COVID-19
HEALTH CARE PROVIDER UPDATE:
COVID-19 AND MATERNAL HEALTH;
UPDATE ON MIS-C IN NEW YORK CITY
MARCH 19, 2021

Amitasrigowri S. Murthy, MD, MPH, FACOG
Ellen H. Lee, MD
Madhury (Didi) Ray, MD, MPH

New York City Department of Health and Mental Hygiene

Our understanding of COVID-19 is evolving rapidly. This presentation is based on our knowledge as of March 18, 2021, 5 PM.
Celebrating Women’s History Month

Elizabeth Blackwell (1821-1910)
First woman to be granted an MD in the U.S. after being turned away by over 10 medical schools. Co-founded New York Infirmary for Indigent Women and Children, 1857.

Rebecca Lee Crumpler (1831-1895)
First African American woman to be granted an MD. Author of “Book of Medical Discourses” (1883), one of the first medical publications by an African American. There are no known photographs of Dr. Crumpler.

Joycelyn Elders (1933- )
First African American and second woman to serve as U.S. surgeon general. Was forced to resign due to views on topics including sex education, masturbation, and distribution of condoms in public schools. Advocate for women’s health and for people with limited access to medical care.

NEW DEVELOPMENTS AND GUIDANCE

Madhury (Didi) Ray, MD, MPH
Critical Care Planning Lead
COVID-19 Response
NYC Department of Health and Mental Hygiene
CURRENT STATUS: GLOBAL

- Over 121 million cases
- Over 2.6 million deaths
- New cases rose 10% in past week
- Americas and Europe account for over 80% of new cases
- Over 400 million vaccine doses administered worldwide (22% increase from last week)

As of 3/18/2021
CURRENT STATUS: U.S.

- Over 29.6 million cases
- Over 538,100 deaths
- New cases leveled off during past week
- States with highest case rate in past week include New York, New Jersey
- Approximately 12% of U.S. population has been fully vaccinated

As of 3/18/2021
https://covid.cdc.gov/covid-data-tracker/#datatracker-home
CURRENT STATUS: NYC

- Over 789,000 cases
- Over 25,000 confirmed deaths
- During past week, cases have stabilized/trended downward
- Hospitalizations trending downward
- Deaths have stabilized

Figures show data for Dec 2020 – March 2021
Updated 3/18/2021
https://www1.nyc.gov/site/doh/covid/covid-19-data.page
COVID-19 VACCINE ADMINISTRATION, NYC

- Over 3 million doses administered
- Approximately 22% of adult NYC population has received at least 1 dose
- Pace of vaccination continues to increase steadily

Data are reported by providers to the Citywide Immunization Registry and may be delayed. [https://www1.nyc.gov/site/doh/covid/covid-19-data-vaccines.page](https://www1.nyc.gov/site/doh/covid/covid-19-data-vaccines.page); updated 3/18/2021
Updated Guidance: Respiratory Protection and Source Control for Health Care Personnel (HCP)

• In addition to eye protection, gown, and gloves, HCP should use N95 respirators* when caring for patients with suspected or confirmed COVID-19

• During periods of high COVID-19 incidence (including the present in NYC) HCP caring for patients not suspected of having COVID-19 should use eye protection and
  • Use N95 respirators* when performing potentially aerosol-generating procedures
  • Consider using N95 respirators* during all patient encounters. If an N95* is not worn, use a well-fitting facemask

• HCP should continue to practice universal source control while in health care facilities, including during breaks

• These steps must be taken by all HCP, including those who have been vaccinated

* Or equivalent or higher-level respirators
CDC: Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 (COVID-19) Pandemic
Updated NYS Quarantine Recommendations after Vaccination Against or Recovery From COVID-19

• In NY State, vaccinated persons are not required to quarantine or seek COVID-19 diagnostic testing after domestic travel or exposure to COVID-19 if they remain asymptomatic and:
  • Are fully vaccinated (≥ 2 weeks since completing a vaccine series)
  • Less than 3 months have passed since completing vaccination

• Persons who have recovered from laboratory-confirmed COVID-19 are exempt from quarantine and testing after domestic travel or exposure if they remain asymptomatic and:
  • It is less than 3 months since they developed COVID-19 symptoms/first positive diagnostic test

• Exemptions from quarantine apply to health care personnel (HCP), but HCP must continue to participate in COVID-19 testing after an exposure or travel

• Exemptions do not apply to inpatients or residents in health care settings

COVID-19 Vaccine Eligibility, NYS

• Groups recently made eligible include:
  • Persons aged 60-64 years
  • Public-facing government and public employees
  • Not-for-profit workers who provide public-facing services to New Yorkers in need
  • Essential in-person public-facing building service workers*

• Reminder: people eligible due to underlying medical conditions **do NOT** need to obtain documentation from a provider
  • Vaccine recipient may self certify eligibility based on an underlying condition

• Detailed, up-to-date list of currently eligible groups:
  • [nyc.gov/covidvaccinedistribution](http://nyc.gov/covidvaccinedistribution)

*Does not apply to workers at construction sites*
Updated NYC Health Department Resources

• COVID-19 information and guidance for providers:
  https://www1.nyc.gov/site/doh/covid/covid-19-providers.page

• Information for providers on COVID-19 vaccines:
  nyc.gov/health/covidvaccineprovider

• COVID-19 data page:
  https://www1.nyc.gov/site/doh/covid/covid-19-data.page
UPDATE ON MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN IN NYC

Ellen H. Lee, MD, MPH
Medical Director
General Surveillance
Bureau of Communicable Disease Control
NYC Department of Health and Mental Hygiene
New syndrome initially described April 2020 among children in Europe, related to previous SARS-CoV-2 infection

CDC MIS-C case definition:

- Age <21 years, febrile, hospitalized, with ≥2 system involvement and elevated inflammatory markers AND
- No alternative plausible diagnoses; AND
- Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms

As of March 1, 2021, 2617 cases and 33 fatalities reported to CDC* from 48 states, District of Columbia, Puerto Rico

*https://www.cdc.gov/mis-c/cases/index.html  Data are preliminary and subject to change
NYC Residents meeting MIS-C Criteria
3/01/2020 – 3/16/2021

<table>
<thead>
<tr>
<th>MIS-C reports received by DOHMH</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total reports received</td>
<td>497</td>
</tr>
<tr>
<td>- Meets CDC case definition</td>
<td>291</td>
</tr>
<tr>
<td>- Does not meet CDC case definition</td>
<td>175</td>
</tr>
</tbody>
</table>

Among 291 NYC residents meeting MIS-C case definition:

<table>
<thead>
<tr>
<th>Period of MIS-C hospitalization</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave 1 (March 1 – October 31, 2020)</td>
<td>241</td>
<td>83</td>
</tr>
<tr>
<td>Wave 2 (November 1, 2020 – present)</td>
<td>50</td>
<td>17</td>
</tr>
</tbody>
</table>

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
MIS-C Cases by Hospitalization Date, NYC, 3/01/2020 – 3/14/2021

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
MIS-C Cases by Borough of Residence, NYC
3/01/2020-3/16/2021

- Bronx: 34%
- Brooklyn: 33%
- Manhattan: 10%
- Queens: 19%
- Staten Island: 3%

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
MIS-C CASES BY AGE, NYC
3/01/2020-3/16/2021

NYC MIS-C Cases by Age Group, n=291

- 0-4 years: 31%
- 5-9 years: 32%
- 10-14 years: 23%
- 15-<21 years: 14%

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
Sex of NYC MIS-C Cases, n=291

56% Female
44% Male

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
NYC MIS-C Cases by Race/Ethnicity, n=291

- Asian/Pacific Islander: 7%
- Black/African American: 32%
- Hispanic/Latino: 35%
- White: 12%
- Other: 1%
- Unknown: 13%

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
### Table 2. MIS-C Cases and COVID-19 Hospitalizations Among New York City Residents Younger Than 20 Years by Race/Ethnicity, March 1 to June 30, 2020

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>MIS-C cases&lt;sup&gt;a&lt;/sup&gt;</th>
<th>COVID-19 hospitalizations</th>
<th>NYC population, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>Incidence rate&lt;sup&gt;b&lt;/sup&gt;</td>
<td>IRR (95% CI)&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>12 (5.5)</td>
<td>4.90</td>
<td>0.87 (0.44-1.72)</td>
</tr>
<tr>
<td>Black</td>
<td>75 (34.4)</td>
<td>17.62</td>
<td><strong>3.15 (2.04-4.86)</strong></td>
</tr>
<tr>
<td>Hispanic</td>
<td>65 (29.8)</td>
<td>9.54</td>
<td><strong>1.70 (1.09-2.65)</strong></td>
</tr>
<tr>
<td>White</td>
<td>28 (12.8)</td>
<td>5.60</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Multiracial or other&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2 (0.9)</td>
<td>3.14</td>
<td>0.56 (0.13-2.36)</td>
</tr>
<tr>
<td>Missing</td>
<td>36 (16.5)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>218 (100)</td>
<td>11.38</td>
<td>NA</td>
</tr>
</tbody>
</table>

Abbreviations: COVID-19, coronavirus disease 2019; IRR, incidence rate ratio; MIS-C, multisystem inflammatory syndrome in children; NA, not applicable.

<sup>a</sup> MIS-C cases were limited to patients aged 0 to 19 years (excluding 5 patients with MIS-C aged 20 years) to align with existing population estimates produced by New York City Department of Health and Mental Hygiene using the US Census Bureau Population Estimate Program.

<sup>b</sup> Rates were calculated using number of cases as numerator, with age- and race/ethnicity-specific New York City population as denominator, per 100,000.

<sup>c</sup> IRRs use the rate of White group as referent group, with 95% CI.

<sup>d</sup> Other race/ethnicity includes American Indian and multiracial.

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NYC MIS-C Cases by SARS-CoV-2 Laboratory Test Results, n=291

- Positive for COVID-19: PCR OR Serology: 82%
- Positive by PCR only: 7%
- Positive by serology only: 48%
- Positive by both PCR and Serology: 26%
- Negative for COVID-19: PCR and/or Serology: 17%

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
Hospitalization and Symptoms among 291 Cases of MIS-C, NYC (03/1/2020-03/16/2021)

- Median time from fever onset to hospital admission: 4 days (IQR: 3, 5)
- Median length of hospital stay: 5 days (IQR: 3, 7)
- Most common symptoms:
  - Vomiting (67%)
  - Abdominal pain (60%)
  - Rash (56%)
  - Conjunctivitis (49%)
  - Diarrhea (48%)

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
### SELECT CHARACTERISTICS OF MIS-C CASES, NYC

3/01/2020-3/16/2021

*March 1 – October 31, 2020 ** November 1, 2020 – present

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.

<table>
<thead>
<tr>
<th></th>
<th>Wave 1,* N=241</th>
<th>Wave 2,** N=50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Admitted to ICU</td>
<td>135</td>
<td>56%</td>
</tr>
<tr>
<td>Mechanical ventilation</td>
<td>12</td>
<td>5%</td>
</tr>
<tr>
<td>Diagnosis of shock</td>
<td>74</td>
<td>31%</td>
</tr>
<tr>
<td>Death</td>
<td>1</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

*March 1 – October 31, 2020 ** November 1, 2020 – present

Produced by Surveillance and Epidemiology Branch. Data are preliminary and subject to change.
Small number of reports of individuals >20 years old with similar presentation, now called Multisystem Inflammatory Syndrome in Adults (MIS-A)

No standard case definition for MIS-A
New ICD-10-CM Diagnosis Code for MIS

- **New ICD-10-CM Diagnosis Code for MIS M35.81** - applicable to:
  - MIS-A
  - MIS-C
  - Multisystem inflammatory syndrome in adults
  - Multisystem inflammatory syndrome in children
  - Pediatric inflammatory multisystem syndrome
  - PIMS
- Use additional code, if applicable, for:
  - Sequelae of COVID-19 (B94.8)
  - Personal history of COVID-19 (Z86.16)
  - Exposure to COVID-19 or SARS-CoV-2 infection (Z20.822)
- Code first, if applicable, COVID-19 (U07.1)
- Code also any associated complications

https://www.icd10data.com/ICD10CM/Codes/M00-M99/M30-M36/M35-/M35.81
• Call the NYC DOHMH Provider Access Line at **(866) 692-3641** to report any patient who meets criteria for MIS-C


• CDC Multisystem Inflammatory Syndrome in Children (MIS-C) webpage: [https://www.cdc.gov/mis-c/hcp/](https://www.cdc.gov/mis-c/hcp/)

• American College of Rheumatology clinical guidance for management of patients with MIS-C: [https://doi.org/10.1002/art.41454](https://doi.org/10.1002/art.41454)
Covid 19 in Pregnancy

Amitasrigowri S. Murthy, MD, MPH
Bureau of Maternal Infant and Reproductive Health
NYC Department of Health and Mental Hygiene
Outline

- Effects of COVID-19 on pregnancy, birth outcomes and infant health
- Vertical transmission
- COVID-19 vaccine questions
Current Evidence: COVID-19 and Pregnancy

- CDC national COVID-19 case surveillance found 1,300,938 (26%) cases in women aged 15-44 years between January and October 2020
  - Pregnancy status available for 461,825 (35%) women aged 15-44 years
    - 30,415 (6%) were pregnant and 431,410 (93%) were nonpregnant
    - 23,434 pregnant women accounted for 6% of all symptomatic women (409,462) with laboratory-confirmed COVID-19
  - Pregnant women were more frequently Hispanic/Latina (Hispanic) (30%) or non-Hispanic Black (14%)
- Most frequent signs and symptoms reported were cough, headache, muscle aches, and fever
  - Symptoms were reported less frequently by pregnant women than by nonpregnant women

https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e3.htm
### Hospitalization, ICU admission, mechanical ventilation, and death among pregnant women and nonpregnant WRA with SARS-CoV-2 infection

<table>
<thead>
<tr>
<th>Outcomes of Interest</th>
<th>Pregnant women with COVID-19 (N = 8,207)</th>
<th>Nonpregnant women with COVID-19 (N = 83,205)</th>
<th>Crude RR (95% CI)</th>
<th>aRR (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalization§</td>
<td>2,587 (31.5)</td>
<td>4,840 (5.8)</td>
<td>5.4 (5.2-5.7)</td>
<td>5.4 (5.1-5.6)</td>
</tr>
<tr>
<td>ICU Admission</td>
<td>120 (1.5)</td>
<td>757 (0.9)</td>
<td>1.6 (1.3-1.9)</td>
<td>1.5 (1.2-1.8)</td>
</tr>
<tr>
<td>Mechanical Ventilation</td>
<td>42 (0.5)</td>
<td>225 (0.3)</td>
<td>1.9 (1.4-2.6)</td>
<td>1.7 (1.2-2.4)</td>
</tr>
<tr>
<td>Death</td>
<td>16 (0.2)</td>
<td>208 (0.2)</td>
<td>0.8 (0.5-1.3)</td>
<td>0.9 (0.5-1.5)</td>
</tr>
</tbody>
</table>

* Percentages calculated among total in pregnancy status group; those with missing data on outcomes were counted as not having the outcome.
† Adjusted for age as a continuous variable, dichotomous yes/no variable for presence of underlying conditions, and categorical race/ethnicity.
Nonpregnant women are the referent group.
§ May include women admitted for obstetric care reasons who received routine SARS-CoV-2 testing upon admission.

Effects of COVID-19 in Pregnancy

- Compared with nonpregnant women, pregnant women were
  - More frequently admitted to an ICU (aRR = 3.0; 95% CI = 2.6–3.4),
  - Received invasive ventilation (aRR = 2.9; 95% CI = 2.2–3.8)
  - Received ECMO (aRR = 2.4; 95% CI = 1.5–4.0)

- 34 deaths (1.5 per 1,000 cases) were reported among 23,434 symptomatic pregnant women compared to 447 (1.2 per 1,000 cases) among 386,028 nonpregnant women

- When stratified by race
  - ICU admissions were more seen in Black (36%), Asian (13%) and Hispanic (14%) women
  - Invasive ventilation was seen more in Native Hawaiian (34%), Asian (7%) and Hispanic (5%)

Pregnancy-Related Mortality Ratios by Maternal Race/Ethnicity, NYC, 2001-2015

Figure 6. Pregnancy-related mortality ratios by maternal race/ethnicity, New York City, 2001-2015

What Contributes to Increased Severity of COVID-19 during Pregnancy?

• Elevated risks may be related to physiologic changes in pregnancy
  • Increased heart rate and oxygen consumption
  • Decreased lung capacity
  • Shift away from cell-mediated immunity
  • Increased risk for thromboembolic disease

• Other risk factors that worsen COVID-19 in pregnancy
  • Including obesity, high blood pressure and gestational diabetes
Figure 24. Severe Maternal Morbidity by Chronic Condition, New York City, 2008–2012

*Any chronic disease includes women with diabetes, heart disease or hypertension or any combination of these conditions.

Limitations of CDC COVID-19 Surveillance Data

• Case information is limited or unavailable for a portion of detected COVID-19 cases
• Pregnancy status was missing for over one half (64.5%) of reported cases
• Data on race/ethnicity were missing for approximately 25% of cases
• Information on symptoms and underlying conditions was missing for approximately one half
• Observational data collected through passive surveillance might be subject to reporting bias

What Happens in Mild Infection?

• One study included 3,374 pregnant patients who delivered at Parkland Health (Texas) between March 18 and August 22, 2020 and were tested for COVID-19 during pregnancy
  • 75% Latina, 18% Black, 4% White
  • 252 tested positive for COVID-19 at some point during their pregnancy and 3,122 tested negative
    • Testing sites were located in inpatient and outpatient locations

• Most pregnant patients diagnosed with COVID-19 did not experience severe symptoms and were never hospitalized for COVID-19
  • Were not at increased risk for obstetric complications

CDC Surveillance for Infectious and Non-Infectious Public Health Threats to Pregnant Persons and Infants

Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET)

SET-NET: https://www.cdc.gov/ncbddd/aboutus/pregnancy/emerging-threats.html
Image: NACCHO presentation 10/30/3030
Data Submissions to SET-NET Consist of Four Datasets

<table>
<thead>
<tr>
<th>SET-NET datasets</th>
<th>Existing data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal</td>
<td>Vital records, medical records, NNDSS case reports and investigations</td>
</tr>
<tr>
<td>Birth</td>
<td>Vital records, medical records, NNDSS case reports and investigations</td>
</tr>
<tr>
<td>Infant follow up</td>
<td>Medical records, Vital records, early hearing detection and intervention</td>
</tr>
<tr>
<td>Laboratory</td>
<td>Electronic laboratory reporting (ELR)</td>
</tr>
</tbody>
</table>

NNDSS: National Notifiable Diseases Surveillance System

Image: NACCHO presentation 10/30/3030
Pregnancy Outcomes and COVID-19

• Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET)
  • Collected supplementary information on pregnancy and infant outcomes among 5,252 women with laboratory-confirmed SARS-CoV-2 infection reported during March 29–October 14, 2020
    • Data available for 4,442 women
  • Among 3,912 live births with known gestational age, 13% were preterm (<37 weeks) – which is higher than the national estimate (10%)
  • Among 610 infants (21%) with reported SARS-CoV-2 test results, perinatal infection was infrequent (3%)
    • Occurred primarily among infants whose mother had SARS-CoV-2 infection identified within 1 week of delivery

Characteristics of Pregnant Women with Confirmed COVID-19 and Available Data

• Median age: 28.9 years
• 46% were Hispanic or Latina (Hispanic) ethnicity
• At least one underlying medical condition was reported for 1,564 (45%)
  • Prepregnancy obesity (body mass index ≥30 kg/m²) (35%) most commonly reported
• 84% had infection identified in the third trimester (based on date of first positive test result or symptom onset)
• Symptom status was known for 2,691 (61%)
  • 376 (14%) were reported to be asymptomatic

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. of outcomes (%) [Total no. of women with available information]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>N = 4,442</td>
</tr>
<tr>
<td>Days from first positive RT-PCR test to pregnancy outcome</td>
<td>[3,278]</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>17.5 (1–58)</td>
</tr>
<tr>
<td>Induction of labor</td>
<td>[3,846]</td>
</tr>
<tr>
<td>Induced</td>
<td>1,091 (28.4)</td>
</tr>
<tr>
<td>Delivery type</td>
<td>[3,920]</td>
</tr>
<tr>
<td>Vaginal</td>
<td>2,589 (66.0)</td>
</tr>
<tr>
<td>Cesarean</td>
<td>1,331 (34.0)</td>
</tr>
<tr>
<td>Emergent</td>
<td>110 (39.6)</td>
</tr>
<tr>
<td>Non-emergent</td>
<td>168 (60.4)</td>
</tr>
</tbody>
</table>
### Pregnancy and Birth Outcomes, Continued

<table>
<thead>
<tr>
<th>Pregnancy outcome</th>
<th>[4,527]</th>
<th>[2,372]</th>
<th>[384]</th>
<th>[1,771]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live birth</td>
<td>4,495 (99.3)</td>
<td>2,355 (99.3)</td>
<td>379 (98.7)</td>
<td>1,761 (99.4)</td>
</tr>
<tr>
<td>Pregnancy loss</td>
<td>32 (0.7)</td>
<td>17 (0.7)</td>
<td>5 (1.3)</td>
<td>10 (0.6)</td>
</tr>
<tr>
<td>Pregnancy loss &lt;20 weeks</td>
<td>12 (0.3)</td>
<td>10 (0.4)</td>
<td>2 (0.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Pregnancy loss ≥20 weeks</td>
<td>20 (0.4)</td>
<td>7 (0.3)</td>
<td>3 (0.8)</td>
<td>10 (0.6)</td>
</tr>
<tr>
<td>Gestational age among live births</td>
<td>[3,912]</td>
<td>[2,137]</td>
<td>[287]</td>
<td>[1,488]</td>
</tr>
<tr>
<td>Term (≥37 weeks)</td>
<td>3,406 (87.1)</td>
<td>1,840 (86.1)</td>
<td>244 (85.0)</td>
<td>1,322 (88.8)</td>
</tr>
<tr>
<td>Preterm (&lt;37 weeks)</td>
<td>506 (12.9)</td>
<td>297 (13.9)</td>
<td>43 (15.0)</td>
<td>166 (11.2)</td>
</tr>
<tr>
<td>Late preterm (34–36 weeks)</td>
<td>357 (9.1)</td>
<td>211 (9.9)</td>
<td>28 (9.8)</td>
<td>118 (7.9)</td>
</tr>
<tr>
<td>Moderate preterm (32–33 weeks)</td>
<td>50 (1.3)</td>
<td>32 (1.5)</td>
<td>6 (2.1)</td>
<td>12 (0.8)</td>
</tr>
<tr>
<td>Very preterm (28–31 weeks)</td>
<td>69 (1.8)</td>
<td>41 (1.9)</td>
<td>6 (2.1)</td>
<td>22 (1.5)</td>
</tr>
<tr>
<td>Extremely preterm (&lt;28 weeks)</td>
<td>30 (0.8)</td>
<td>13 (0.6)</td>
<td>3 (1.0)</td>
<td>14 (0.9)</td>
</tr>
<tr>
<td>Infant ICU admission among term live births,† n/N (%)</td>
<td>279/2,995 (9.3)</td>
<td>158/1,558 (10.1)</td>
<td>15/173 (8.7)</td>
<td>106/1,264 (8.4)</td>
</tr>
<tr>
<td>Birth defects among live births,** n/N (%)</td>
<td>28/4,447 (0.6)</td>
<td>18/2,330 (0.8)</td>
<td>2/371 (0.5)</td>
<td>8/1,746 (0.5)</td>
</tr>
</tbody>
</table>

SET-NET Infant Outcomes

• 13 jurisdictions reporting
• Of 923 infants with information, 313 (34%) were not tested
• Of 610 (21%) infants with molecular test results 16 (3%) were positive
• Percent positivity was 4% (14 of 328) among infants born to women with infection identified ≤14 days before delivery
• No infants born to women with documented infection >14 days before delivery tested positive

SET-NET Infant Outcomes, Continued

- Outcomes among 4,527 fetuses and infants
  - 4,495 (99%) live births (including 79 sets of twins and one set of triplets)
  - 12 (0.3%) pregnancy losses at <20 weeks’ gestation
  - 20 (0.4%) losses at ≥20 weeks’ gestation

- Among 3,912 infants with reported gestational age
  - 506 (13%) were preterm
    - 149 (4%) at <34 weeks
    - 357 (9%) at 34–37 weeks
  - 9% of term infants were admitted to ICU
    - Reason for admission often missing
  - 9 (0.2%) in-hospital neonatal deaths were reported

Vertical Transmission of Immunity?

- Blood samples from >1,470 pregnant women analyzed
  - Of these, 83 tested positive for antibodies for SARS-CoV-2 at delivery
- Cord blood from 72 of 83 babies born to antibody-positive mothers was positive SARS-CoV-2 IgG
  - Quantity of antibodies in cord blood correlated with concentration of IgG in maternal blood
  - Increased time between maternal infection and delivery correlated to greater number of antibodies
  - Antibodies were transferred across placenta after both symptomatic and asymptomatic infection
  - Mothers of the 11 infants whose cord blood was negative for antibodies had relatively low IgG levels or were IgM positive, suggesting early maternal infection and insufficient time for antibody production and transfer
Treatment for COVID-19 during Pregnancy

• High proportion of studies evaluating medications used to treat COVID-19 excluded pregnant women

• However, data from studies of similar treatments (e.g., HAART for HIV, monoclonal antibody treatment for multiple sclerosis) demonstrate safety during pregnancy
  • May be able to extrapolate

• Monoclonal antibody treatment should not be withheld from pregnant people who meet criteria
Doulas & Hospital Visitation Policies

- NYS supports the presence of doulas during labor, through several executive orders
- Guidance from New York State Health Department December 21, 2020* stated that patients are allowed one support person and one doula
- Responsibilities of the birthing facility:
  - Admit doula for duration of in-patient hospital stay
  - Provide adequate personal protective equipment for doula
  - Do not require proof of certification or training
  - Support virtual doula support whenever possible (use of personal cell phone or other device, use of secure wi-fi network, etc.)
  - Post information on visitation policy, including doulas, on facility’s web site
- The NYC Health Department will work to share best practices for operationalizing the state policy

Benefits of Doula Support during COVID-19

• Doulas provide a host of benefits to the birthing parent and the infant:
  • Lower rates of pain medication, C-section, postpartum depression
  • Higher rates of breastfeeding, satisfaction with birth
  • On average, shorter labor, higher APGAR scores

• Especially important during the high-stress, ever-changing environment of the COVID-19 pandemic

• Both virtual and in-person support are excellent options for birthing people
• Many doulas offer virtual support to clients
• Many doulas have been vaccinated and have returned to in-person support
COVID-19 and Breastfeeding

• Although samples of breast milk have tested positive for SARS-CoV-2 by RT-PCR, current evidence suggests breast milk is not likely a route of transmission
  • Testing for viable and infective virus not routinely performed
• Rate of infection is no greater when the baby is breastfed/remains with the mother vs. being separated
• Breast milk is the optimal source of nutrition for most infants
  • Including those born to mothers with suspected or confirmed COVID-19
• Precautions to avoid spreading the virus to her infant should be taken

Antibodies in Breast Milk?

• Study of breast milk from people with and without COVID-19
  • 8 with SARS-CoV-2–positive PCR test, 7 with suspected COVID-19
  • Compared those samples to control samples donated from different lactating mothers collected before the pandemic
  • All samples from women who had recovered from COVID-19 had specific SARS-CoV-2 binding activity
  • Pre-pandemic samples had low levels of nonspecific activity
  • Tested the antibodies’ response to the receptor binding domain of the SARS-CoV-2 spike protein
    • 12 out of 15 of the samples from previously-infected donors showed significant IgA binding activity

Fox A, et al. Robust and Specific Secretory IgA Against SARS-CoV-2 Detected in Human Milk. iScience. 2020;23:11. 
https://doi.org/10.1016/j.isci.2020.101735
COVID-19 Vaccines and Pregnancy

• Persons who are pregnant or lactating may choose to be vaccinated
• Consider level of COVID-19 community transmission and risk of COVID-19 to the patient and potential risk to the fetus
• The Society for Maternal-Fetal Medicine strongly recommends that pregnant people have access to COVID-19 vaccines. They recommend that each person talk to their provider or midwife about their choice.
• The American College of Obstetricians and Gynecologists recommends that the COVID-19 vaccine should not be withheld from pregnant people and should be offered to people who are lactating.

COVID-19 Vaccines: Pregnant or Lactating People

• CDC and FDA have safety monitoring systems in place to obtain information about vaccination during pregnancy

• Clinical trials to evaluate COVID-19 vaccine safety and efficacy in pregnant people are planned

• Providers should encourage patients to enroll in v-safe, CDC’s voluntary smartphone-based, after-vaccination health checker for people who receive COVID-19 vaccines
  • Includes a v-safe pregnancy registry to collect information on the health of pregnant people who get vaccinated

COVID-19 Vaccines and Pregnancy

• Substantial numbers of self-reported pregnant persons (>30,000) have registered in v-safe*
  • No unexpected pregnancy or infant outcomes have been observed related to COVID-19 vaccination during pregnancy
• Fever is a possible side effect from the vaccine
  • Persistently high fever during first trimester might increase the risk of fetal abnormalities or miscarriage
  • Pregnant people who receive COVID-19 vaccination should take acetaminophen if they develop a fever after vaccination, as fever during pregnancy can negatively affect a fetus (acetaminophen is safe in pregnancy)

*https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-02/28-03-01/05-covid-Shimabukuro.pdf
Can Vaccines During Pregnancy Protect Newborns?

• One case report documents detection of IgG in cord blood at 39 weeks in a person who reported no history of COVID-19 exposure or symptoms

• This is consistent with data on other vaccinations during pregnancy
  • Vaccines for influenza and tetanus, diphtheria, and pertussis (TDaP) are routinely recommended in pregnancy**
  • Maternal antibodies are transferred to fetus and protect infants during first few months of life while they are too young to be vaccinated

* Gilbert P, Rudnick C. Newborn antibodies to SARS-CoV-2 detected in cord blood after maternal vaccination. medRxiv 2021. https://doi.org/10.1101/2021.02.03.21250579 (preprint, not peer-reviewed)

** TDaP: 27-36 weeks gestation (preferably earlier in range), every pregnancy; Flu vaccine: any trimester, every flu season
DOHMH Information on COVID-19 and Pregnancy

https://www1.nyc.gov/site/doh/covid/covid-19-pregnancy.page
CME Accreditation Statement for Joint Providership
NYC Health + Hospitals is accredited by The Medical Society of the State of New York (MSSNY) to provide continuing medical education for physicians. This activity has been planned and implemented in accordance with the Accreditation Requirements and Policies of the MSSNY through the joint providership of NYC Health + Hospitals and the NYC Department of Health and Mental Hygiene. NYC Health + Hospitals designates this continuing medical education activity for a maximum of 1 AMA PRA Category 1 Credit™. Physicians should claim only credit commensurate with the extent of their participation in the activity.
Additional COVID-19 Resources

COVID-19 Vaccines
• NYC Health Department - COVID-19 Vaccine:
  • Public: nyc.gov/covidvaccine
  • Providers: nyc.gov/health/covidvaccineprovider
• Citywide Immunization Registry Reporting Assistance
  • https://www1.nyc.gov/site/doh/providers/reporting-and-services/cir-how-to-report.page#electronic
• Vaccine Provider Assistance:
  • Email nycimmunize@health.nyc.gov

General COVID-19 Resources
• Provider page: https://www1.nyc.gov/site/doh/covid/covid-19-providers.page
• Data page: https://www1.nyc.gov/site/doh/covid/covid-19-data.page
• Dear Colleague COVID-19 newsletters (sign up for City Health Information subscription at: nyc.gov/health/register)
• NYC Health Alert Network (sign up at https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page)
• Provider Access Line: 866-692-3641

Next NYC Health Department provider webinar
• Friday, April 16, 1 p.m. (sign up on provider page)