

1 **Intensive Care Unit Admissions for Pregnant and Non-Pregnant Women with COVID-19**

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9 **Keywords:** hospital birth; novel coronavirus; COVID-19; SARS-CoV-2; pneumonia; respiratory
10 failure; shock; multiorgan dysfunction; pregnancy

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14 The authors report no conflict of interest.

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19 **Objective:** Early reports indicate that pregnant women are not at increased risk for COVID-19
20 infection or for a worse disease course if infection occurs.¹⁻³ The objective of this study was to
21 review our experiences with intensive care unit (ICU) admissions for women of reproductive age
22 infected with COVID-19, and to determine whether pregnant women are more likely to be
23 admitted to the ICU than non-pregnant women.

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25 **Study Design:** We evaluated data from a large hospital system in New York State between March
26 2 and April 9, 2020. SARS-CoV-2 testing was performed on acutely symptomatic patients
27 presenting with characteristic respiratory signs and symptoms.⁴ Nasopharyngeal specimens were
28 obtained, and microbiologic diagnosis was made based on a positive result on SARS-CoV-2 real-
29 time reverse transcription polymerase chain reaction (RT-PCR) assay. We included only patients
30 in the reproductive age groups (15-49 years of age) who were admitted to one of seven hospitals
31 in our system and who were diagnosed with COVID-19 on RT-PCR on admission, during the
32 hospital stay, or postpartum period. Data analyzed in this study included age (five age groups
33 between 15 and 49 years), pregnancy status, and admission to an ICU. We excluded patients with
34 incomplete data. The incidence of ICU admission was compared between pregnant and non-
35 pregnant women with COVID-19 in each age group. Patients were admitted to the ICU at the
36 discretion of the consulted critical care attending physician. Other clinical characteristics,
37 including medical comorbidities, were not evaluated and not necessarily the same. The
38 Institutional Review Board determined that this study did not meet the definition of human subjects
39 research and was exempt from formal review.

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41 **Results:** Among all patients between the age of 15 to 49 admitted at 7 hospitals within our health
42 system between March 4 and April 9, 2020, there were 1,168 symptomatic patients diagnosed with
43 COVID-19. Of these, 754 (64.6%) were male, 332 (28.4%) were non-pregnant females, and 82
44 (7.0%) were pregnant females. During this time period, 2,971 pregnant patients were admitted,
45 primarily for delivery. In some cases, symptomatic patients diagnosed with COVID-19 (2.8%)
46 were admitted for obstetrical indications and only had mild respiratory disease. In total, 50 non-
47 pregnant females (15.1%, 50/332) and 8 pregnant females (9.8%, 8/82) were admitted to the ICU

48 for worsening respiratory status, a difference that was not statistically significant ($p=0.22$). ICU
49 admissions by age group are shown in Table 1.

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51 **Conclusion:** Among hospitalized women who are infected with COVID-19, those who are
52 pregnant are not at increased risk for ICU admission compared to those who are not pregnant. This
53 finding is consistent with the overall lower hospital admission rate of pregnant women with
54 COVID-19 that we previously demonstrated.⁵ Pregnant women are considered to be at greater risk
55 of severe morbidity and mortality from other respiratory infections such as influenza.⁶ Admission
56 to the ICU signifies a more severe course of disease. Therefore, our findings are reassuring, and
57 indicate that pregnant women infected with COVID-19 may not experience more severe disease
58 progression than non-pregnant women.

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82 **Table 1.** Intensive Care Unit Admissions by Age Group in Pregnant and Non-Pregnant Women
83 with COVID-19

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Age Group	Pregnant Women (n=82)	Non-Pregnant Women (n=332)	P value
<25 years	1/11 (9.1)	3/7 (42.9)	0.09
25-29 years	0/17 (0)	5/40 (12.5)	0.16
30-34 years	2/33 (6.1)	5/44 (11.4)	0.46
35-39 years	3/15 (20.0)	9/55 (16.4)	0.73
40-49 years	2/6 (33.3)	28/190 (14.7)	0.28
Totals	8/82 (9.8)	50/332 (15.1)	0.22

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