# Pregnant & the Flu Vaccine? Why It's More Important Than Ever during the COVID-19 Pandemic

"I just found out I am pregnant. I've heard that it is really important to get the flu shot this fall, but is it still OK now that I am pregnant?" The woman on the other end of the phone line sounded cautious and concerned. I told her, "I'm so glad you called to ask about this. The influenza vaccination may be even more important for pregnant women. The coronavirus pandemic has given us a lot to worry about without adding influenza infections to the mix. Let me tell you more about this…."

### *Influenza and Pregnancy*

Once we are into influenza season (October to March), pregnant women are strongly recommended to get immunized, regardless of where they are in their pregnancy. Yet, many women delay, and in the end only about 50% of pregnant women get their flu shot.

An influenza infection itself can cause severe illness and even death in pregnant and post-partum women. It is important to remember that a healthy mother is more likely to have a healthy baby! The injectable version of the influenza immunization ("flu shot") contains an inactivated (dead) virus and is not going to make you or your baby sick. It is the most effective way to prevent influenza or have less severe symptoms if you do get the flu. Currently, the nasal-spray flu vaccination is not recommended for pregnant women because it contains live attenuated virus.

## Will the vaccine harm my baby?

Some pregnant women are worried about whether immunizations will harm their baby. The scares about vaccines being associated with problems like autism have been shown not to be true. In fact, just last month a large study was published in the journal ***Pediatric***s, "Early Childhood Health Outcomes Following In-Utero Exposure to Influenza Vaccines: A Systemic Review." This study compiled results from 9 earlier studies and found no association between exposure to the flu vaccine during pregnancy and adverse outcomes in children. One of the authors was later quoted as saying, "This should be reassuring for pregnant women who may be considering the vaccination…"

Are you interested in learning more about vaccinations in pregnancy or while breastfeeding? Visit the MotherToBaby website and read all of our vaccine-related fact sheets. There is a general fact sheet on all vaccines, and then specific fact sheets on the seasonal influenza vaccine and also many others like the Tetanus, Diphtheria, and Pertussis (Tdap), Measles, Mumps, and Rubella (MMR), HPV (human papillomavirus), hepatitis A, and varicella (chicken pox) vaccinations.

### *References*

**Early Childhood Health Outcomes Following In Utero Exposure to Influenza Vaccines: A Systematic Review**
Damien Y.P. Foo, Mohinder Sarna, Gavin Pereira, Hannah C. Moore, Deshayne B. Fell, Annette K. Regan, Pediatrics Aug 2020, 146 (2) e20200375; **DOI:** 10.1542/peds.2020-0375



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If you are an athlete and/or have a physically active lifestyle, you may have wondered: 'Should my exercise routine change during pregnancy and breastfeeding?' As a former division 1 athlete and now teratogen information specialist, I sure have. You may have seen news reports about professional athletes who trained and competed at the highest level at least for some time during or shortly after their pregnancies. Serena Williams won the Australian Open while 8 weeks pregnant; Alysia Montano ran the 800 meter race at a national meet in her third trimester and Allyson Felix won a gold medal at the World Championship in track only 10 months postpartum, breaking the world record for number of gold medals won at world championships. At the same time, you may hear concerns that vigorous/strenuous physical activity can be harmful to a pregnancy. So, what is really recommended for pregnant women who have a very physically active lifestyle?

## *Intense Exercise and Pregnancy*

## Benefits of Exercise

In general, exercise is an essential element of a healthy lifestyle and is encouraged during pregnancy as a component of optimal health. Women who frequently engaged in high-intensity aerobic activity or who were physically active before pregnancy can continue these activities during and after pregnancy. Studies show many benefits: it reduces the risk of excessive weight gain, preterm birth, low birth weight, risk of C-section and developing diabetes and high blood pressure during pregnancy. Additionally, physical activity can also help with the aches and pains of pregnancy and reduce the risk of postpartum depression. Concerns that physical activity may cause miscarriage, preterm delivery or growth problems have not been proven for women with uncomplicated pregnancies.

While exercise during pregnancy is associated with minimal risks, some changes to your routine may be necessary because of normal body changes during pregnancy. Consult with your healthcare provider to determine if/how you need to adjust your exercise routine. This is even more important for women who have pre-existing health conditions.

## Level and Duration of Activity

It's important to listen to your body during pregnancy. Every pregnancy and every pregnant woman is different. The body goes through many changes during pregnancy: blood volume increases, your heart pumps harder, heart rate increases and aerobic capacity (fitness level) decreases. Additionally, many women experience nausea and fatigue throughout their pregnancy making it difficult to maintain prior exercise levels, not to mention proper nutrition and hydration. Listen to your body and don't push it past its limits.

It's difficult to compare vigorous/strenuous exercise between individuals. Jogging 10 miles may seem like a piece of cake for a marathon runner but could be extremely difficult for an Olympic lifter. For this reason, 'vigorous' activity is most frequently defined as up to 85% of capacity. While maximum effort is difficult to measure, capacity is often described in terms of maternal heart rate.

Another way to check your intensity level is the "talk test." If you're breathing hard but can still have a conversation easily—but you can't sing—that's moderate intensity. An activity would be considered vigorous if you can only say a few words before pausing for a breath.

If you were in the habit of doing vigorous-intensity exercise or were physically active before your pregnancy, vigorous exercise appears to be ok for most healthy women. However, there is limited information on individuals who exceed the accepted 85% capacity and an upper level of 'safe' exercise intensity hasn't been established.

In general, it is recommended to exercise 30-60 minutes 3-4 times a week to up to daily.

## What to Consider When Exercising

- Stick with what your body is used to. If you are used to long-distance running, pregnancy is not the time to turn

into a power lifter and vice versa.

- Stay hydrated. Drink plenty of fluids before, during and after exercising.
- Avoid overheating. Even if you are used to exercising in 90-degree heat with 70% humidity, you may have to look for an alternative method such as air-conditioned gyms. Don't use steam rooms, hot tubs, and saunas.
- Avoid exercises that call for you to lie flat on your back in the second and third trimester of your pregnancy because this allows less blood flow to your womb.
- Don't engage in sports where you could fall or get injured, or sports where you might get hit by a fast ball.
- Reduce weight load. There is limited data on the effects of resistance training (e.g. weightlifting) on pregnancy. There is a concern that holding your breath during heavy lifts can possibly result in baby's heart rate slowing down. Because of this, you may have to reduce the resistance load.
- Allow enough time for your body to recover after each training session.
- Make sure you have enough caloric intake. If you regularly participate in vigorous-intensity exercise, you will likely have to adjust your caloric intake to allow for appropriate weight gain for your pregnancy.
- Continue to fuel your body. Prolonged high-intensity exercise can result in low blood sugar. Make sure you fuel your body if you plan on exercising over 45 minutes.
- Check with your healthcare provider before continuing any supplements such as pre-workout protein shakes. Also, see our MotherToBaby blog on this topic.
- Stop exercising if you feel dizzy, have a headache, develop chest pain, have calf pain or swelling, have muscle cramps, or you experience vaginal bleeding, leakage of fluid, contractions or shortness of breath before exertion. Call your healthcare provider with any concerns.

## Postpartum and Breastfeeding

In general, exercise can be resumed gradually after delivery as soon as it is medically safe – consult with your healthcare provider on when they may be. This may depend on mode of delivery (c-section vs. vaginal birth) and any additional health problems or complications. When exercise can be resumed varies among women, with some being able to start exercising within days after delivery.

Regular exercise has not been shown to affect breast milk production or quality and hasn't been shown to affect baby's growth either. It is extremely important to remain hydrated during breastfeeding, especially when regularly exercising. All women who are breastfeeding should also focus on the correct amount of caloric intake which may vary depending on level of activity.

Bottom line is, we are all different athletes and will all have different needs during pregnancy and the postpartum period. There is no 'one-size-fits-all' recipe for vigorous exercising during pregnancy. The best things you can do are to consult with your healthcare provider frequently and listen to your body. For more information, see our MotherToBaby Fact Sheet on exercising. You can also find some information on which foods/drinks to limit/avoid, the appropriate amount of weight to gain, and the recommended amount of exercise here.

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As the famous song croons, "Summertime and the living is easy…." Summer is finally here! COVID-19 has interfered with outdoor gatherings, but people are starting to venture out…with good social distancing, of course! Outdoor activities mean more sun exposure, and healthcare providers recommend protecting your skin from the sun. These recommendations stem from concerns that the sun's UV (ultraviolet) rays can damage the skin and increase the risk for skin cancer and early aging. Studies show that an exposure as short as 15 minutes in duration can cause skin damage.

### *Sunscreen and Pregnancy*

Pregnant women often ask MotherToBaby about whether sunscreen is ok to use during pregnancy. The US Food and Drug Administration (FDA) regulates sunscreen ingredients to ensure safety and effectiveness. The FDA is currently in the process of updating requirements, so stay tuned for news on that front. The FDA reminds us that, "Given the recognized public health benefits of sunscreen use, Americans should continue to use sunscreen with other sun protective measures as this important rulemaking effort moves forward."

## What's in Sunscreen?

There are two types of UV rays that cause skin damage: UV-A and UV-B. Sunscreens that protect against both types of rays are called 'broad spectrum'. There are many different active ingredients in sunscreens sold in the US. Some contain chemicals like oxybenzone, an agent banned in some areas because it is harmful to coral. It used to be

thought that because they were applied topically to the skin, sunscreens did not end up in the bloodstream. However, several recent studies have found that there is some absorption of sunscreen chemicals through the skin, although in relatively small amounts. Many of these sunscreen chemicals have not been studied very well in pregnancy, although they are not known to have a negative effect on the pregnancy or baby. Aside from active sunscreen ingredients, many products contain other ingredients such as CBD oil (made from the marijuana plant) that have not been studied well in pregnancy. Read the label! Apply your sunscreen properly and then wash your hands.

## Alternatives

One alternative is to use a mineral sunscreen such as titanium dioxide and zinc oxide. These are physical blocking agents and stay on top of the skin. That means they are not absorbed through the skin and may be a good choice. These mineral sunscreens are best applied as a lotion rather than a spray since they may be a hazard when inhaled.

Also, limit your exposure by using a hat and other protective clothing, and not going out in the sun during peak hours (between 10a – 2p).

Our last bit of advice? Enjoy your summer!

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As a teratogen information specialist, I provide the most up-to-date information about exposures during pregnancy, breastfeeding, before pregnancy or in cases of adoption. Over the years, I have been asked questions about hair dye, heroin, and lots of things in between. I never thought I would be getting questions from multiple people about tear gas and pepper spray exposure during pregnancy. But here we are.

Protests happening in many cities in the United States right now are resulting in some exposure to riot control agents such as tear gas and pepper spray. Even if women who know they are pregnant do not participate in a protest, about 50% of pregnancies in the US are unplanned. This means some women who are participating in the protests may not even know they are pregnant at the time of exposure.

***Common protest-related exposures that we have been asked about include:***

## Tear Gas

There are multiple chemicals in tear gas. It can cause tearing of the eyes, irritation of mucous membranes, cough, difficulty breathing and irritation to the skin. A common chemical in tear gas is called 2-chlorobenzalmalononitrile (also called o-chlorobenzylidene malononitrile or CS for short).

In every pregnancy, a woman starts out with a 3-5% chance of having a baby with a birth defect. This is called her background risk. Based on the very limited information we have, exposure to CS gas is not expected to increase the chance of birth defects over the background risk. A report looking at CS exposure found no major increases in miscarriages, stillbirths, or birth defects.

## Pepper Spray

The active ingredient in pepper spray is capsaicin, a chemical that comes from chili peppers. Effects from pepper spray exposure can include irritation of the eyes, skin, and mucous membranes, coughing, and trouble breathing or speaking. Like tear gas, there is very limited information on the use of capsaicin in pregnancy and from what we do know, it is not expected to increase the chance of birth defects over the background risk. Please see our fact sheet on capsaicin for more information.

The Centers for Disease Control and Prevention (CDC) has more information on riot control agents such as tear gas and pepper spray, as well as tips on how you can protect yourself and what to do if you are exposed.

## Trauma

Trauma can be caused by physical injury, such as being hit (by a hand or fist or by objects such as a baton or a rubber bullet) or falling. Trauma can also be psychological, which can stem from violence or from mental/emotional stress. There are individual reports of babies born with and without birth defects following trauma. Pregnancy outcomes may differ based on the type of trauma experienced and based on the severity of the trauma. Our fact sheet on trauma has more information.

## Stress

For most of us, stress is a part of "normal" life. However, the world is anything but normal right now. While it is unlikely that stress alone will increase the chance of birth defects, being under a lot of stress over time can affect your health and well-being. Stress can increase the chance for developing conditions such as high blood pressure or depression. If you already have medical problems, stress may make them worse. If stress is causing you to have any medical problems, it's suggested that you talk to your healthcare provider. More information about stress during pregnancy and breastfeeding can be found in our fact sheet.

## COVID-19

As crowds gather, it's important to practice social distancing and other safety techniques to prevent the spread of COVID-19. Please visit our MotherToBaby Fact Sheet on COVID-19 in pregnancy for recent information.

Of course, it's suggested for women who are pregnant to minimize these exposures as much as possible. However, sometimes it's unavoidable. Just know that even during these troubled times, if you have questions for us at MotherToBaby, we are here to answer them as best we can.

We're all in this together. Please be safe out there.

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Tanya called in on a Monday morning. "I'm getting married in a few months and we want to start trying to get pregnant right away. What should I be doing now to have the best chance of a healthy baby?"

Preconception health and pregnancy planning present a terrific opportunity to assess a wide range of factors that can give your baby the best start. This blog will outline the things to consider, as I relayed to Tanya:

### *Your Personal Health*

Are you generally healthy? If you already get headaches or have acid reflux, know that pregnancy can make these more frequent. Ask your doctor if the way you treat these common conditions should change once you are pregnant. Ask about your current exercise routine and if you need to alter it during pregnancy. Get checked for sexually transmitted infections because some may not show symptoms. Also discuss your medications – some should be stopped before you start trying to conceive, such as Valproic acid, leflunomide (e.g. Arava®), teriflunomide (Aubagio®), methotrexate, and isotretinoin (e.g. Accutane®) to name just a few. For others, you'll want to weigh the risks vs. the benefits with your health provider before you conceive. Talk with your doctors now to make a plan.

## Caffeine

Do you drink caffeinated coffee, tea, or soda? What about energy drinks, protein powders, or Kombucha? MotherToBaby's fact sheet on caffeine may put your mind at ease and encourage you to think about all your beverage options.

## Body Weight

Is your weight a concern? One of the best things you can do before conception is to get to a healthy weight. Women who are overweight or obese have increased risks for miscarriage, birth defects, gestational diabetes, high blood pressure and preeclampsia, and unplanned cesarean birth. Now is a good time to meet with a nutritionist or go on a sensible diet to get to a healthy weight in anticipation of pregnancy. Once you are pregnant, continue to watch what you eat but don't try to lose weight. Weight gain is inevitable during pregnancy but guidelines from the American College of Obstetricians and Gynecologists (or ACOG, the leading professional society for OB/GYNs) advise women to gain anywhere from 11-40 pounds, depending on your pre-pregnancy weight. It's a myth that you need to "eat for two," so don't set yourself up for postpartum weight gain by eating more than you should. After delivery of an average 7-8 lb. baby, you may lose 2 lbs. in amniotic fluid, 1.5 lbs. of placenta, 5-7 lbs. in blood volume, and 2 lbs. as the uterus returns to its normal size. That could still leave you with 10 pounds of excess weight, or more if you gained more weight during the pregnancy. Some women never take off those extra pounds, and their weight creeps up with successive pregnancies and age, which can lead to pregnancy complications and chronic health problems later on. See our exercise fact sheet for more information.

## Chronic Health Conditions

Do you have chronic health conditions like diabetes, high blood pressure, migraines, asthma, high cholesterol, heart conditions, varicose veins, or anemia? Do you have an autoimmune disease like Crohn's or ulcerative colitis, lupus, rheumatoid arthritis, ankylosing spondylitis, multiple sclerosis, psoriasis or psoriatic arthritis? Meet with your obstetrician for a "preconception" appointment to discuss how a pregnancy might impact your health, and how your health might affect a future pregnancy. Your specialist can provide an important opinion too. A maternal-fetal medicine specialist (MFM) is a doctor who specializes in high-risk pregnancies, and consulting with a MFM once you are pregnant could help you learn how to optimize your and your baby's health.

## Mental Health

What about your mental health? If you have a history of anxiety or depression, ADHD or other conditions, ask your psychiatrist and OB about treatment, and don't make changes before you do. Many medications can be continued during pregnancy and while breastfeeding. In fact, mental health is incredibly important – for example, when a woman doesn't treat her mood disorder or inadequately treats it, some studies suggest risks for miscarriage, premature birth, low birth weight, and preeclampsia. Talk therapy is vitally important too. And if you struggle with mental health concerns during the pregnancy, you are at risk for postpartum depression. Let's face it – pregnancy and caring for a new baby is stressful, so now is the time to marshal your helpers – friends, relatives, therapists and doctors – to ensure you have enough support. Your obstetrician should ask about mental health but if not, speak up. Your doctor can be your ally here, helping you get treatment and addressing concerns related to pregnancy and postpartum mental health. And MotherToBaby can give you an overview of the research related to any prescriptions you might choose to take.

## Dental Health

Have you seen a dentist lately? Oral health can impact a pregnancy, meaning that if you have swollen or bleeding gums, a toothache or an infection, it can increase risks to the pregnancy. If you need to have a dental x-ray, take antibiotics, or have local anesthesia for a dental procedure, these are generally acceptable during pregnancy, but best to complete before you get pregnant. Contact MotherToBaby for more details.

## Your Workplace

Where do you work? MotherToBaby can give you information to minimize exposures in a veterinarian office, dry cleaners, salon, laboratory/hospital, imaging center, pest control service, or other business. Your occupational safety department can recommend personal protective equipment (PPE) and tell you about ventilation that may be in place to ensure workplace safety. Safety data sheets (SDS) give an overview of chemicals used in industry and are available online or at work.

## Food Safety

Read up on food safety and learn how to minimize your exposure to foods that have commonly been associated with foodborne illness such as E. coli or listeria. Get in the habit of washing your fresh fruits and vegetables well. Check out other blogs on our website too.

## Vitamins and Supplements

Have you started taking a prenatal vitamin? Are you getting enough folic acid? ACOG recommends that women take at least 400 mcg of folic acid before getting pregnant and at least 600-800 mcg/day once they are pregnant. This can help prevent birth defects of the brain and spinal cord. Call MotherToBaby if you want to learn the recommended daily intake for specific vitamins or minerals. In general, taking more than what is recommended is not advisable – we haven't studied how mega-doses of vitamins may impact a pregnancy. Other supplements beyond taking a prenatal vitamin are not advisable either – the Food & Drug Administration (FDA) doesn't supervise their manufacturing plants and past surveys have shown some supplements actually contain contaminants. Furthermore, we've seen instances where the label didn't match the contents of the bottle and could cause ill effects. Pregnant and breastfeeding women should avoid herbal supplements unless specifically recommended by your doctor.

## Alcohol, Cannabis, and Tobacco

Do you smoke cigarettes? Do you use cannabis for medicinal or recreational purposes? Do you drink alcohol? Recent research has demonstrated that marijuana use very early in pregnancy causes changes in brain development, which could result in behavioral or learning challenges we see later in the child's life. Cigarettes increase risks for pregnancy

loss, among other things. And alcohol is known to cause a variety of birth defects known as fetal alcohol spectrum disorder (FASD). We don't believe that there is a "safe" amount of alcohol which when consumed doesn't cause issues for a developing child. Now is the time to quit smoking, drinking, and using cannabis – your baby will be heathier for it. MotherToBaby can provide resources, or check with your doctor.

## Vaccinations

Are you up to date on all your vaccines? Did you get a flu shot this past season? You don't want a vaccine-preventable illness to have an impact on your pregnancy. Flu infection can increase risks for more severe symptoms, longer-lasting illness, pregnancy loss and premature delivery, which can have a lifelong impact on your baby. Flu vaccine helps prevent infection. Another benefit to vaccinating during pregnancy? Studies show the protection extends to your baby, and gives them a little extra immunity from birth until they can receive vaccines. Also good to know: some vaccines can be given and are recommended during pregnancy, like a flu shot or TDAP, but others are best given before you conceive to avoid a small risk of spreading the illness to the fetus (e.g. the measles, mumps, and rubella (MMR) vaccine, as well as the Varicella (chicken pox) vaccine) – so try to get these done at least a month before trying to conceive. Check your medical records to see the last time you received any of these vaccinations. If you don't know if you were previously vaccinated, your doctor can draw blood to check if you have immunity.

## Your Pets

Do you have a cat? There is some concern in pregnancy about an infection called toxoplasmosis, which is caused by a parasite that can be found in cat feces. Read our blog for more info on what you can do to prevent this infection if you have a fur baby at home.

## Other Illnesses

Do your upcoming travel plans involve travel to a warm tropical place? Check out our Zika fact sheet to learn more before you book nonrefundable tickets. In general, women will want to wait to try to conceive for eight weeks from the time of your return home; the wait time is three months if your male partner travels with you. COVID-19 is also spreading around the globe and our fact sheet can give you the latest information on whether and how it could affect a pregnancy.

Finally, your obstetrician or primary care doctor would be glad to see you for a Preconception consultation. Make an appointment to discuss your personal history and health. It's a great way to get you and your baby off to the best start.