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

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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.

24

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

40

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

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

50

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.
53 This 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
55 risk of severe morbidity and mortality from other respiratory infections such as influenza.⁶
56 Admission to the ICU signifies a more severe course of disease. Therefore, our findings are
57 reassuring, and indicate that pregnant women infected with COVID-19 may not experience more
58 severe disease 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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