

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

## Seminars in Perinatology

[www.seminperinat.com](http://www.seminperinat.com)**COVID-19 in a community hospital****Anna Burgansky<sup>a</sup>, Jaclyn Coletta-Lucas<sup>b</sup>, and Meera S. Garcia<sup>c,\*</sup>**<sup>a</sup>Assistant Professor of Obstetrics and Gynecology, Columbia University Medical Center, Director, Department of Obstetrics and Gynecology, NYP Lawrence Hospital<sup>b</sup>Assistant Professor of Obstetrics & Gynecology, Regional Director of Maternal Fetal Medicine, Westchester, Department of Obstetrics and Gynecology, Columbia University Medical Center<sup>c</sup>Assistant Professor of Obstetrics & Gynecology, Columbia University Medical Center, Division Chief of Obstetrics & Gynecology, New York-Presbyterian Hudson Valley Hospital, Regional Director of Women's Health Services, New York-Presbyterian Medical Group

## ARTICLE INFO

## ABSTRACT

The rapid spread of COVID-19 across the globe quickly and drastically changed the way we practice medicine. In order to respond to its effects, careful planning and implementation of new guidelines and protocols was crucial to ensure the safety of both patients and staff. Given the limitations of space, staff, and resources in the community hospitals, a centralized command center, robust lines of communication within the department and between departments, and contingency and surge planning in this setting were critical. This chapter focuses on the unique challenges of practicing within a Level II hospital during a global pandemic.

© 2020 Elsevier Inc. All rights reserved.

**Introduction**

A novel coronavirus, COVID-19 or SARS-CoV-2, spread rapidly throughout the world over the past six months causing a global pandemic. With little known regarding the epidemiology, clinical course, and treatment, patient care within a community hospital becomes more difficult as there is often less access to equipment, resources, and subspecialists. Therefore, the overall planning and actions taken are even more crucial in this setting. This was accomplished at the community hospitals of New York-Presbyterian (NYP) in Westchester County, New York, through a thoughtful multi-phased plan focusing on preparation, implementation, maintenance, and recovery.

New York-Presbyterian Hospital is the largest nonprofit academic medical enterprise in New York City (NYC) and Westchester County, and it is affiliated with two Ivy League

medical schools, namely, Columbia and Weill Cornell. The enterprise includes eleven campuses based in Manhattan, Brooklyn, Queens, and Westchester County. There are two Level II facilities in Westchester County that are part of the regional hospital network of NYP and provide academically-supported community-based healthcare for Westchester, Putnam, and Dutchess counties. Two-hundred eighty-eight bed NYP Lawrence Hospital has about 1,300 deliveries a year in southern Westchester, and NYP Hudson Valley Hospital performs 700 deliveries per annum with 128 overall beds. For these two hospitals, there is referral and resource support from their anchor facility at Columbia University Irving Medical Center (CUIMC), and the day-to-day management of these regional hospitals is under the control of the institutions' NYP administrators and physician leadership.

During the preparation phase of this pandemic, as previously described by the World Health Organization<sup>1</sup>, it was important to identify multidisciplinary leaders and set up a

\*Corresponding author.

E-mail address: [mg4051@cumc.columbia.edu](mailto:mg4051@cumc.columbia.edu) (M.S. Garcia).

planning committee to ensure adequate physical space, trained staff, and clinical resources including personal protective equipment (PPE) were available. Circulation of accurate and timely information was deemed critical to achieve the best response. Daily calls were scheduled in order to gather information from the enterprise's tertiary care center at CUIMC about new guidelines and algorithms. As many of the community hospitals' physicians were voluntary or part of outside clinics, they were often not participants in the academic department's daily calls. Dissemination of the information by community hospital leadership to all clinical staff was crucial.

In this chapter, we discuss the unique challenges faced by Level II hospitals in the setting of a global pandemic.

---

### Physical Space

Securement of the physical spaces including outpatient offices, labor and delivery (L&D) suites, operating rooms (OR), and the emergency department (ED) was vital to stemming the spread of COVID-19.

Outpatient space constraints revolved around parking, lobbies and waiting areas, bathrooms, and exam rooms. Hospital management continued to offer valet services by appropriately PPE-donned attendants to reduce the number of individuals in the garage stairwells and elevators. In order to minimize the number of patients in the waiting areas, patients were often asked to wait in their cars until they could be directly roomed. In the office, informational signs were posted, and chairs were spaced to encourage social distancing. Excess supplies were removed from the patient bathrooms and exam rooms, and only necessary equipment was left. In the exam rooms, all required supplies were stored in cabinets and accessed on an as-needed basis by the provider. Counter spaces and equipment were wiped down completely after each patient with viricidal wipes.

---

### Changes in routine practice

Delivery in a community hospital setting is usually a family affair with multiple support people as well as the delivering clinician, two nurses, a technician, and a nursery attendant. However, this was pared down in order to allow for distancing while maintaining control of the clinical situation. During labor, management of a COVID-positive patient or patient under investigation (PUI) was characterized by a decrease in cervical exam frequency and in the number of staff at delivery unless additional resources were clinically indicated.

Compliance with certifications such as Baby Friendly were adapted to the new normal – the certifying organization relayed rooming-in and breast-feeding guidelines adapted from the directives set forth by the Centers for Disease Control<sup>2</sup>, and reeducation was undertaken with the obstetric staff. Additionally, partners and support persons were not allowed into the nurseries to decrease neonatal exposure to COVID-19 as so little was known about COVID-19 in the puerperium. In some hospitals, the term newborn nursery was

closed and universal rooming-in instituted in order to facilitate infant bonding, regardless of COVID status.

Our obstetrical service maintained full use of ORs on L&D; and, due to concerns about equipment contamination from respiratory droplets of COVID-positive patients, one of the L&D ORs was designated to be used exclusively for these cases. This COVID-OR was re-organized to stock only the minimum necessary equipment for routine cesarean deliveries, and a runner was identified at the start of a cesarean delivery to help bring any needed equipment, medications, and blood products or to summon additional help during the case.

---

### Emergency Department

A collaborative approach with ongoing communication between the obstetric service and the emergency department is critical in a disaster preparedness plan.<sup>3</sup> Obstetric triage units in the NYP enterprise use a gestational age cut-off of 20 weeks to determine the location of pregnant patient evaluation – L&D versus ED. Smaller non-academic community hospitals without on-site MFM or obstetric hospitalist presence may utilize the ED for evaluation of pregnant patients presenting with non-obstetrical complaints, even after 20 weeks. In these facilities, pregnant patients are commonly admitted to a medicine service with obstetric consultation. In the beginning of the pandemic, this practice continued with the goal of limiting exposure of healthy patients on L&D to potential COVID cases in the ED.<sup>4</sup> This approach also allowed for initial evaluation by the ED providers who are more experienced in assessing patients with acute respiratory symptoms and have faster access to Respiratory Therapy (RT) and non-obstetrical imaging such as chest X-rays and CT scans.<sup>5</sup> As the pandemic evolved, several issues emerged with the use of this strategy. The ED volume increased rapidly with a large number of critically ill patients, and the capacity within the physical emergency department was quickly overwhelmed by the number of patients awaiting evaluation and by admitted patients waiting for available beds in the hospital. This resulted in potentially avoidable COVID-19 exposure of pregnant patients coming in for non-obstetrical complaints.

All of these factors lead to a modification of the initial approach in the evaluation of pregnant patients in the ED. Stable pregnant patients, gestational age of 14 weeks or higher, were referred to L&D triage for most obstetric and non-obstetric complaints except acute severe respiratory distress.

---

### Surge response

Given the limitations of space and clinical resources at the community hospitals, contingency planning and delineation of surge response were critical. At the peak of the pandemic, additional ICU and in-patient capacity was achieved by converting existing hospital spaces previously dedicated to surgical and out-patient services. The ambulatory surgery unit (ASU) was converted into an additional ICU; the main OR recovery room was partially converted to ICU space with only a few beds available for emergency surgical cases. Labor and delivery ORs were also part of the surge planning process,

and we discussed the conversion of L&D ORs to ICU rooms and subsequent diversion of all cesareans to the main OR. Obstetric OR anesthesia machines were considered for ICU patients in need of ventilator support.

The outpatient prenatal testing unit was closed, and the space was converted to in-patient beds. Hospital-based prenatal ultrasounds and fetal testing were moved into the satellite MFM offices, and urgent non-stress tests (NSTs) were performed in the L&D triage area. As the need for in-patient capacity continued to grow, the post-partum and antepartum units were also converted into an internal medicine ward. Based on the daily census on L&D, post-partum patients either remained on L&D for the entire hospital stay (LDRP model) or were transferred to an oncology floor where a limited number of beds were made available. When L&D and oncology bed capacity was exceeded, COVID-negative post-partum patients and newborns were housed in a shared space, such as the obstetric triage suite, the ward's dayroom, or obstetric ORs recovery room. Due to the limited bed capacity and loss of in-patient prenatal ultrasound services, all patients requiring antepartum admissions were stabilized and transferred to the regional perinatal center at CUIMC.

With decreased bed-capacity on our obstetrical service, contingency planning included review of expected delivery volume from existing practices and of all scheduled cases (cesareans and inductions). Scheduled cases were distributed throughout the week to avoid volume surges on L&D. In addition, several non-NYP affiliated community hospitals closed their obstetric services, and patients who had planned to deliver at those institutions presented to our facility. The hospitalist service saw a significant increase in the number of patients transferring in for late obstetrical care and some with limited prenatal care or without prenatal records. Late transfers of care were accepted without exception. Our MFM community-based practice registered a significant increase in outpatient ultrasound volume as patients who were afraid to travel into New York City or those whose testing sites had been closed presented for indicated antepartum surveillance.

---

### In-patient PPE

Shortage of PPE became apparent early during the pandemic, and conservation efforts were implemented across the enterprise. An onsite command center was created at each NYP-affiliated hospital, and it coordinated distribution of PPE and other supplies within the hospital. Especially in independent community hospitals which do not have the access to the support services afforded by an affiliated tertiary care facility, establishment of this central command center becomes indispensable for acquisition of supplies and equitable resource distribution.

---

### Communication

Dissemination of accurate information during a pandemic is vital to its mitigation. In suburban or rural communities, access to information can be limited even with the prevalence of the internet because of paucity of broadband and

lower usage.<sup>6</sup> Further studies show that where one gets information can affect risk of getting COVID-19 and of dying from the disease.<sup>7</sup> Thus, active dialogue with patients regarding evidence-based policies and protocols remains the cornerstone of cogent care.

Patients were notified and educated by phone, email, and in-person about ever-evolving NYP policies on visitors, testing, and management of COVID-19 related illness, and they were given appropriate subsequent appointments at the conclusion of the calls, tele-health encounters, and in-office visits to prevent loss to follow up and attrition.

---

### Testing

One of the crucial aspects of a pandemic response includes timely testing and tracking of patient exposure to enforce isolation and decrease further spread. The availability of accurate and efficient testing was an essential tool that was difficult to obtain in the early stages, especially at the community hospitals.

Nasopharyngeal swab COVID tests were initially only performed at local health departments; however as demand became more widespread, these health department labs were overwhelmed. Once the FDA granted emergency authorization to commercial labs to expand testing services in the NYC suburbs, drive through testing centers emerged luring patients promising easier access. However, without detailed regulations, some specimens were sub-optimally obtained resulting in false negative results with unknown specificity. In addition, result turnaround times at these smaller sites were often 1–2 weeks. Many patients also presented to independent urgent care centers for tests but neglected to notify their primary obstetricians and primary care doctors, leading to unrecognized cases which could not be followed. Even once testing was available within the NYP enterprise, access was limited by a scarcity of swabs and by transport from our community hospitals to the laboratory at CUIMC, and results still took 24–48 h. Although, this was an improvement over the initial 1–2 week turnaround times, patients would present in labor, deliver, and sometimes even be discharged post-partum prior to receipt of the results.

Due to limited testing capacity during the initial months of pandemic, symptomatic pregnant patients who did not require hospital admission were not tested for COVID in the ED. On L&D, we initially started testing patients who were symptomatic even if they were not in respiratory distress, and we soon instituted universal testing based on adverse events that occurred on L&D at CUIMC. Along with universal testing, each clinical division began accruing and sharing data with the MFM division at CUIMC; this allowed for an enterprise-wide databank for management and follow-up of our COVID-positive patients.

In addition to universal testing on L&D, NYP "Fever Clinics" were opened in the boroughs of NYC with the intent of acting as an intermediary between outpatient offices and emergency rooms – to triage, test, treat, and discharge patients home with close follow up. Although there was discussion to potentially expand into Westchester County, the fever clinics remained only within NYC and did not augment community

testing. Though numbers in Westchester appeared much lower in comparison to the city, barriers to testing and tracking at community hospitals likely led to an inaccurate numerator and an artificially lower denominator.

### Interdepartmental relationships

Interdepartmental relationships within a community hospital can be inconsistent as clinical responsibilities are sometimes siloed. Around-the-clock services can be limited due to lower volumes and the predominance of voluntary and private practice faculty; obstetricians, anesthesiologists, infectious disease specialists, and pulmonologists are not always in-house 24 h a day. Additionally, treatment delays and errors occur more frequently at Level II hospitals due to these reduced clinical resources and limited experience of the staff to high-acuity clinical situations.<sup>8</sup>

Preparation for a pandemic requires increased communication and planning among all the departments of the hospital. Often behind-the-scenes divisions such as Laboratory Medicine, Perioperative Nursing and Respiratory Therapy move to the forefront along with the ED, anesthesiology, critical care, infectious diseases (ID), pulmonology, and others.

Anesthesiologists at Level II hospitals are not required to remain in-house for the duration of the shift, and some facilities do not have epidural pumps to allow for continuous infusion of regional anesthesia during labor. Boluses of epidurals were delayed as our anesthesiologists were occupied in the ED and the ICU's intubating COVID-positive patients; thus attempts were made to acquire epidural pumps to facilitate consistent adequate pain relief for the parturient.

Caring for pregnant women during this time of uncertainty was extremely difficult and often required a multidisciplinary approach. Even in the absence of a pandemic, non-obstetric specialists will often discontinue medications or refuse to manage medical issues during pregnancy for fear of adversely affecting the unborn fetus. This can become an additional barrier to care in the community hospital setting where there is less experience with making recommendations during pregnancy.

Treatment paradigms for COVID-related illnesses are still in their infancy, and there are several clinical trials active at NYP; however pregnancy remains an exclusion to enrollment. Even some of the less controversial medications are being withheld due to infectious disease and internal medicine consultants' hesitancy in treating pregnant women, and if the patient or consultant do not seek advice from the treating obstetrician or MFM, the patient could be sub-optimally treated.

Within the community hospitals, there are many unique differences in physical space, staffing, surge response planning, and interdepartmental relationships as compared to the tertiary care center. Some community hospitals have the benefit of being affiliated with a large academic institution, but others do not. Regardless of the relationships and affiliations, each community hospital needs to adapt the WHO recommendations and prepare for pandemics in the context of their own strengths and limitations. Communication, education, preparation, and protocol creation need to involve a multidisciplinary planning committee, and a central command center is essential for success. As we now reach the phase of recovery, cases begin to decrease, and social restrictions are loosened, elective cases will soon resume, and a transition to a "new normal" will occur with continued vigilance and assurance that staff and patient safety are paramount.

### Disclosure statement

Anna Burgansky, MD: none

Jaclyn M. Coletta-Lucas, MD: none

Meera S. Garcia, MD: none

The authors report no proprietary or commercial interest in any product mentioned or concept discussed in this article.

### REFERENCES

1. World Health Organization. In: *WHO checklist for influenza pandemic preparedness planning*; 2005. No. WHO / CDS / CSR / GIP / 2005.4. World Health Organization.
2. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html> (accessed 5/5/2020)
3. American Academy of Pediatrics. Committee opinion no. 726: hospital disaster preparedness for obstetricians and facilities providing maternity care. *Obstetric Anesthesia Digest*. 2018;38(2): 85–86.
4. Hospital-based triage of obstetric patients. Committee opinion no. 667. American College of Obstetricians and Gynecologists. *Obstet Gynecol*. 2016;128:e16–e19.
5. Chagolla Brenda A, Keats John P, Fulton Janet M. The importance of interdepartmental collaboration and safe triage for pregnant women in the emergency department. *J Obstet, Gynecol Neonatal Nurs*. 2013;42(5):595–605.
6. Perrin Andrew. In: *Digital gap between rural and nonrural America persists* | Pew Research Center; 2017.
7. <https://bfj.uchicago.edu/working-paper/2020-44/> (accessed 5/5/2020)
8. Della Torre Micaela, Kilpatrick Sarah J, Hibbard Judith U, Simonson Louise, Scott Shirley, Koch Abby, Schy Deborah, Geller Stacie E. Assessing preventability for obstetric hemorrhage. *Am J Perinatol*. 2011;28(10):753–760.