In early July 2021, C. was eight months pregnant and looking ahead to the holiday weekend when she developed an uncontrollable cough and a fever. She went to an urgent care with fears of COVID-19, and tested positive.

Over the following days, her doctor helped her monitor the fever and instructed her that if she felt contractions, she should go to labor and delivery, but if she felt breathless, she needed to go to the emergency room. One night, she felt out of breath and lightheaded, but by that point her husband and daughter had also tested positive for COVID-19. She knew that the hospital would not allow additional people to accompany her, and her husband needed to stay home with their daughter. So in the middle of the night, she drove herself to the ER where she spent seven and a half hours in the waiting room before being admitted.

When news of a novel coronavirus emerged from Wuhan, the obstetrics field worldwide had major concerns. Would this virus be like SARS or MERS, which can have severe neonatal and maternal effects? Could it be transmitted from mother to infant? Could it be transmitted from a laboring mother to her doctor, nurse or midwife? Researchers quickly mobilized to gather data that would guide the rapidly evolving decisions impacting policies, procedures, and mothers.

There are normal changes that make pregnant women more prone to respiratory conditions, explained Dr. Aris Papageorghiou, a professor of fetal medicine and clinical research director of the Oxford Maternal and Perinatal Health Institute. They include shallower breathing, increased oxygen demand and faster heart rate. There are also changes in immunity to allow the body to carry the fetus.

Papageorghiou is also one of the driving forces behind a multinational cohort study INTERCOVID, which began in April 2020. Designing studies to examine the impact of COVID-19 in pregnancy was challenging due to unique pandemic circumstances, he said. “When someone has an adverse outcome, how do you know if it is worse or better than the normal population? Because all sorts of other stuff was happening,” he said. “The health systems were overwhelmed and women were frightened to go to a hospital. So you might expect that there might be some changes to women's healthcare that weren't related to the virus itself, but that may have been related to seeking care.”

But even after accounting for all the unique variables, the data was clear. Getting COVID-19 while pregnant has significant consequences. “For example,” said Papageorghiou, “needing respiratory support, needing to go to intensive care, and higher rates of hypertension and preeclampsia. There are also the effects of medical interventions, effects of indicated preterm birth, or needing to deliver the baby in order to support the mother. So there are direct effects of the virus on the respiratory system. And then indirect effects where we take actions as doctors which have adverse effects, but necessary adverse effects.”

C. spent three days alone in her hospital room, sick with COVID-19 and pneumonia while doctors watched over her and the baby. She was administered oxygen and monitored for blood clots, a risk of COVID-19 that pregnant women are already prone to. The doctors informed her

that since her quality of breathing had decreased, they needed to deliver the baby via emergency cesarean section before her condition worsened and she risked needing a ventilator.

30 minutes later, she was in the operating room and her baby was born, nearly a month early, safe and healthy. After the delivery, C. said her cough and fever both improved, and though her pneumonia was not cleared, she felt better.

COVID-19 does not only impact mothers physiologically - the pandemic is influencing their pregnancy, delivery, and postpartum experiences in other ways, too.

When C. was still at home and her entire family was ill, she felt she could not ask anyone for help because she did not want to risk exposing visitors to the virus. Many expecting mothers had to attend regular appointments alone, video chatting with their partners during ultrasounds.

“This was my first pregnancy and it was supposed to be something special,” said Rebekah Harris, whose son was born in September 2020. “Not having somebody there, it was awful.”

In the hospital, Harris said safety guidelines limited some in-person resources. For example, she wasn’t able to meet with the lactation consultant she normally would have. “I was winging it learning how to breastfeed,” she said. “I had to teach myself. I wasn’t able to feed him and he lost a whole pound and some ounces. It was so scary.” She said the nurses helped as much as they could, but ultimately she moved on to formula.

Doctors, nurses, midwives and all of the healthcare staff that work in labor and delivery have also had to adjust to new workflows, practicing in extensive personal protective equipment, and other changes brought by safety guidelines to protect themselves, other staff, and mothers.

“Wearing personal protective equipment, masks, and the whole gear means that your personal interaction with a pregnant mother, there's no question that it’s hampered,” said Papageorghiou. “Human touch, not being able to hold someone's hand and really sit close to someone and support them through a difficult moment, it’s tough.”

“Everyone was wonderful at the hospital, they were really kind and helpful,” said C.
“But I felt like a leper. It was a weird experience to be that isolated. The other moms went out into the hallway to walk around, or to go get some fresh air, but I was trapped in that room.”

A recent study published in Scientific Reports found that women who gave birth during the pandemic and were positive for COVID-19 at the time of delivery were more likely to have a traumatic birth experience and higher levels of pain than those who did not have COVID-19. Traumatic birth can lead to post traumatic stress disorder, depression and trouble with early mother-infant bonding.

The researchers of that small study speculate that the increased clinical levels of stress could be due to the lack of support because of visitor restrictions, the anxiety of transmitting the virus to the newborn, or the fear or actuality of being separated from the baby after birth. The research is in early stages and ongoing, but vital to understand the physical and psychological impacts the virus is having on this generation of mothers, whether directly or indirectly.

The risks can continue beyond delivery, too. “Postpartum depression is very high, even in non-COVID times. We've been trying to work really hard to identify who's at risk for postpartum depression because there's so many things about COVID that increase that risk,” said Dr. Susan Hellerstein, an obstetrician-gynecologist at Brigham and Women’s Hospital.

“We call it that fourth trimester...it's such a vulnerable time in those first six weeks postpartum,” said Hellerstein. “It’s the support system that mothers go home to that allows them to feel successful, whether it’s friends or parents, lactation consultants or visiting nurses, there's so many different places that people get support.” And during a pandemic when people have stayed closed off in their homes, mothers haven’t had that.

C. has been adjusting to life as a mother of two all while still recovering from COVID-19 and her hospital stay. “There are all these emotions that I didn’t know were in there - they surface after you experience something like this that’s so scary,” she said. “I’m still processing it.”