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Editorial

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Dilemmas and Priorities in the Neonatal Intensive Care Unit during the COVID-19 Pandemic.

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Since December 2019 a novel corona virus not previously seen in humans has presented itself first in Wuhan, China and then spreading to currently 181 countries around the globe with more than 1,000,000 confirmed cases and a total number of fatalities of more than 53,000[1].

The case definition[2] of a patient with *corona virus disease*, COVID-19, infected with the virus, SARS-CoV-2, is being established and adapted as new information accumulates. Even though human infection seems mostly to be transmitted from symptomatic patients, asymptomatic individuals have also been reported to transmit virus.

The incubation period is 2-14 days with most cases emerging 4-5 days after exposure[3]. Since the development of COVID-19 is also gradual and occult, starting with little or non-specific symptoms from the upper airway, wide community spread has prompted national health care authorities to move from a containment to a mitigation strategy.

In the adult population several countries have consistently reported scarcity of resources including ICU beds, manpower, ventilators, medicine and personal protective equipment (PPE) due to the overwhelming number of admissions. This has led to necessary prioritization and

triage of patients to intensive care treatment based on considerations like age, comorbidity and functional status, probability and estimated length of survival[4].

On the contrary, in the neonatal population there has been no confirmed cases of intrauterine or transplacental (vertical) transmission of SARS-CoV-2 from mothers with COVID-19 to the fetuses[5], and we have as of today no confirmed fatalities in newborns caused by COVID-19. Nevertheless, in most countries newborn infants and especially preterm and sick newborn infants admitted to the neonatal intensive care unit (NICU) are considered at risk of severe disease if infected based on a precautionary principle, just like adult patients with specific underlying diseases and pregnant women. The infant is regarded potentially infected if the mother is known to have SARS-CoV-2 or COVID-19 during birth and some countries recommend the mother to be isolated or quarantined until at least 48 hours after cessation of symptoms[6], resulting in separation of the mother and child. The partner is regarded potentially infected due to the cohabitation with the mother and equal safety measures are recommended related to the partner.

Some 10% of all newborns need transfer to the NICU, most of them immediately after delivery[7,8]. So, during the COVID-19 pandemic, families and newborn health care professionals will face several dilemmas.

- How do we grade the mother's condition without a strict case definition and knowledge on the disease progression?
- How do we secure the extremely important mother and child bonding, establishment of breast feeding and neurosensory stimulation in the immediate postnatal period if COVID-19 infected mothers are separated from their child?
- How do we handle potentially contagious mothers, family members and newborns in a NICU where parents are important in the care of even the sickest newborns and not just visitors?
- How do we continue to follow the principles of family-centered care (FCC), and newborn individualized developmental care and assessment program (NIDCAP) if the infant is isolated from parents?
- How will NICU staff protect themselves and their families against a highly contagious disease without jeopardizing the sick infant and the parents?

Decision making under these circumstances is challenging. Firm and clear decisions need to be taken – even though most of them are going to be adjusted as we learn more about the virus and the pandemic progress. However, trying to over-simplify decision tools with so many unknowns does not seem to be the right solution.

We suggest using the following principles in the handling of families with COVID-19 in the NICU without compromising our fundamental values and prerequisites for the optimal course of hospitalization:

1. A basic principle about *not separating the family*
2. A precautionary principle about the *risk of virus transmission* to the infant, other patients and staff members
3. A holistic principle about considering *the family situation and resources*

Basic principle: Mother and partner with suspected or verified COVID-19 may stay in the NICU, unless they have productive symptoms and are unable to follow local guidelines. Thus, our fundamental FCC and NIDCAP values have high priority. Families should be able to comply with the strict precautions described by each unit.

Precautionary principle: Considerations should be paid to the infant's maturity, treatment challenges, type and severity of disease and expected length of stay. Consideration should also be paid to the other patients in the NICU, parents and not least staff members. Strict adherence to preventive measures by parents and use of PPE by staff is very important for NICU safety including safety for staff and their families, while maintaining the highest quality of care and treatment for the patients.

Holistic principle: Consideration should also be paid to the capacity of the infant's family, constellation and potential resources available from their network, in particular if parents are too affected by COVID-19 to be in the NICU.

After all, once the SARS-CoV-2 pandemic has come to an end, we as neonatologists would like to be acknowledged by the way we were able to maintain the highest quality of care and treatment while not putting aside our advanced principles for which we have fought for so many years.

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