Protecting Labor and Delivery Personnel from COVID-19 during the Second Stage of Labor

Anna Palatnik, MD1 Jennifer J. McIntosh, DO, MS1

1 Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Medical College of Wisconsin, Milwaukee, Wisconsin

Abstract

The novel coronavirus disease 2019 (COVID-19) is spreading fast and is affecting the clinical workers at much higher risk than the general population. Little is known about COVID-19 effect on pregnant women; however, the emerging evidence suggests they may be at high risk of asymptomatic disease. In light of projected shortage of personal protective equipment (PPE), there is an aggressive attempt at conservation. In obstetrics, the guidelines on PPE use are controversial and differ among hospitals, globally, as well as nationally. The Centers for Disease Control and Prevention (CDC) recommend using N95 respirators, which are respirators that offer a higher level of protection instead of a facemask for when performing or present for an aerosol-generating procedures (AGP). However, the second stage of labor is not considered an AGP. The second stage of labor can last up to 4 hours. During that time, labor and delivery personnel is in close contact to patients, who are exerting extreme effort during and frequently blow out their breath, cough, shout, and vomit, all of which put the health care team at risk, considering that COVID-19 transmission occurs through aerosol generated by coughing and sneezing. The CDC and the American College of Obstetricians and Gynecologists (ACOG) do not provide clarification on the use of N95 during the second stage. We recommend that labor and delivery personnel have the utmost caution and be granted the protection they need to protect themselves and other patients. This includes providing labor and delivery personnel full PPE including N95 for the second stage of labor. This is critical to ensure the adequate protection for health care workers and to prevent spread to other health care workers and patients.

Keywords
- COVID-19
- second stage of labor
- N95 mask
- aerosol

Key Points
- Second stage of labor exposes providers to aerosol.
- COVID-19 risk during second stage of labor is high.
- N95 should be used during second stage of labor.

The novel coronavirus disease 2019 (COVID-19) has spread in more than 170 countries and, to date, affected close to 800,000 people worldwide (as of March 30, 2020). Evidence from past epidemics suggests that clinical workers are at much higher risk than the general population of being infected. Indeed, globally, COVID-19 infects thousands of health workers. Figures from China’s National Health Commission show that more than 3,400 health care workers have been infected and at least 13 died. In Italy, according to the Italian research institute, around 5,760 health care workers...
in the country have been diagnosed with COVID-19, which is
approximately 8% of all cases in Italy and hundreds are dead (The Daily Mail). In Spain, out of 40,000 confirmed coronavi-
sus cases, 5,400 (~14%) are medical professionals (The New York Times). The numbers regarding medical professionals in
the United States affected by COVID-19 have not yet been
reported (as of March 30, 2020).

As there has been an exponential increase in the number of
positive patients in the United States requiring hospitalization,
there is a real trepidation that hospitals will run out of personal
protective equipment (PPE). In fact, many hospitals are already
starting aggressively to conserve their gear. In obstetrics, the
guidelines on PPE use are controversial and differ between
hospitals, globally, as well as nationally. The transmission of
COVID-19 is thought to occur through respiratory droplets
generated by coughing and sneezing, and through contact with
contaminated surfaces. The centers for disease control and
prevention (CDC) recommend using N95 respirators, which
offer a higher level of protection instead of a general face mask
when performing or present for an aerosol-generating proce-
dures (AGP). Examples of AGPs include positive pressure
ventilation, endotracheal intubation, airway suction, high-
frequency oscillatory ventilation, tracheostomy, chest physio-
therapy, nebulizer treatment, sputum induction, and bron-
choscopy.¹ Neither the CDC nor the American College of
Obstetricians and Gynecologists (ACOG) include the second
stage of labor (stage that starts at full dilation of the cervix
and lasts until delivery of the baby) as an AGP. The academic center
where the authors practice recently changed their guidelines
and recommended using N95 masks while attending COVID-
19 positive patients in second stage of labor. The recommenda-
tion for attendance of the second stage of labor for person
under investigation or asymptomatic laboring woman is to
wear a standard surgical mask.

In evaluating the second stage of labor as a possible AGP, it is
important to consider the length of time and close contact with
a patient during the active phase of pushing. According to the
obstetric care consensus to safely prevent the first cesarean
delivery,² it is recommended to allow nulliparous women up to
4 hours and multiparous women up to 3 hours for the second
stage of labor. During this time, most labor and delivery
personnel is allowed less than 6-feet away as recommended
and in close contact with their patients for an extended duration.
Further, women exerting extreme effort during the second
stage of labor and frequently blow out their breath, cough,
shout, and vomit, all of which put the health care team at risk.

When evaluating whether or not the second stage of labor
should be considered as an AGP, the data are scarce. However, it
is helpful to review publications examining respiratory spread of
similar viruses. In response to the H1N1 and severe acute
respiratory syndrome (SARS) outbreak, Zayas et al characterized
respiratory droplets to understand the possible respiratory
spread of these diseases.³ In their study, they found that
99% of droplets expelled were < 10 µm, which are of inhala-
ble size and could potentially contribute directly, as well as
indirectly, to the airborne spread of respiratory infections
the size similar of the influenza of SARS.³ This route of
transmission would be of concern during vaginal delivery. If

In light of this data, it is fair to assume that COVID-19 is associated with high
respiratory and nosocomial spread. Of particular interest, a study by Liu et al examined infectious spread within the
Wuhan Hospitals.⁶ They recorded elevated levels of airborne
COVID-19 inside the mobile toilet area. They attributed this to
possible aerosolization from the patient’s stool or urine.⁵ This
is of particular concern to labor and delivery personnel who is
tasked with cleaning a patient’s perineum of stool during the
second stage of labor. If indeed there is an increased exposure
from fecal content, in addition to respiratory exposure from
the act of pushing and breathing, the need for appropriate PPE
must strongly be considered.

The CDC statement for PPE during the COVID-19 pandem-
ic in labor and delivery unit is vague. The ACOG does not offer
further clarifications beyond what is within the CDC guid-
ance. Given the close proximity of the labor and delivery
personnel to an infected or possibly infected patient who
would readily expose the team with respiratory droplets
during pushing, this PPE is imperative for labor and delivery
personnel. Most notably, the International Society for Ultra-
sound in Obstetrics and Gynecology has given several webi-
nars and have included the second stage of labor, vaginal
delivery, and cesarean delivery as possible AGP that should
require appropriate PPE, including N95 or respirator. Yes, the
surgical mask is decreasing the number of aerosol droplets
behind the mask by a substantial four-fold compared with
wearing no mask at all; however, exposing labor and delivery
personnel to 25% risk of aerosol droplets leak for up to
4 hours of second stage of labor is negligent. Other hospitals
on the forefront of the COVID-19 pandemic have already
made this realization and have all required their labor and
delivery teams to wear full PPE including N95 masks. These
institutions are operating ahead of national guidelines.

In summary, we recommend that labor and delivery
personnel have the utmost caution and be granted the
protection they need to protect themselves and other
patients. We recommend the following:

• Consider testing all laboring patients for COVID-19 in light
  of high percent of asymptomatic pregnant women testing
  positive.⁷
• All providers on labor and delivery should wear a face
  mask that is changed between patients.
• Number of staff and physicians should be kept to essential
  personnel for the second stage of labor and cesarean
delivery.
• All staff and physicians in the room during the second
  stage of labor or cesarean delivery should be wearing full
  PPE including gown, gloves, eye protection, and N95 mask.

These measures are critical to ensure the adequate
protection for health care workers and to prevent spread
to other health care workers and patients. While we certainly realize the shortage of PPE, labor and delivery personnel deserves more than that. We deserve to be protected while we do our job. Our patients deserve their providers to be kept safe.

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Conflict of Interest
None declared.

References