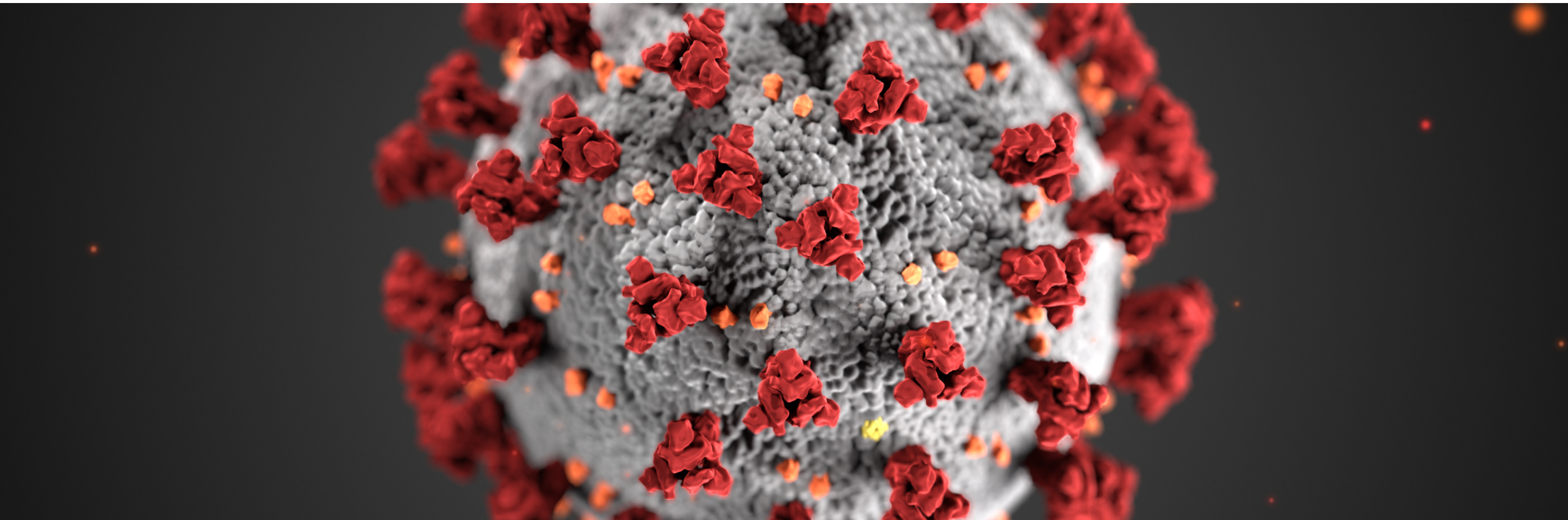
coronavirus disease 2019 (COVID-19)

# Pregnant Women at Greater Risk for Severe COVID-19, CDC Says



# HEADLINES

- BMJ: An introduction to coronavirus disease 2019 (COVID-19)

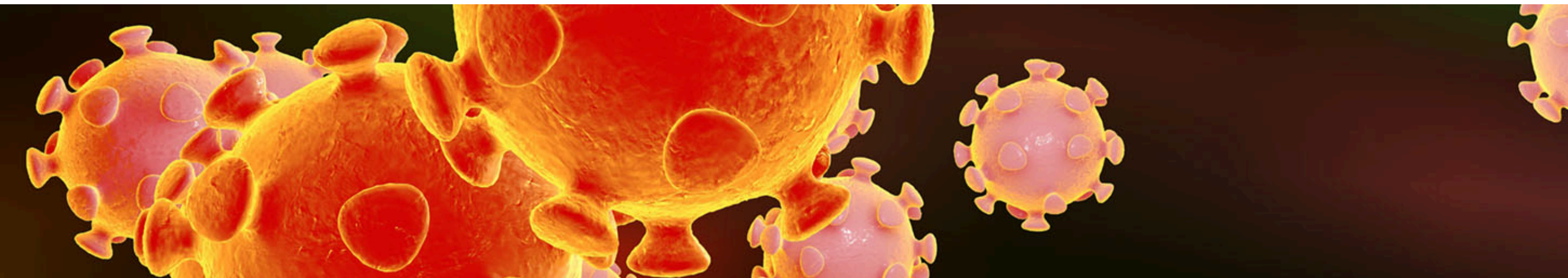
- CDC: Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–June 7, 2020

# COVID-19

- The World Health Organization (WHO) was informed on 31 December 2019.

- a public health emergency of international concern on 30 January 2020.

- formally declaring it a pandemic on 11 March 2020.



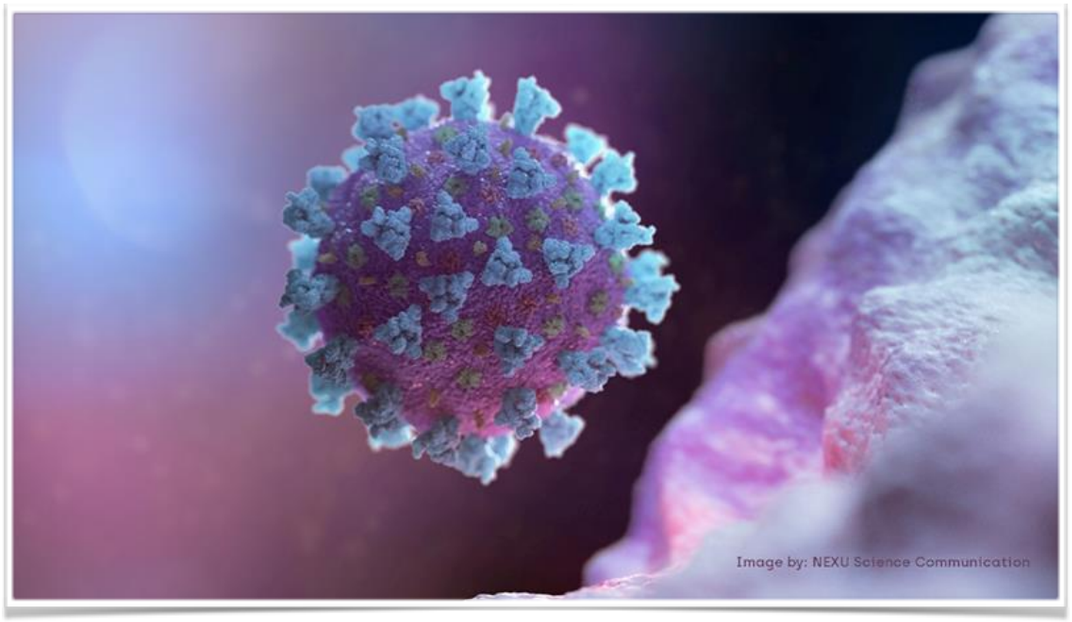
# KEY DIAGNOSTIC FACTORS

1. ☐ fever

2. ☐ cough

3. ☐ dyspnoea

4. ☐ altered sense of smell/taste



# fever

- Reported in approximately **78%** of patients.

- Prevalence has been higher in some case series. In one case series, only **44%** of patients had a fever on presentation, but it developed in **89%** of patients **after hospitalisation**.

- The course may be **prolonged and intermittent,** and some patients may have **chills/rigors**. In **children**, fever may be absent or brief and rapidly resolving.

# cough

- Reported in approximately **57%** of patients.

- Prevalence has been higher in some case series. The cough is **usually dry**; however, a productive cough has been reported in some patients.

# dyspnoea

- Reported in approximately **23%** of patients.
- Prevalence has been higher in some case series. The **World Health Organization** estimates the range to be **31% to 40%**.
- Median time from **onset of symptoms** to development of dyspnoea is **5 to 8 days**.
- It is **less common in children**, but the **most common sign** in **neonates**.
- **May last weeks** after initial onset of symptoms. **Wheeze** has been reported in **17%** of patients.

# altered sense of smell/taste

- The pooled prevalence of **olfactory dysfunction** (anosmia/hyposmia) is **53%**, with a pooled prevalence of **44%** for **gustatory dysfunction** (ageusia/dysgeusia).

- Prevalence appears to be higher in **European** studies; **87%** of patients self-reported loss of smell and **56%** reported taste dysfunction in one study.

- There is anecdotal evidence that altered sense of smell/taste **may be an early symptom** of COVID-19 before the onset of other symptoms, or may be **the only symptom** in patients with mild to moderate illness.

- The **UK** government now includes altered sense of taste/smell in the general clinical case **definition**, and recommends that patients **self-isolate** if they develop an altered sense of smell/taste. However, the current evidence base is of **poor quality** due to the mainly **retrospective** and **cross-sectional** nature of studies available.

# KEY DIAGNOSTIC FACTORS

1. **fever**
2. **cough**
3. **dyspnoea**
4. **altered sense of smell/taste**

# WORLD HEALTH ORGANIZATION: CASE DEFINITIONS

1. Suspect case

2. Probable case

3. Confirmed case

4. Definition of contact

World Health Organization

# SUSPECT CASE


- A. Patients with **acute respiratory illness** (i.e., fever and **at least one** sign/symptom of respiratory disease such as cough or shortness of breath) AND a **history of travel to or residence** in a location reporting community transmission of COVID-19 during the **14 days prior to symptom onset**; OR

- B. Patients with any **acute respiratory illness** AND having been **in contact** with a **confirmed or probable COVID-19 case** in the **last 14 days** prior to symptom onset; OR

- C. Patients with **severe acute respiratory illness** (i.e., fever and at least one sign/symptom of respiratory disease such as cough or shortness of breath) AND **requiring hospitalisation** AND in the **absence of an alternative diagnosis** that fully explains the clinical presentation.

# PROBABLE CASE

- A. **Suspect case** for whom **testing** for the COVID-19 virus is **inconclusive** (inconclusive being the result of the test reported by the laboratory); OR

- B. Suspect case for whom **testing could not be performed** for any reason.

# CONFIRMED CASE

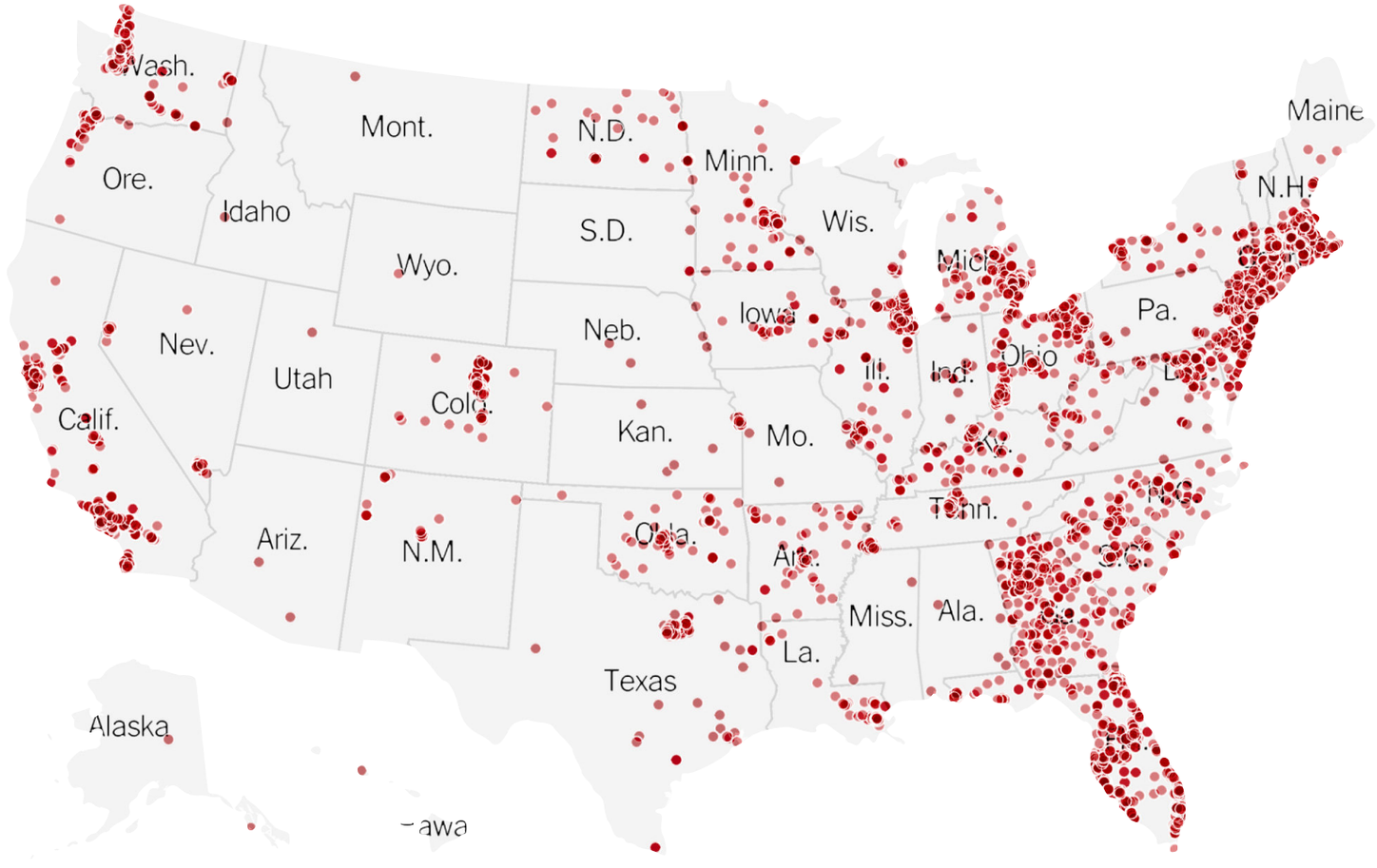

- Patients with **laboratory confirmation** of COVID-19 infection, **irrespective of clinical** signs and symptoms.

# DEFINITION OF CONTACT

- A contact is a person who experienced any one of the following exposures during the **2 days before and the 14 days after the onset of symptoms of a probable or confirmed case**:
    - **Face-to-face** contact with a probable or confirmed case within **1 metre** (3 feet) and for more than **15 minutes**
    - **Direct physical contact** with a probable or confirmed case
    - **Direct care** for a patient with probable or confirmed COVID-19 disease **without** using proper personal **protective** equipment
    - Other situations as indicated by local risk assessments.
- Note: for **confirmed asymptomatic cases,** the period of contact is measured as the 2 days before through the 14 days after the date on which the sample was taken that led to confirmation.

# Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–June 7, 2020

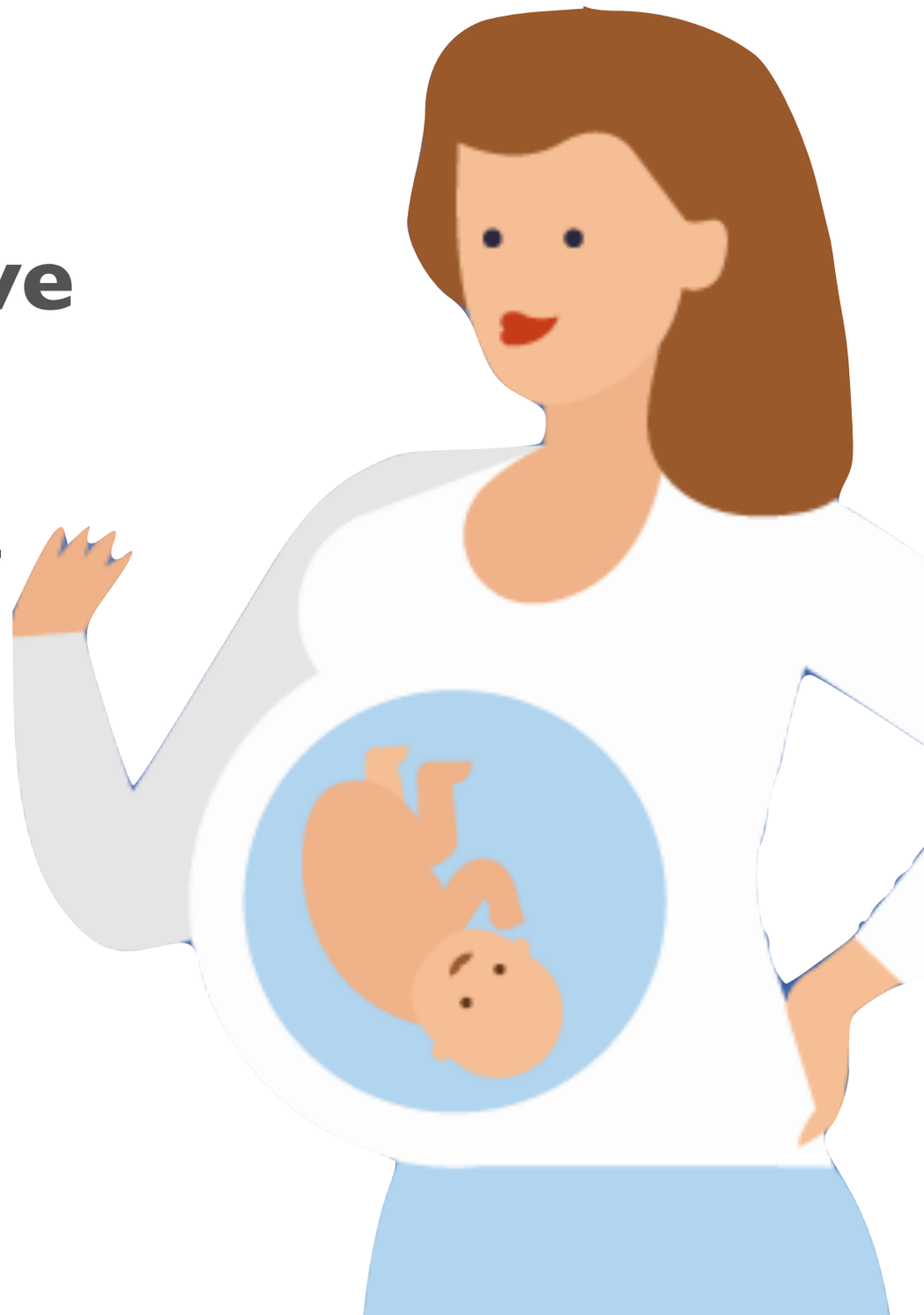
- As of June 16, 2020, the coronavirus disease 2019 (COVID-19) pandemic has resulted in **2,104,346 cases and 116,140 deaths** in **the United States**.



- During **pregnancy**, women experience **immunologic** and **physiologic changes** that could **increase** their **risk** for more severe illness from **respiratory infections**.

- To date, **data** to assess the prevalence and severity of COVID-19 among pregnant U.S. women and determine whether signs and symptoms differ among pregnant and nonpregnant women are **limited**.

During **January 22– June 7**, as part of COVID-19 surveillance, **CDC** received **reports** of **326,335** women of **reproductive age (15–44 years)** who had **positive test** results for SARS-CoV-2, the virus that causes COVID-19. **Data on pregnancy** status were available for **91,412 (28.0%)** women with laboratory-confirmed infections; among these, **8,207 (9.0%) were pregnant**.



Symptomatic pregnant and nonpregnant women with COVID-19 reported similar frequencies of:

- cough (>50%) and
- shortness of breath (30%)

but pregnant women **less** frequently reported:

- **headache**(40.6% versus 52.2%)
- **muscle aches**(38.1% versus 47.2%)
- **fever**(34.3% versus 42.1%)
- **chills**(28.5% versus 35.6%)
- **diarrhea**(14.3% versus 23.1%)

# HOSPITALIZATION


approximately **one third (31.5%)** of pregnant women were reported to have been **hospitalized** compared with **5.8% of nonpregnant** women.

Data were not available to **distinguish** hospitalization for COVID-19–related circumstances (e.g., **worsening respiratory status**) from hospital admission for pregnancy-related treatment or procedures (e.g., **delivery**).

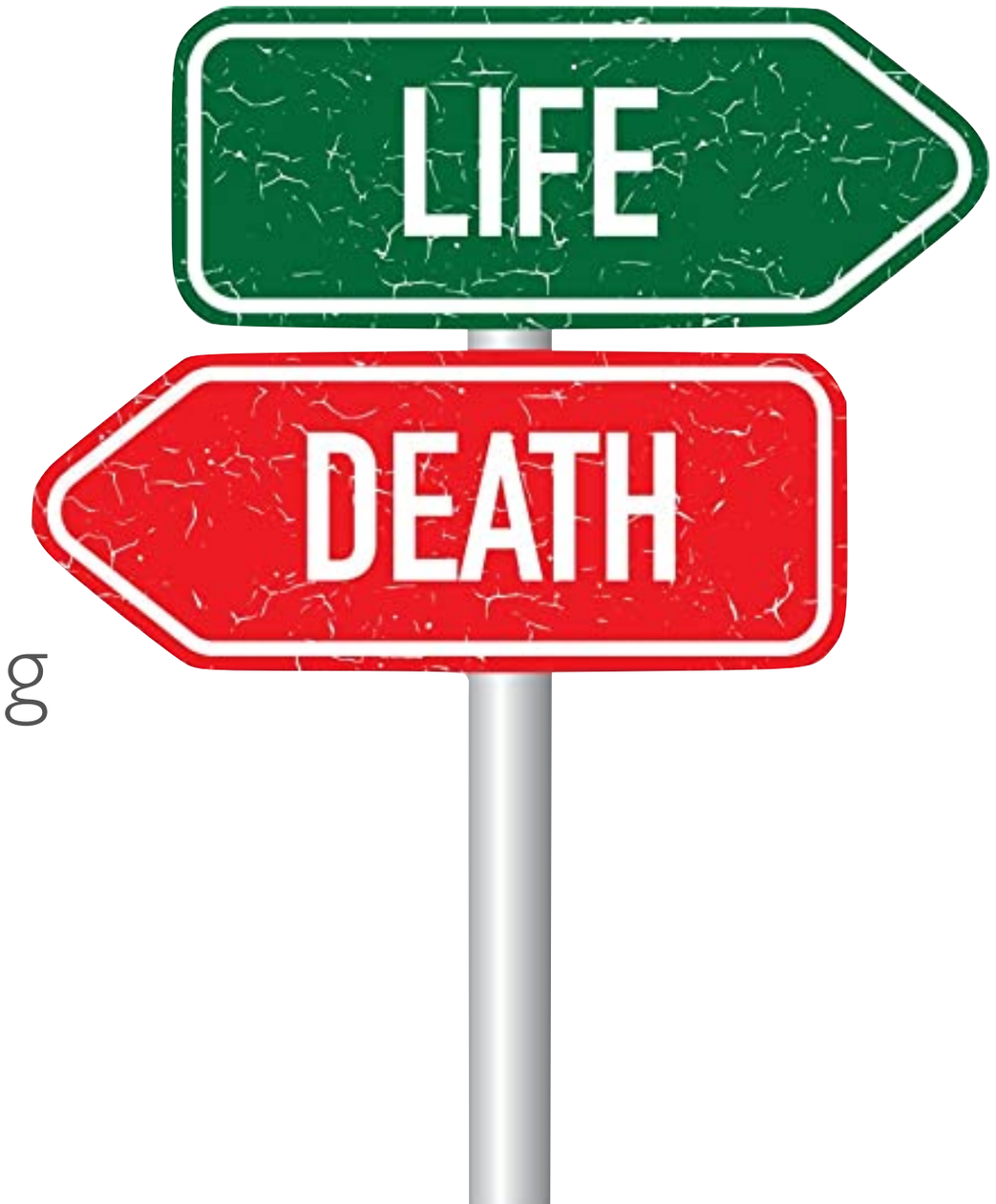
Pregnant women were admitted more frequently to the **ICU (1.5%)** than were **nonpregnant** women **(0.9%)**. Similarly, **0.5%** of pregnant women required mechanical **ventilation** compared with **0.3%** of nonpregnant women.

**Chronic lung disease, diabetes mellitus, and cardiovascular disease** were more commonly reported among pregnant women than among nonpregnant women.

After **adjusting** for age, presence of underlying medical conditions, and race/ethnicity, pregnant women were significantly more likely to be admitted to the intensive care unit (**ICU**) (aRR = **1.5**, 95% confidence interval [CI] = 1.2–1.8) and **receive mechanical ventilation** (aRR = **1.7**, 95% CI = 1.2–2.4).

# MORTALITY

**Sixteen (0.2%)** COVID-19–related **deaths** were reported among **pregnant** women aged 15–44 years, and **208 (0.2%)** such deaths were reported among **nonpregnant** women (aRR = 0.9, 95% CI = 0.5–1.5).



# AGE

When **stratified** by age, all outcomes **(hospitalization, ICU admission, receipt of mechanical ventilation, and death)** were more frequently reported among women aged **35–44** years than among those aged **15–24** years, regardless of pregnancy status.

# RACE/ETHNICITY

When **stratified** by race/ethnicity, **ICU admission** was most frequently reported among pregnant women who were non-Hispanic **Asian** (**3.5%**) than **among all pregnant women (1.5%)**

These findings suggest that **among** women of **reproductive** age with COVID-19, **pregnant** women are:

1. more likely to be **hospitalized**
2. and at increased risk for **ICU admission**
3. and receipt of mechanical **ventilation**

| Characteristic | Pregnant women (n = 8,207) | Nonpregnant women (n = 83,205) |
|---|---|---|
| **Symptom status[¶]** | | |
| Symptomatic | 5,199 (97.1) | 72,549 (96.9) |
| Asymptomatic | 156 (2.9) | 2,328 (3.1) |
| **Symptom reported[**]** | | |
| Cough | 1,799 (51.8) | 23,554 (53.7) |
| Fever[††] | 1,190 (34.3) | 18,474 (42.1) |
| Muscle aches | 1,323 (38.1) | 20,693 (47.2) |
| Chills | 989 (28.5) | 15,630 (35.6) |
| Headache | 1,409 (40.6) | 22,899 (52.2) |
| Shortness of breath | 1,045 (30.1) | 13,292 (30.3) |
| Sore throat | 942 (27.1) | 13,681 (31.2) |
| Diarrhea | 497 (14.3) | 10,113 (23.1) |
| Nausea or vomiting | 682 (19.6) | 6,795 (15.5) |
| Abdominal pain | 350 (10.1) | 5,139 (11.7) |
| Runny nose | 326 (9.4) | 4,540 (10.4) |
| New loss of taste or smell[§§] | 587 (16.9) | 7,262 (16.6) |
| **Underlying medical condition** | | |
| Known underlying medical condition status[¶¶] | 1,878 (22.9) | 29,142 (35.0) |
| Diabetes mellitus | 288 (15.3) | 1,866 (6.4) |
| Chronic lung disease | 409 (21.8) | 3,006 (10.3) |
| Cardiovascular disease | 262 (14.0) | 2,082 (7.1) |
| Chronic renal disease | 12 (0.6) | 266 (0.9) |
| Chronic liver disease | 8 (0.4) | 141 (0.5) |
| Immunocompromised condition | 66 (3.5) | 811 (2.8) |
| Neurologic disorder, neurodevelopmental disorder, or intellectual disability | 17 (0.9) | 389 (1.3) |
| Other chronic disease | 162 (8.6) | 1,586 (5.4) |

| Outcome* | Pregnant women (n = 8,207) | Nonpregnant women (n = 83,205) | Crude risk ratio (95% CI) | Adjusted risk ratio† (95% CI) |
|---|---|---|---|---|
| **Hospitalization§** | | | **5.4 (5.2–5.7)** | **5.4 (5.1–5.6)** |
| **All** | **2,587 (31.5)** | **4,840 (5.8)** | | |
| **Age group (yrs)** | | | | |
| 15–24 | 562 (29.3) | 639 (3.3) | | |
| 25–34 | 1,398 (31.3) | 1,689 (5.3) | | |
| 35–44 | 627 (34.5) | 2,512 (7.9) | | |
| **Race/Ethnicity¶** | | | | |
| Hispanic or Latino | 968 (31.7) | 1,473 (6.5) | | |
| Asian, non-Hispanic | 100 (39.4) | 136 (7.3) | | |
| Black, non-Hispanic | 461 (31.6) | 1,199 (8.0) | | |
| White, non-Hispanic | 492 (32.4) | 803 (4.6) | | |
| Multiple or other race, non-Hispanic** | 136 (42.4) | 194 (8.4) | | |
| **ICU admission††** | | | **1.6 (1.3–1.9)** | **1.5 (1.2–1.8)** |
| **All** | **120 (1.5)** | **757 (0.9)** | | |
| **Age group (yrs)** | | | | |
| 15–24 | 19 (1.0) | 100 (0.5) | | |
| 25–34 | 53 (1.2) | 251 (0.8) | | |
| 35–44 | 48 (2.6) | 406 (1.3) | | |
| **Race/Ethnicity** | | | | |
| Hispanic or Latino | 49 (1.6) | 194 (0.9) | | |
| Asian, non-Hispanic | 9 (3.5) | 25 (1.3) | | |
| Black, non-Hispanic | 28 (1.9) | 194 (1.3) | | |
| White, non-Hispanic | 12 (0.8) | 158 (0.9) | | |
| Multiple or other race, non-Hispanic** | <5 (—§§) | 40 (1.7) | | |
| Hispanic or Latino | 49 (1.6) | 194 (0.9) | | |
| **Mechanical ventilation¶¶** | | | **1.9 (1.4–2.6)** | **1.7 (1.2–2.4)** |
| **All** | **42 (0.5)** | **225 (0.3)** | | |
| **Age group (yrs)** | | | | |
| 15–24 | <5 (—§§) | 22 (0.1) | | |
| 25–34 | 18 (0.4) | 74 (0.2) | | |
| 35–44 | 21 (1.2) | 129 (0.4) | | |
| **Race/Ethnicity** | | | | |
| Hispanic or Latino | 13 (0.4) | 70 (0.3) | | |
| Asian, non-Hispanic | <5 (—§§) | 13 (0.7) | | |
| Black, non-Hispanic | 9 (0.6) | 48 (0.3) | | |
| White, non-Hispanic | <5 (—§§) | 44 (0.3) | | |
| Multiple or other race, non-Hispanic** | 5 (1.6) | 16 (0.7) | | |
| **Death***** | | | **0.8 (0.5–1.3)** | **0.9 (0.5–1.5)** |
| **All** | **16 (0.2)** | **208 (0.2)** | | |

# DISCUSSION

As of June 7, 2020, a total of 8,207 cases of COVID-19 in **pregnant** women were reported to CDC, representing approximately **9%** of cases among women of reproductive age with data available on pregnancy status. This finding is **similar to that of a recent analysis of hospitalized COVID-19** patients (*3*); however, given that approximately **5% of women aged 15–44 years are pregnant** at a point in time,** this percentage is higher than expected.

Although these findings could be related to the increased risk for illness, they also could be related to the high proportion of reproductive-aged women for whom data on **pregnancy status was missing**, if these women were more likely to not be pregnant.

The higher-than-expected percentage of COVID-19 cases among women of reproductive age who were pregnant might also be attributable to **increased screening** and detection of SARS-CoV-2 infection in pregnant women compared with nonpregnant women or by more frequent health **care encounters**, which increase opportunities to receive SARS-CoV-2 testing. Several inpatient **obstetric** health care **facilities** have implemented **universal screening** and testing policies for pregnant women upon admission.

**Diabetes mellitus, chronic lung disease, and cardiovascular** disease were reported **more** frequently among **pregnant** women than among nonpregnant women. **Additional information** is **needed** to distinguish medical conditions that developed before pregnancy from those that developed during pregnancy and **to determine whether this distinction affects clinical outcomes** of COVID-19.

Whereas **hospitalization** occurred in a significantly higher proportion of **pregnant** women than nonpregnant women, data needed to **distinguish hospitalization for COVID-19 from** hospital admission for **pregnancy-related** conditions were not available.

Further, differences in hospitalization by pregnancy status **might** reflect a **lower threshold** for admitting pregnant patients or for universal screening and testing policies **that some hospitals have implemented** for women admitted to the labor and delivery unit.

**In contrast,** however, **ICU admission** and receipt of mechanical **ventilation** are **distinct proxies** for **illness severity**, and after adjusting for age, presence of underlying conditions, and race/ethnicity, the risks for both outcomes were significantly higher among pregnant women than among nonpregnant women. These findings are **similar to** those from a **recent study in Sweden**, which found that **pregnant** women **with COVID-19** were **five times** more likely to be admitted to the **ICU** and **four times** more like to receive mechanical **ventilation** than were nonpregnant women. The risk for **death was the same** for pregnant and nonpregnant women.