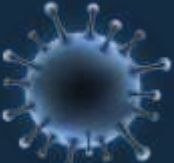

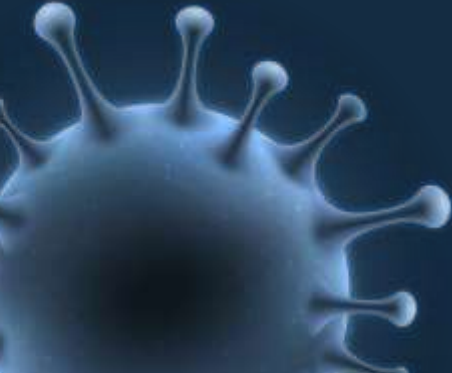




COVID-19 in pregnancy

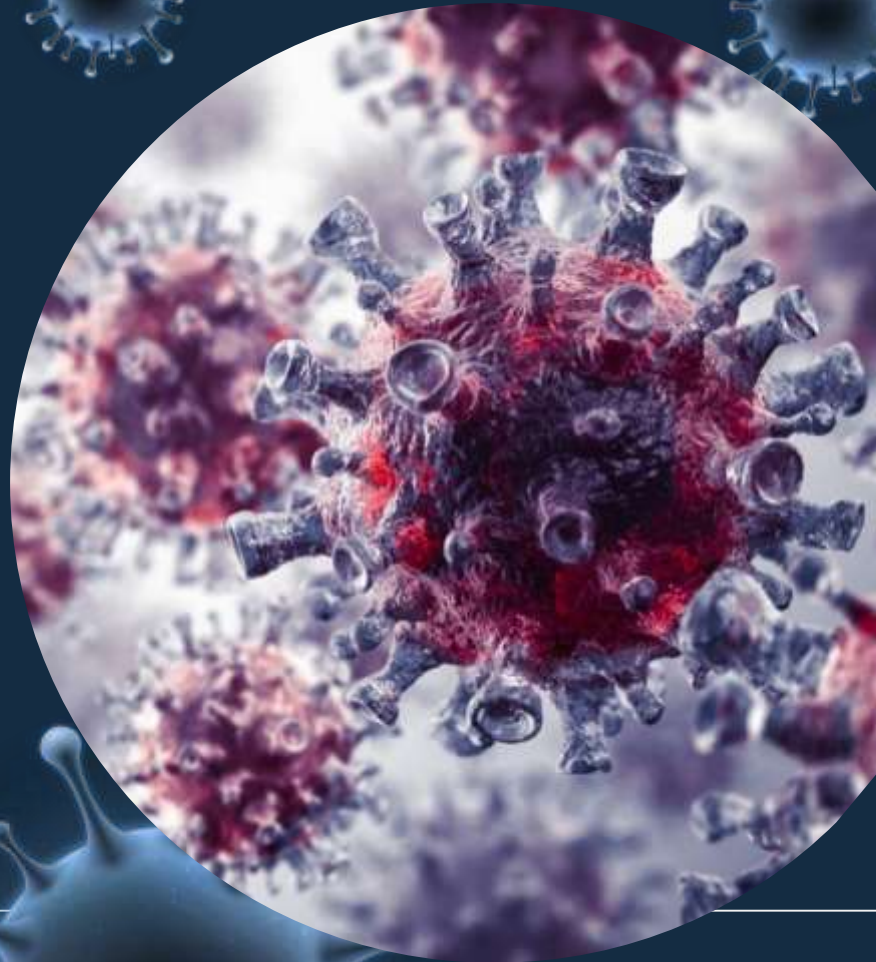
Done by :

Rami Riad
Rami Barham
Musa Al-aqayleh
Aya Al-aqtash



Corona Virus

- Coronaviruses are enveloped +ssRNA
- Coronavirus that causes COVID-19 is β -coronavirus in the same subgenus as SARS, MERS.
- The host receptor is ACE2 in which the virus binds to it to allow viral entry to the cell.
- SARS-CoV-2 is the strain of coronavirus which causes COVID-19.
- It was first identified in Wuhan City, China, towards the end of 2019



Epidemiology

700 million

confirmed cases of COVID-19 have been reported.



Previous outbreaks

There are previous outbreaks :
severe acute respiratory syndrome (SARS CoV-1), It was first identified at the end of February 2003 during an outbreak that emerged in China
Middle Eastern respiratory syndrome (MERS) was first identified in Saudi Arabia in 2012.

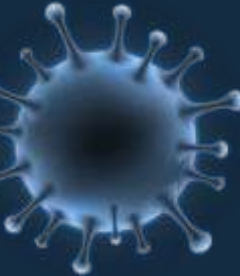


Outbreak status

WHO declared the COVID-19 outbreak a Public Health Emergency of International Concern on January 30, 2020. WHO classified the disease as a pandemic on March 11, 2020.



Transmission

1. mainly person-to-person
 2. Primarily via **respiratory droplets**
 3. **Via aerosols**: detected in aerosols for a duration of **3 hours** and could last even longer.
 4. **Direct contact transmission**: especially hand-to-face contact
 5. **Surface transmission**
 6. **Fecal-oral transmission**: Evidence that both **SARS-CoV** and **MERS-CoV** are excreted fecally suggests that fecal-oral transmission is possible.
 7. **Evidence suggests that vertical transmission.**
- 



Effect of COVID-19 on pregnant women

- Pregnant women do not appear more likely to contract the infection than the general population, unless if there are comorbidities.
- Comorbidities such as pre-existing diabetes, body-mass index (BMI) >25 kg/m², and gestational diabetes on insulin are at increased risk of contracting SARS-CoV-2 infection.
- Most pregnant women who are infected with SARS-CoV-2 will experience only mild or moderate cold/flu-like symptoms.
- A significant proportion of pregnant women with COVID-19 may be asymptomatic: an estimated 74% are asymptomatic.

Symptoms associated with coronavirus disease 2019 (COVID-19)^[1]

Symptoms that may be seen in patients with COVID-19

- Cough
- Fever
- Myalgias
- Headache
- Dyspnea (new or worsening over baseline)
- Sore throat
- Diarrhea
- Nausea/vomiting
- Anosmia or other smell abnormalities
- Ageusia or other taste abnormalities
- Rhinorrhea and/or nasal congestion
- Chills/rigors
- Fatigue
- Confusion
- Chest pain or pressure

Most patients with confirmed COVID-19 have fever and/or symptoms of acute respiratory illness. However, various other symptoms have been associated with COVID-19; this list is not inclusive of all reported symptoms. These symptoms are also not specific for COVID-19, and the predictive value of a single symptom in the diagnosis of COVID-19 is uncertain.

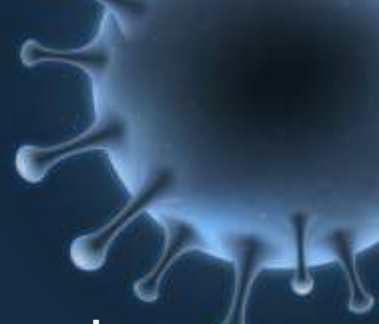
The most common symptoms were:

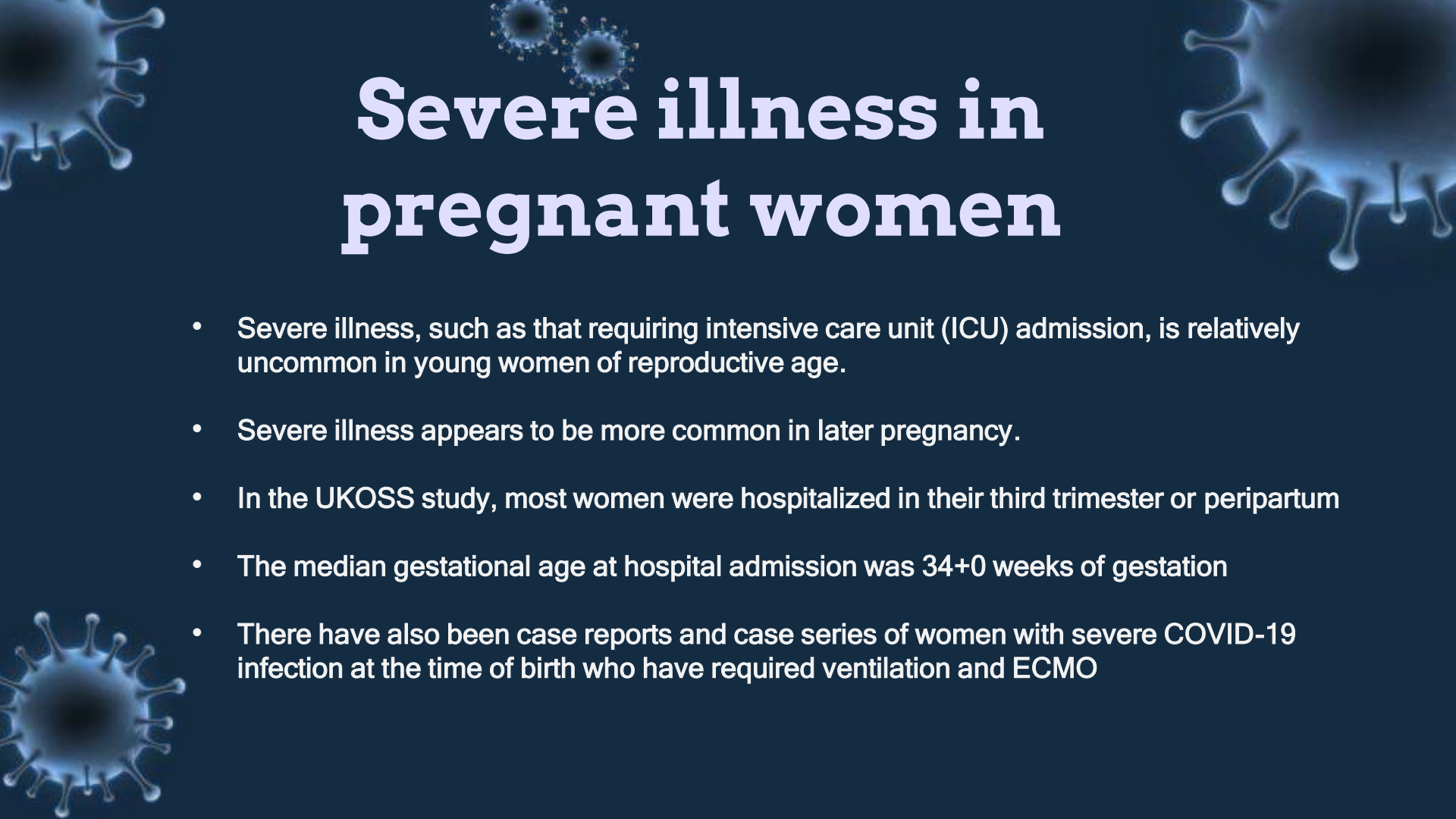
1. fever (40%)
2. cough (39%)

Less frequent symptoms were:

dyspnea, myalgia, loss of sense of taste, and diarrhea

Each present in more than 10% of women



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Severe illness in pregnant women

- Severe illness, such as that requiring intensive care unit (ICU) admission, is relatively uncommon in young women of reproductive age.
- Severe illness appears to be more common in later pregnancy.
- In the UKOSS study, most women were hospitalized in their third trimester or peripartum
- The median gestational age at hospital admission was 34+0 weeks of gestation
- There have also been case reports and case series of women with severe COVID-19 infection at the time of birth who have required ventilation and ECMO

The slide features a dark blue background with several stylized, glowing virus particles in the corners. These particles are spherical with numerous spike-like protrusions extending from their surfaces, resembling coronaviruses. They are positioned in the top-left, top-right, and bottom-left corners, creating a thematic border around the central text.

In numbers:

- A report on 427 pregnant women admitted to UK hospitals with confirmed SARS-CoV-2 infection between 1 March and 14 April 2020.
- During this time, public health recommendations were to test only individuals admitted to the hospital with symptoms of COVID-19.
- Of the 427 pregnant women, 38 women (9%) required level 3 critical care; four women (less than 1%) received extracorporeal membrane oxygenation (ECMO).

Effect on pregnancy

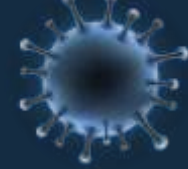
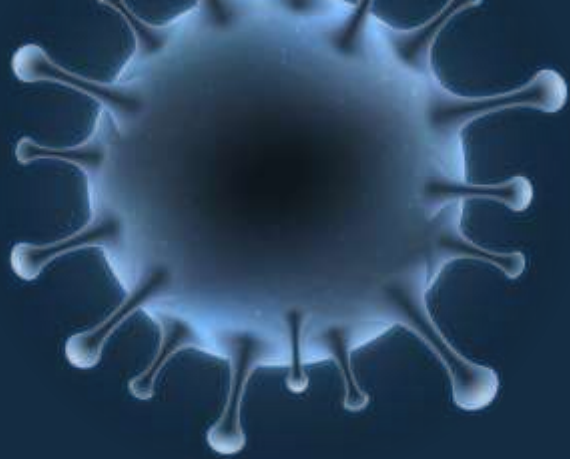
Maternal COVID-19 is associated with an approximately three times greater risk of preterm birth.

Maternal COVID-19 is also associated with an increased rate of cesarean birth

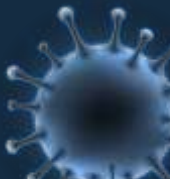
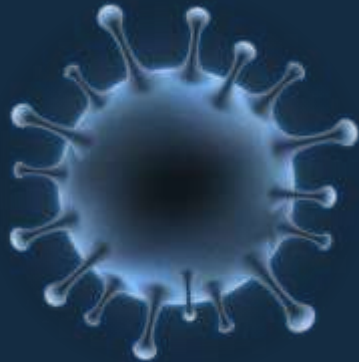
In numbers

- A systematic review estimated the risk at approximately 17%.
- Most of these preterm births (94%) were iatrogenic.
- In the UKOSS study, 59% of women had caesarean births; Approximately half of these were because of maternal or fetal compromise.
- The remainder were for obstetric reasons (e.g. progress in labour, previous caesarean birth) or maternal request (6%).
- Of the women having a caesarean birth, 20% required general anaesthesia (GA) because of severe COVID-19 symptoms or urgency of birth.





Risk factors



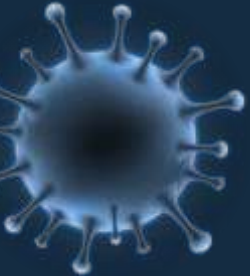
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Risk factors for hospital admissions

- Black, Asian and minority ethnic (BAME)
- One possible contributing factor to the observed association between severe illness and BAME background is vitamin D deficiency
- Being overweight (BMI 25-29 kg/m²) or obese (BMI 30 kg/m² or more)
- Pre-pregnancy co-morbidity, such as pre-existing diabetes and chronic hypertension
- Maternal age 35 years or older
- Living in areas or households of increased socioeconomic deprivation



Candidates for Hospitalization

- Specific criteria for hospitalization may vary with the availability of hospital resources and patient-specific clinical and/or social factors that might support earlier hospitalization, but typically include the following characteristics of severe disease:
 1. Oxygen saturation (SpO₂) <94% on room air
 2. Respiratory rate >30 breaths/minute
 3. Pressure of oxygen (PaO₂)/fraction of inspired oxygen (FiO₂) <300 mmHg
 4. Lung infiltrates >50%
- 



Effect of covid-19 on the fetus

1. There has been no significant reported increase in the incidence of congenital abnormalities.
 2. There has also been no evidence to date that fetal growth restriction (FGR) is a consequence of COVID-19.
 3. For babies born to women with COVID-19, the overall outcomes are positive, with over 95% of newborns included in a systematic review reported as being born in good condition.
- Symptomatic maternal COVID-19 is associated with a two to three times greater risk of preterm birth.
 - Although the overall risk of stillbirth is small, the risk is approximately doubled with SARS-CoV-2 infection.

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prevention in pregnant woman

- Pregnant women should follow the same recommendations as non pregnant women (physical distancing, hand-hygiene, wearing masks, ... etc), reducing the exposure can be considered to reduce risk of prenatal transmission
- Vaccination is strongly recommended regardless of conception intentions or pregnancy status.



Antenatal care during COVID-19 infection

- Antenatal and postnatal care should be regarded as essential and women encouraged to attend while observing social distancing and infection prevention measures.
- Studies in the UK and internationally have shown that women who do not attend antenatal services are at increased risk of maternal death, stillbirth, and other adverse perinatal outcome.
- NICE guidance on antenatal care, including the schedule of antenatal appointments recommended for women with uncomplicated pregnancies



pregnant COVID-19 patients: Candidates for inpatient care

- Mild symptoms (fever, cough, sore throat, malaise, headache, muscle pain without shortness of breath, dyspnea, or abnormal chest imaging) plus a comorbid condition (e.g., poorly controlled hypertension or diabetes, chronic kidney disease, chronic cardiopulmonary disease)
- Fever $>39^{\circ}\text{C}$ despite use of acetaminophen
- Moderate or severe signs and symptoms (e.g., oxygen saturation <95 percent on room air and while walking, respiratory frequency >30 breaths per minute.
- Critical disease - Respiratory failure, hypotension despite appropriate hydration, and/or new end-organ dysfunction (e.g., mental status changes, hepatic or renal insufficiency, cardiac dysfunction).
- During pregnancy, maternal peripheral oxygen saturation (SpO_2) should be maintained at $\geq 95\%$.
Maternal PaO_2 greater than 70 mmHg is desirable to maintain a favorable oxygen diffusion gradient from the maternal to the fetal side of the placenta



Use and type of VTE prophylaxis


- Prophylactic-dose anticoagulation is recommended for pregnant patients hospitalized for severe COVID-19 if there are no contraindications to its use.
- Patients with COVID-19 who do not warrant hospitalization for the infection or who are asymptomatic or mildly symptomatic and hospitalized for reasons other than COVID-19 do not require anticoagulation.
- Low molecular weight heparin (LMWH)- are generally the preferred one.
- Unfractionated heparin is preferred for pregnant women who might be proximate to delivery because it is more readily reversed than low molecular weight heparin (LMWH). Also, in patients with severe renal insufficiency (eg, creatinine clearance <30 mL/min)

All pregnant women who have been hospitalized and have had confirmed COVID-19 should be offered thromboprophylaxis for 10 days following hospital discharge. Consider a longer duration of thromboprophylaxis for women with persistent morbidity



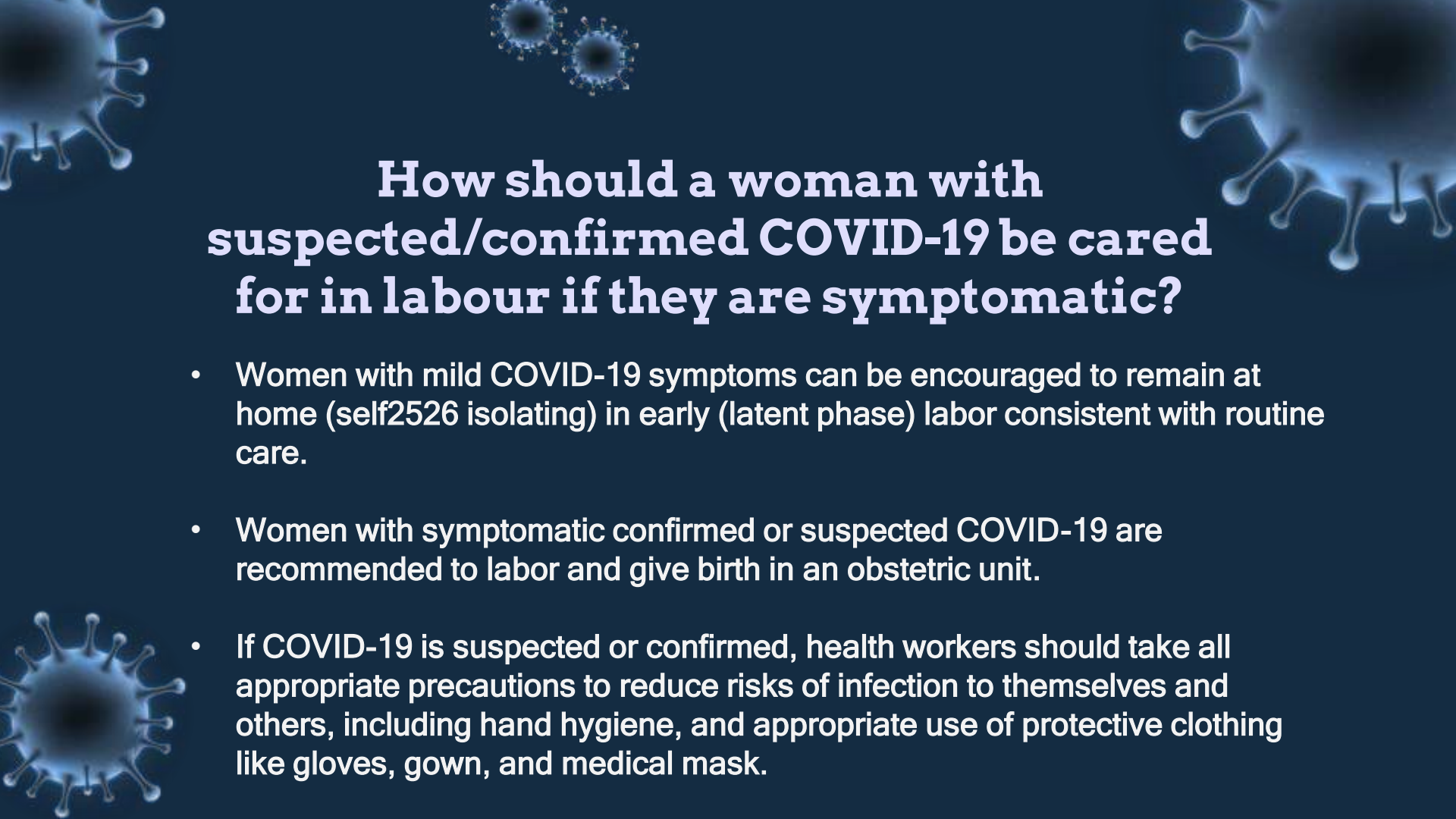
Labor

- For low-risk women who are asymptomatic and test-positive COVID-19: is recommended that an informed discussion around the place of birth takes place with the midwife, consistent with local policies.
- For asymptomatic women who test positive for SARS-CoV-2 on admission: continuous fetal monitoring during labor using cardiotocography (CTG) is not recommended solely.
- for this Reason and should only be used if it is required for another reason (e.g. previous cesarean birth). In women with symptomatic COVID-19, there may be an increased risk of fetal compromise in active labor.



Do pregnant women with suspected or confirmed COVID-19 need to give birth by cesarean section?

- No. WHO advice is that cesarean sections should only be performed when medically justified.
- The mode of birth should be individualized and based on a woman's preferences alongside obstetric indications.



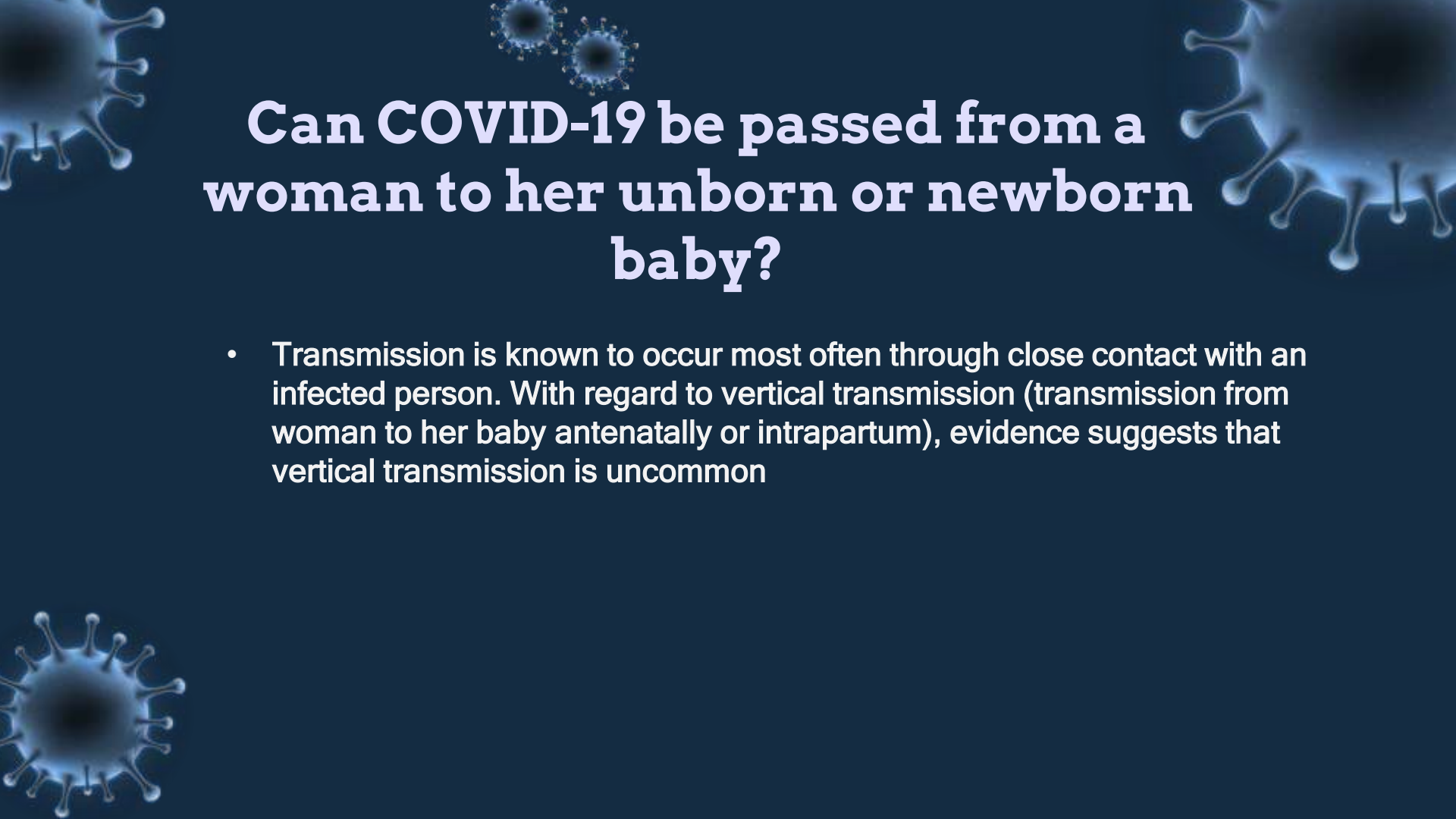
How should a woman with suspected/confirmed COVID-19 be cared for in labour if they are symptomatic?

- Women with mild COVID-19 symptoms can be encouraged to remain at home (self-isolating) in early (latent phase) labor consistent with routine care.
- Women with symptomatic confirmed or suspected COVID-19 are recommended to labor and give birth in an obstetric unit.
- If COVID-19 is suspected or confirmed, health workers should take all appropriate precautions to reduce risks of infection to themselves and others, including hand hygiene, and appropriate use of protective clothing like gloves, gown, and medical mask.

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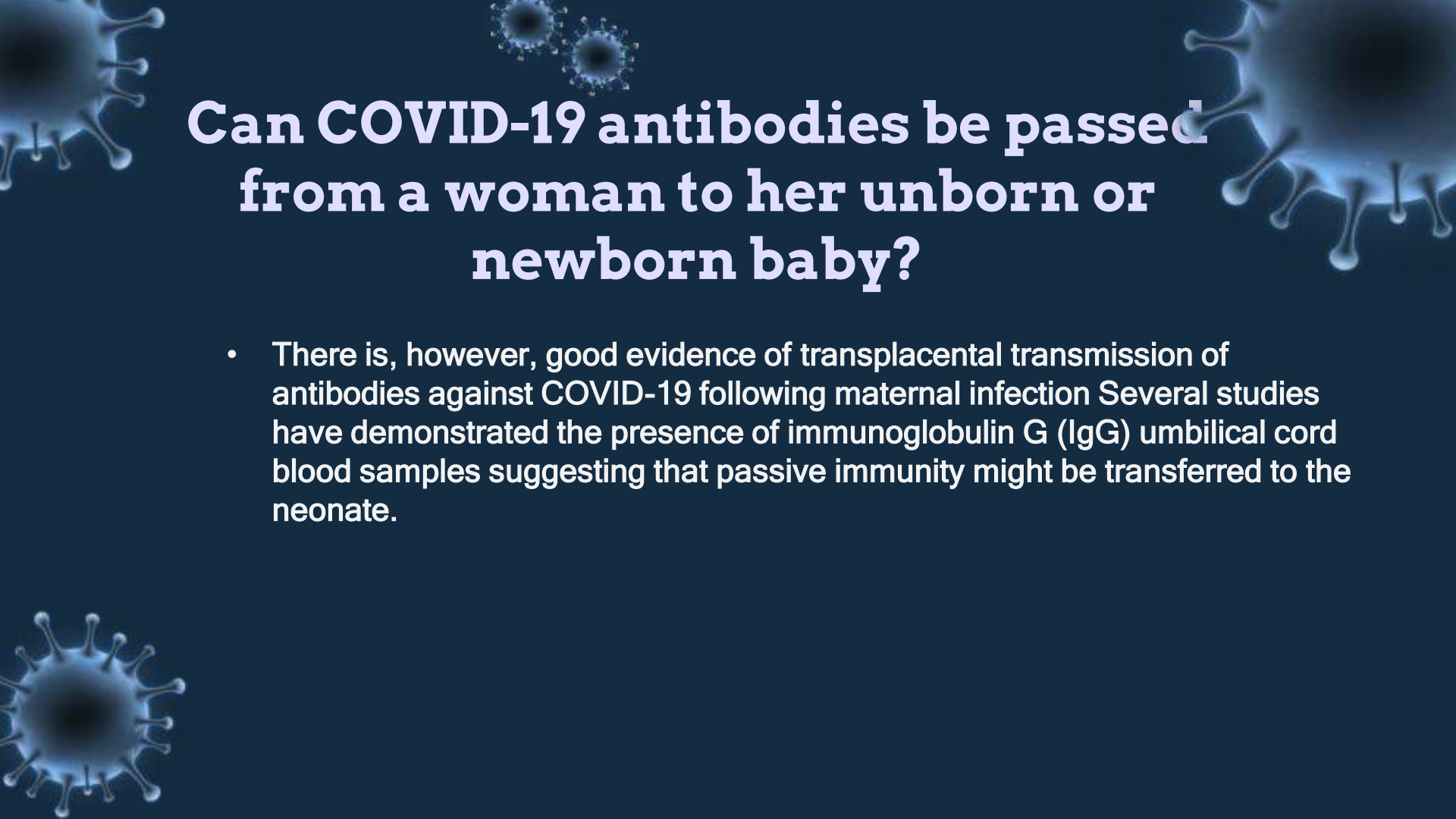
On admission

- A full maternal and fetal assessment should be undertaken, including:
 1. Assessment of the severity of COVID-19 symptoms
 2. Maternal observations including temperature, respiratory rate, and oxygen saturation.
 3. Confirmation of the onset of labour, as per standard care
 4. Continuous External Fetal Monitoring (CEFM) using CTG.
 5. Women with symptomatic confirmed or suspected COVID-19 should be offered CEFM during labor and vaginal birth.



Can COVID-19 be passed from a woman to her unborn or newborn baby?

- Transmission is known to occur most often through close contact with an infected person. With regard to vertical transmission (transmission from woman to her baby antenatally or intrapartum), evidence suggests that vertical transmission is uncommon



Can COVID-19 antibodies be passed from a woman to her unborn or newborn baby?

- There is, however, good evidence of transplacental transmission of antibodies against COVID-19 following maternal infection. Several studies have demonstrated the presence of immunoglobulin G (IgG) in umbilical cord blood samples suggesting that passive immunity might be transferred to the neonate.



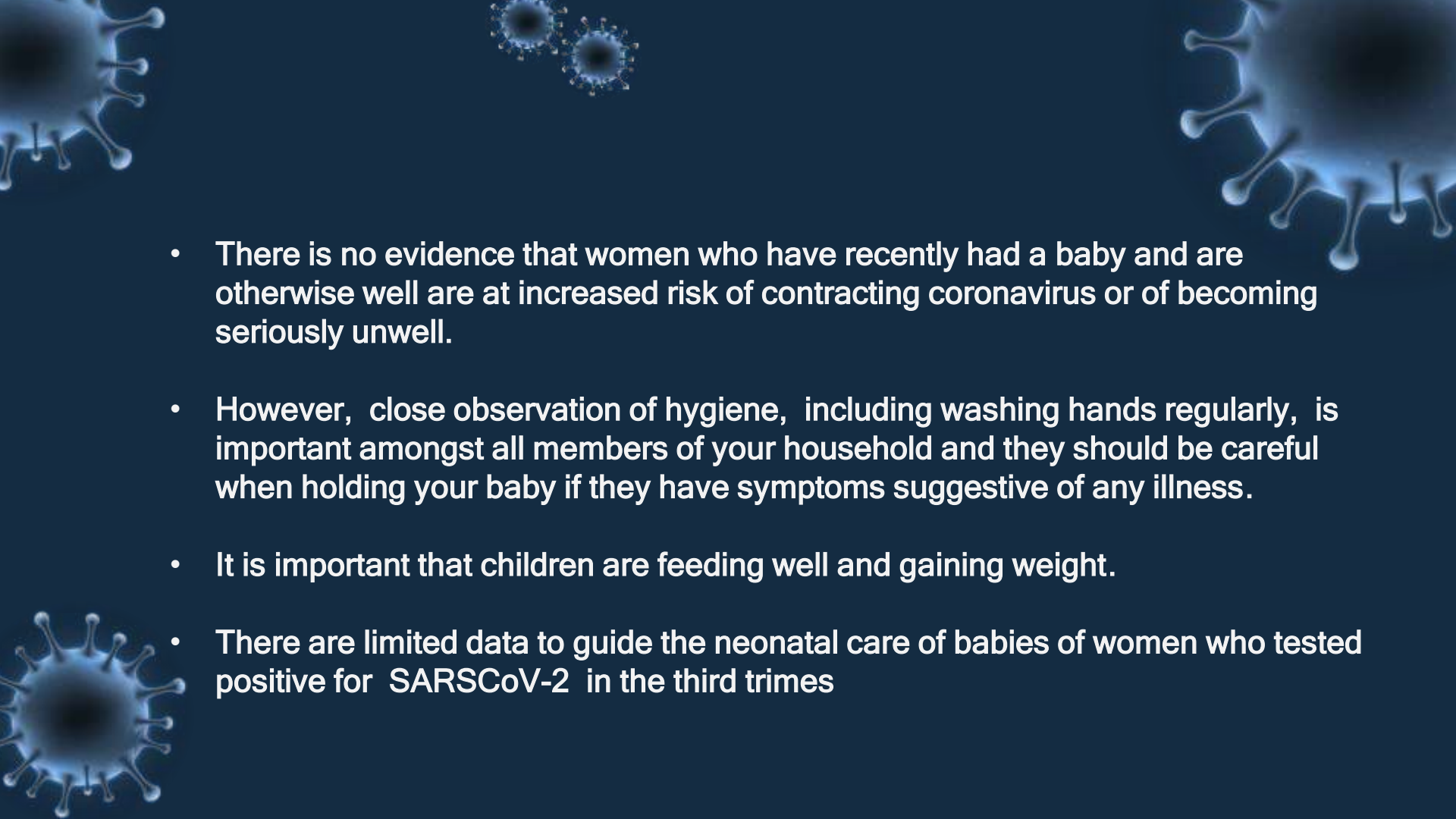
Postnatal care

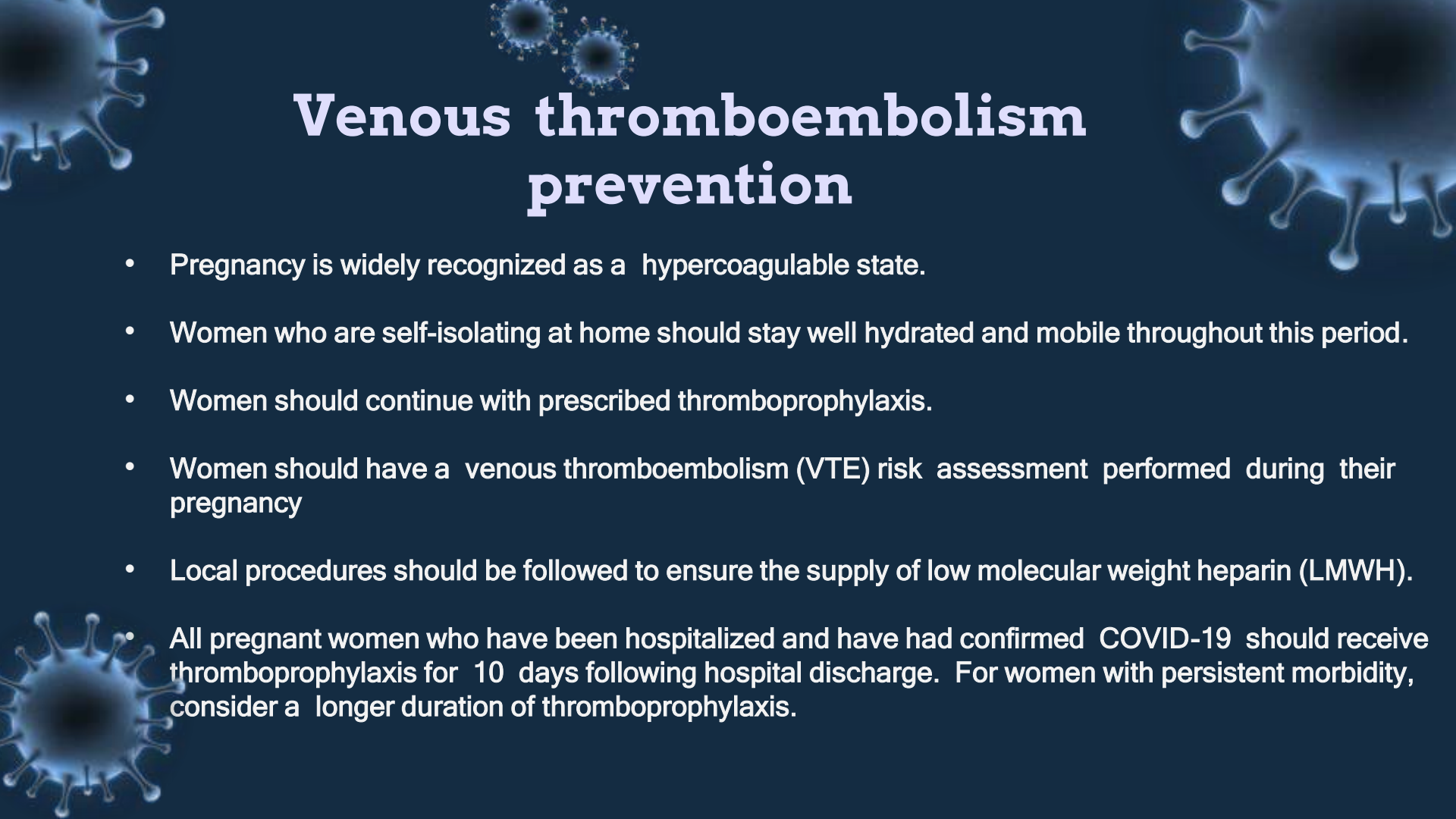
- There is no evidence that women who have recently had a baby and are otherwise well are at increased risk of contracting coronavirus or of becoming seriously unwell
- However, close observation of hygiene, including washing hands regularly, is important amongst all members of your household and they should be careful when holding your baby if they have symptoms suggestive of any illness.
- It is important that children are feeding well and gaining weight

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Postnatal care

- Transmission of SARS-CoV-2, the virus that causes COVID-19, to neonates is thought to occur primarily through respiratory droplets during the postnatal period when neonates are exposed to mothers or other caregivers with SARS-CoV-2 infection.
- Little data is available regarding intrauterine, intrapartum, or peripartum transmission.
- There is insufficient data to make recommendations on routine delayed cord clamping or immediate skin-to-skin care.
- The advice for households to isolate for 14 days after the birth of a baby born to a woman who is infected with SARS-CoV-2 is to ensure a full period of isolation in case of incubation of the virus in the baby

- 
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 - However, close observation of hygiene, including washing hands regularly, is important amongst all members of your household and they should be careful when holding your baby if they have symptoms suggestive of any illness.
 - It is important that children are feeding well and gaining weight.
 - There are limited data to guide the neonatal care of babies of women who tested positive for SARSCoV-2 in the third trimester

The background features several stylized, glowing blue virus particles with prominent spikes, positioned in the corners and along the top edge of the slide. The main title is centered in a large, bold, white font.

Venous thromboembolism prevention

- Pregnancy is widely recognized as a hypercoagulable state.
- Women who are self-isolating at home should stay well hydrated and mobile throughout this period.
- Women should continue with prescribed thromboprophylaxis.
- Women should have a venous thromboembolism (VTE) risk assessment performed during their pregnancy
- Local procedures should be followed to ensure the supply of low molecular weight heparin (LMWH).
- All pregnant women who have been hospitalized and have had confirmed COVID-19 should receive thromboprophylaxis for 10 days following hospital discharge. For women with persistent morbidity, consider a longer duration of thromboprophylaxis.

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Breastfeeding

- According to the CDC: Breast milk is the best source of nutrition for most infants. We do not know whether mothers with COVID-19 can transmit the virus via breast milk, but the limited data available suggest this is not likely.
- Whether and how to start or continue breastfeeding should be determined by the mother in coordination with her family and healthcare providers.
- A mother with confirmed COVID-19 should be counseled to take precautions to avoid spreading the virus to her infant, including handwashing and wearing a cloth face covering.



Breastfeeding

- The long-term well-established benefits of breastfeeding are highly likely to outweigh any potential risks of transmission of the virus through breastmilk.
- It is reassuring that a recent systematic review found that, in 24 cases, breastmilk tested negative for COVID-19; however, given the small number of cases, this evidence should be interpreted with caution.
- The main risk of breastfeeding is the close contact between the baby and the woman, who is likely to share infective respiratory droplets.

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Thank you