



# Newborns of COVID-19 mothers: short-term outcomes of colocating and breastfeeding from the pandemic's epicenter

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## Introduction

The United States of America has been severely affected by the COVID-19 pandemic during the spring of 2020 [1]. The largely immigrant and densely populated neighborhoods of Queens, NY, served by a large public hospital, Elmhurst Hospital Center (NYC H+H/Elmhurst), have emerged as one of the hardest-hit areas in the country [2]. Newborns are at high risk of acquiring severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from their infected mothers who delivered during this period; however, data remains limited [3]. We aim to describe the unique experience from our Baby Friendly hospital at the epicenter of the COVID-19 pandemic.

## Methods

In this retrospective cross-sectional study, we identified live births to women who were tested for SARS-CoV-2 from March 19 to April 22, 2020 at NYC H+H/Elmhurst. Data regarding demographic and clinical characteristics, SARS-CoV-2 test results, symptoms and signs of COVID-19, colocation (rooming-in), breastfeeding, and newborn follow-up were obtained from review of electronic medical

records. Descriptive statistics on the newborns of positive mothers along with maternal data is presented as overall results and percentages. BioReference laboratories and our hospital laboratory (Cepheid Xpert Xpress) were used for SARS-CoV-2 reverse transcriptase polymerase chain reaction (PCR) test. This study was approved under exempt status by the Institutional Review Board of Icahn School of Medicine at Mount Sinai (IRB number 20-03424), local ethics committee, and the office of research administration.

## Results

There were 118 live births to women who were tested for SARS-CoV-2 infection. Of these, 45 (38%) newborns were born to positive mothers and 30 (67%) births were vaginal. The majority of positive mothers, 27 (60%), were asymptomatic. Five (11%) well newborns were placed in isolation room as a part of our initial practice early in the pandemic. Seven (16%) newborns were admitted to the neonatal intensive care unit (NICU) after birth due to prematurity or suspected sepsis. A total of 33 (73%) newborns colocated with their mothers and 31 of the 33 (94%) were breastfed with the initiation of breastfeeding within 1 h of birth. All the newborns were tested for SARS-CoV-2 using a combined oropharyngeal and nasopharyngeal swab after birth following their first bath due to the long turnaround time of the test results. Testing from other sites such as rectal swabs was not performed. A total of 33 (73%) newborns tested negative and 3 (6.6%) tested positive (Fig. 1). Those three newborns were monitored in the NICU until two consecutive tests obtained at least 24 h apart were negative and they remained asymptomatic, thus suggesting transient colonization. None of the 45 newborns needed NICU admission for COVID-19-related symptoms. The average age at discharge was 2.7 ( $\pm 2.3$ ) days of life. Upon discharge, there was a 91% adherence (39 out of 43 discharged) to the initial in-person newborn visit. There was

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100 % adherence to the televisits within 2 weeks post discharge. On these visits, none of the newborns were reported to have any symptoms consistent with COVID-19 and none had emergency department visits or hospital admissions related to COVID-19. Demographic and clinical data is summarized in Table 1.

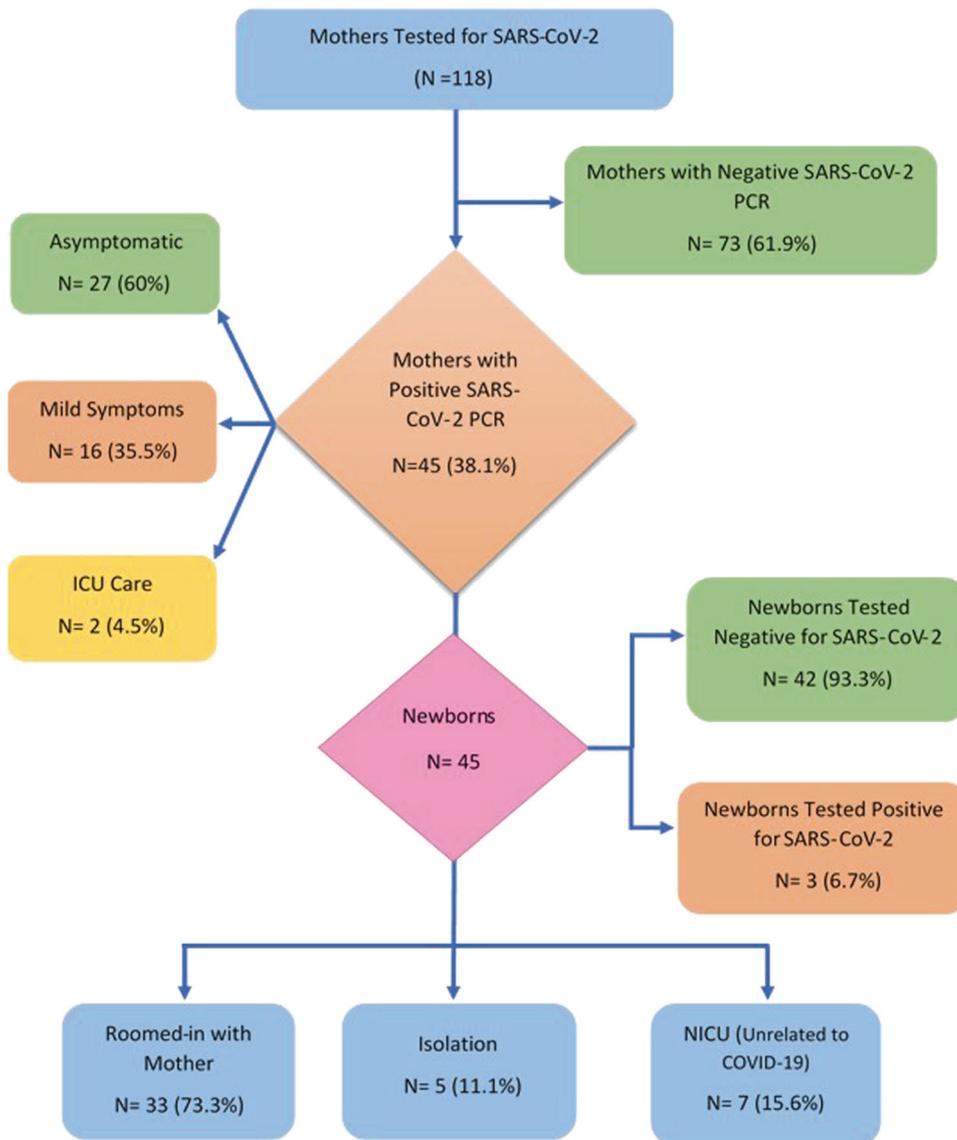
### Discussion

In our experience of caring for newborns at a center with high incidence of maternal SARS-CoV-2, newborns did not show signs of infection after birth. Moreover, we report no short-term adverse neonatal outcomes with skin-to-skin care, rooming-in, or breastfeeding in infants of SARS-CoV-2 positive mothers in our population. In contrast to early reports

from China, majority of our newborns were born via vaginal delivery [4]. And although it has been shown that SARS-CoV-2 can be detected in the stool samples of mothers, routine testing in our cohort of newborns did not show a high incidence of positive PCR results [5]. A possible explanation for both of these observations could be the high number of asymptomatic or mildly symptomatic mothers in our study.

During the early period of the pandemic, our center tested only symptomatic pregnant women for SARS-CoV-2 and newborns of infected mothers were placed in isolation rooms based on the available literature at that time [6]. However, due to the dramatic surge in the number of SARS-CoV-2 positive mothers delivering at our center after initiation of universal screening of all pregnant women admitted for delivery, the limited isolation spaces for the newborns, early postpartum discharges, the crowded

**Fig. 1** SARS-CoV-2 test results and clinical characteristics of the newborns and their mothers.



housing conditions in our community and the desire to promote breastfeeding, we utilized shared decision-making and offered rooming-in of mothers with their newborns [7]. Mothers were encouraged to provide skin-to-skin care and breastfeeding while rooming-in, following appropriate isolation precautions based on the CDC guidance [8].

**Table 1** Demographic and clinical characteristics of newborns of SARS-CoV-2 positive mothers.

Characteristics	Patients/Value (N = 45)
<b>Maternal characteristics</b>	
Age, median (IQR), years	30 (27.5–35.5)
Vaginal delivery, no. (%)	30 (66.7)
Cesarean section, no. (%)	15 (33.3)
Length of stay, median (IQR), days	3 (2–3)
Asymptomatic, no. (%)	27 (60)
Symptomatic, no. (%)	18 (40)
Symptoms, no. (%)	
Fever	15 (33.3)
Cough	16 (35.6)
Sore throat	4 (8.9)
Shortness of breath	6 (13.3)
Intensive care unit admission, no. (%)	2 (4.4)
Mothers needing intubation, no.	0
Treatment with medications for COVID-19, no. (%)	
Hydroxychloroquine	6 (13.3)
Azithromycin	5 (11.1)
Tocilizumab	1 (2.2)
<b>Newborn characteristics</b>	
Birth weight, mean (±SD), g	3133 (±556)
Sex, no. (%)	
Female	19 (42.2)
Male	26 (47.8)
Gestational age, mean (range), weeks	34 (30 5/7–41)
Term (≥37 weeks), no. (%)	41 (91.1)
Preterm (<37 weeks), no. (%)	4 (8.9)
APGAR at 1 min, median	9
APGAR at 5 min, median	9
NICU admission, no. (%)	
Prematurity	3/7 (42.8)
Suspected sepsis	4/7 (57.2)
Isolation during initial practice, no. (%)	5 (11.1)
Breastfeeding and colocation, no. (%)	
Roomed-in	33 (73.3)
Breastfeeding	31/33 (94)
Received any breastmilk	40 (88.9)
Nasopharyngeal PCR positive for SARS-CoV-2, no. (%)	3 (6.7)
Newborn with symptoms of COVID-19, no.	0
Discharge disposition, no. (%)	
Discharge to the same household	40/43 (93.0)
Discharge to different household	3 (7.0)
Adherence to in-person newborn visit, no. (%)	39/43 (90.6)
Symptomatic on in-person newborn visit, no.	0
Adherence to televisit, no. (%)	43/43 (100)
Symptomatic on televisit, no.	0

Newborns were discharged to a healthy asymptomatic caregiver and were closely followed-up for 2 weeks after discharge. Televisitation was utilized in addition to initial in-person visits that showed that the newborns remained asymptomatic after discharge.

Although our study has limitations of small sample size and only short-term outcomes, we believe that to date, our report has the largest number of mother–baby dyads cared for utilizing baby friendly practices when mother is tested positive for SARS-CoV-2.

The practice of rooming-in and breastfeeding in our population provided a critical educational opportunity for the new mothers to learn isolation precautions, safe distancing, personal protective equipment use, and safe breastfeeding or pumping of breastmilk to reduce the risk of transmission of SARS-CoV-2 to the newborn. This may have prepared the SARS-CoV-2 positive mothers to better care for their newborns at home. Given the variations in the guidance and at times some conflict amongst the national and international organizations regarding colocation and breastfeeding after delivery, our experience can help hospitals when planning around best practices for newborn care during the COVID-19 pandemic [9].

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## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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