

# A Curriculum for Perioperative Nurse Deployment During a Pandemic



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## ABSTRACT

As the coronavirus disease 2019 (COVID-19) pandemic spread around the world, the US Surgeon General called for the cancellation of elective surgeries. At a large academic medical center in the Northeast, there was a resulting surplus of perioperative nurses who were deployed to inpatient units in need of skilled nursing care for a surge of COVID-19 patients. To prepare them for deployment to inpatient units, perioperative leaders developed a core curriculum to ensure that the OR nurses possessed the skills and knowledge required to successfully care for patients outside the OR with the same level of care and compassion that they provided to perioperative patients. The leaders employed available resources at the hospital to design and implement the course in a short amount of time. This article describes the development of a curriculum for OR nurses to manage a surging patient volume on inpatient units because of the COVID-19 pandemic.

**Key words:** *coronavirus disease 2019 (COVID-19), pandemic, cross-training, disaster planning, general care model.*

**T**hroughout history, multiple pandemics have had disastrous consequences around the world.<sup>1</sup> In recent decades, pandemics have become increasingly common and a more viable threat because of more frequent human migration and emerging pathogens.<sup>2</sup> Several new strains of coronavirus have emerged in the last 20 years, including the zoonotic coronavirus that caused severe acute respiratory syndrome in 2002 and Middle East respiratory syndrome in 2012.<sup>3</sup> When the novel coronavirus SARS-CoV-2 began spreading globally and resulted in the coronavirus disease 2019 (COVID-19) pandemic,<sup>4</sup> it became paramount for health care leaders to mitigate the effects of the surge in sick patients overburdening health care systems. When a pandemic is bearing down on a health care facility, an all-hands-on-deck staffing model is essential, and perioperative nurses are well-suited to rise to such a challenge.

Perioperative nursing is highly specialized, skilled nursing care that includes patient assessment, advocacy, and safety; technical skills; and familiarity with complex equipment and instrumentation. Operating room nurses

possess a vast body of knowledge, including knowledge of unique concepts (eg, sterility, patient positioning) that benefit the surgical patient and the perioperative team. Depending on the surgical specialties offered at an individual facility, it can take as long as two years for a new OR nurse to become fully independent on the job. Considering the wide range of knowledge and skills that are needed to assist with complex surgical procedures, an experienced OR nurse is invaluable to surgical patients and hospitals.

Emergency preparedness for a pandemic includes having sufficient equipment, supplies (eg, personal protective equipment), physical space, and personnel.<sup>5</sup> Preplanning and emergency preparedness enabled our hospital staff members to care for a surge of patients with COVID-19 during the pandemic. This article describes the process of developing a curriculum to prepare OR nurses for successful deployment to general patient care units (eg, medical-surgical units) and intensive care units (ICUs) to work in tandem with experienced inpatient and ICU nurses.

## THE ROLE OF PERIOPERATIVE SERVICES DURING THE PANDEMIC

Caring for a surge of patients with COVID-19 presented many challenges for clinicians, leaders, and personnel within our health system. Perioperative nurses' significant challenges included deployment options, the roles and responsibilities inherent to those options, and individual risk and liability. Perioperative leaders did not discount the emotional toll on all caregivers during this time and tried to provide support by reinforcing the existing peer support program for perioperative personnel and communicating regularly with the nurses via e-mail or in person. To orient a large group of RNs to nursing care that they have not practiced in variable amounts of time, it quickly became necessary to develop a curriculum to ensure that the OR nurses were successful in their new roles and could meaningfully contribute to the care crisis.

### Setting

Massachusetts General Hospital (MGH) is a Level 1 trauma center and teaching hospital in Boston housing 58 ORs on three levels across several buildings. The typical yearly surgical volume at MGH is 36,000 procedures and includes all surgical specialties. The ORs are supported by several perioperative units with a total capacity of 115 beds. These units typically care for patients in the preoperative and postoperative phases of care. Hospital providers and personnel at MGH care for the surrounding community and a national and international patient population.

Perioperative Services includes the ORs, perioperative units (eg, postanesthesia care unit [PACU], preoperative care unit), and the endoscopy unit. Perioperative Services personnel work closely with personnel from other procedural areas, including the interventional radiology unit and the cardiac catheterization laboratory. The MGH health system includes two suburban ambulatory surgical centers (ASCs) at which personnel perform outpatient procedures in specialties such as orthopedics, gynecology, and urology. There are 300 RNs, 80 certified surgical technologists (CSTs), and 80 OR assistants who work in the ORs at the main MGH campus.

### Hospital Incident Command System

The hospital incident command system (HICS) is a comprehensive program that is designed to enable personnel to

manage any incident that requires a coordinated response via a centralized facilitator. For the COVID-19 response, a HICS team was operationalized with designated individuals filling specific emergency-preparedness roles. The HICS team created a nurse staffing team that established a centralized labor pool from which to deploy nursing resources within the facility as necessary.

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Facility leaders initiated a COVID-19 response in January 2020, which allowed the HICS team to begin preparing resources for the potential consequences of this anticipated pandemic. The HICS plan identified specific individuals for specific roles on the HICS team, including an incident commander, and allowed for centralized decision making for the duration of the expected patient surge. The HICS team met twice per day to assess the overall and daily response to the pandemic. The team also addressed staff members' concerns related to inpatient and ambulatory operations, logistics, planning, and finances.

The institution followed the US Surgeon General's urging to halt elective surgical procedures<sup>6,7</sup> for several reasons:

- to ensure hospital capacity could accommodate patients as needed,
- to protect patients scheduled for an elective procedure from potential exposure to SARS-CoV-2, and
- to protect health care personnel from becoming ill and therefore unable to care for patients.

Elective procedures were canceled for the endoscopy and interventional radiology units, the cardiac catheterization laboratory, ASCs, and hospital ORs. Because all elective procedures at MGH were canceled, Perioperative Services had a surplus of nurses who were available for deployment to other areas of the hospital to assist in the care of patients with COVID-19.

## Deployment Strategy

Most of the RNs from Perioperative Services and other procedural units were initially deployed to the labor pool at the hospital for assignment. Personnel managing the labor pool deployed perioperative RNs to the triage call center and the respiratory illness clinic. They also assigned CSTs, OR assistants, and OR nurses to “proning” teams that were on call to assist with turning patients prone and then supine in the ICUs. One perioperative nursing practice specialist was assigned to the proning teams as a resource for positioning injury prevention. Labor pool managers also deployed CSTs to ICUs as part of the infection control monitoring team that ensured staff member safety during the process of donning and doffing personal protective equipment. The CSTs did not engage in patient care on inpatient units.

Perioperative leaders identified any RN with ICU experience within the past five years as well as PACU nurses from the main campus and satellite ASCs as eligible to work in the ICUs or to fill in for nurses on other inpatient units (eg, medical-surgical, step-down) who had been deployed to ICUs. The hospital offered a four-hour ICU refresher course for any nurse who had ICU experience within the past five years; perioperative nurses with recent ICU experience were eligible for deployment to the ICUs after taking this course.

The remaining OR nurses were broadly categorized as *general care RNs*. The intention was for the OR nurses to supplement the inpatient units that had deployed their RNs to ICUs. After arriving on a general care unit, the OR nurses supported other unit-based RNs or received a typical patient assignment according to the *general care model*. Although many perioperative staff members were deployed, surgical patients continued to receive necessary care in the ORs. Experienced teams of clinicians remained on the perioperative unit to care for trauma, transplantation, stroke, and oncology patients requiring surgical procedures.

### The general care model

Nursing practice specialists and clinical nursing specialists in the nursing department developed a model to define expectations for nurses deployed to inpatient units. The general care model includes three different roles: unit-based RN, nurse partner, and support RN (Table 1). The

unit-based RN was a member of the unit before the pandemic and acted as a resource for deployed personnel. The nurse partner was a deployed RN who took a patient assignment and relied on the unit-based RN for support as needed. The support RN did not receive a patient assignment and instead assisted unit staff members with their responsibilities and performed tasks to help the unit as a whole (eg, obtaining supplies and equipment, helping patients ambulate).

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Personnel managing the labor pool decided that nurses who were deployed as general care RNs would be unit-based (rather than sent to multiple units) to allow them to feel more comfortable and confident in their new roles and new environments. The OR nurses were initially categorized as support RNs; however, because of staffing challenges, many were called upon to be nurse partners and take patient assignments. The OR nurses were available for all shifts during their deployment. Scheduling was based on the needs of the inpatient units; although some nurses were able to maintain their normal Perioperative Services schedules, others worked night shifts or a combination of shifts.

### Conversion of Perioperative Areas to ICUs

The HICS team previously had identified perioperative spaces that would serve as additional ICU areas. This plan included converting one 30-bay PACU into a general care ICU, and two perioperative spaces with a combined total of 51 beds into two COVID-19 ICUs. Anesthesia machines from several ORs were repurposed for use as ventilators in the new ICUs. Certified RN anesthetists were assigned to these units because the anesthesia machines differed from typical ventilators used in established ICUs, which facility personnel acquired through traditional means, borrowed from the ASCs, or took from a state strategic stockpile of ventilators. It was fortuitous that we received a previously ordered delivery of additional IV and syringe pumps at that time and could put them immediately into use in all the ICUs.

**Table 1. Role Delineation in the General Care Model**

Unit-Based RN	Nurse Partner	Support RN <sup>a</sup>
<ul style="list-style-type: none"> <li>• Conducts patient evaluations and physiological monitoring</li> <li>• Oversees and coordinates patient care</li> <li>• Communicates with providers and personnel from other disciplines</li> <li>• Performs hand overs with other nurses</li> <li>• Administers medications, including IV fluids and IV medications</li> <li>• Performs and documents patient assessments and other care interventions</li> <li>• Collaborates with, oversees, and teaches the support RN</li> </ul>	<ul style="list-style-type: none"> <li>• Conducts patient evaluations and physiological monitoring</li> <li>• Reviews all orders with unit-based RN</li> <li>• May administer medications, including IV fluids, with guidance from unit-based RN (based on a collaborative decision made by unit-based RN, nurse partner, and unit nurse leaders)</li> <li>• Maintains and updates patient documentation</li> <li>• Performs glucose monitoring</li> <li>• Assists patients with ambulation and activities of daily living</li> <li>• Delegates tasks to patient care assistant when applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Monitors donning and doffing of personal protective equipment</li> <li>• Retrieves off-unit items necessary for patient care (eg, equipment, supplies)</li> <li>• Maintains and updates patient documentation</li> <li>• Collaborates with patient care assistants to perform glucose monitoring and assist patients with activities of daily living and ambulation</li> <li>• Performs additional miscellaneous interventions requested by the nurse partner</li> </ul>

<sup>a</sup>This role will have varied expectations based on team needs and the discretion of the unit's nurse leaders. These are examples of tasks that a support RN may perform.

## PREPARING OR NURSES TO WORK AS GENERAL CARE RNs

As the nursing practice specialists for Perioperative Services at MGH, we assumed the responsibility of preparing OR nurses for deployment to inpatient units. The time frame for developing an effective curriculum was very short, but our overall objective was clear: to orient OR nurses for deployment to care for, or assist with care for, patients in ICUs and on general inpatient units. A longstanding part of all job descriptions delineates that in emergency situations, the HICS team can deploy staff members into comparable roles during a disaster, but the necessity had never been realized. Many of the OR nurses volunteered for deployment—some requested to assist with COVID-19 testing and others offered to work in the ICUs or join the proning teams. Very few staff members expressed discomfort with their assignments or took leave.

Professional liability was a concern for many of the nurses. The Massachusetts Senate Committee on Ways and Means quickly signed a bill to provide liability protections for health care workers during the COVID-19 pandemic.<sup>8</sup> The bill stipulated that health care professionals and facilities were immune from civil liability for damages incurred while providing services related to the COVID-19 emergency.

Cross-training nurses is not a new concept. However, in Perioperative Services, cross-training generally means orienting to different surgical specialties (eg,

neurosurgery, orthopedics, transplantation). Deploying perioperative nurses to inpatient units during a pandemic forced perioperative nursing leaders to consider the most expedient path for success. We needed to educate an estimated 170 RNs in two weeks while adhering to social distancing rules by limiting the groups to six or fewer members. Identifying the specific RNs for deployment and their individual experiences and learning needs helped ensure that we were preparing these nurses adequately for their new roles.

## Needs Assessment

We discussed a plan to identify the needs of the OR nurses with the nursing directors and identified the following specific training needs:

- charting in the inpatient electronic medical record (EMR) documentation system,
- conducting point-of-care testing,
- administering general care medications,
- using IV medication pumps,
- manipulating and interpreting inpatient physiologic monitors,
- becoming familiar with new environments,
- navigating to unfamiliar areas of the medical campus,
- shadowing on inpatient units, and
- performing other skills as needed.

## Curriculum Development

Based on the needs assessment, we defined and developed an education plan for OR nurses deploying to inpatient units. We coordinated with central nursing education center (CNEC) personnel to offer four eight-hour orientation sessions that included a mix of educational experiences that comprised the curriculum. Attendance and time spent at the orientation varied among the OR nurses based on their level of nursing practice and skill. There were some RNs who had recently transitioned from an inpatient unit to the OR and did not need additional skills practice. Other RNs needed additional information and skills training because they had not worked on a general care unit in several years. We allowed for flexibility and self-assessment in the orientation process. For example, OR nurses who did not have experience with the inpatient EMR documentation system required additional learning time. All RNs, including the perioperative RNs sent to ICUs, underwent a minimum of four hours of orientation before any deployment.

We identified additional personnel who had expertise using the inpatient EMR documentation system and other specific skills (eg, point-of-care testing, IV pumps) as resources to assist in our education efforts. The OR nurses also had the usual resources available to them, such as the electronic medication formulary and nursing policy and procedure manuals. We created a tour script for all nurses who were deploying to the newly created ICUs in the perioperative area to comply with safety and emergency response requirements (Sidebar 1). The OR nurses who were deployed to a general care unit were oriented to their specific unit after their arrival.

We also created packets of materials for each OR nurse for reference and to assist with questions. The packets included maps of the hospital and directions to specific general care units, a scavenger hunt for the RNs to complete during the education sessions, and performance expectations for the deployed OR nurses. To keep the large number of individuals and various activities organized during these sessions, we developed an extensive schedule for the entire four-day orientation so that the groups could rotate through all the skills stations and education activities. This extensive schedule also allowed us to keep a record of attendance for all required activities.

### Sidebar 1. Overview of Items to Review During Orientation to New Intensive Care Units in the Perioperative Area

- Life safety:
  - Emergency equipment (eg, electrocardiogram machine, defibrillator, airway cart, code cart)
  - Fire safety components, including all fire extinguisher locations
- Gowning station for donning personal protective equipment
- Gas shutoff location in postanesthesia care unit
- Patient bathrooms
- Soiled utility rooms
- Clean supply room
- Equipment storage room
- Isolation rooms
- Work area
  - Code buttons
  - Electrocardiogram strip printer
  - Laboratory printer and labeler
  - Whiteboard listing daily staff member assignments
- Staff member bathrooms and kitchen
- Automated medication-dispensing cabinet system
- Travel monitors
- Glucometers
- Patient postanesthesia care unit reservation board
- Pneumatic tube station
- Blanket warmer

## Education and Training

We began with an introduction in a very large room so that the nurses could spread out to comply with social distancing measures. We explained the orientation and education process, asked for questions and feedback, and then allowed some time for discussion. We then gave the nurses several hours to complete individual online learning in different workspaces. All the OR nurses completed an established four-hour online education module specific to inpatient EMR documentation. The nursing educators also taught point-of-care testing and IV medication pump use to the nurses and then allowed time for

hands-on training in small groups to comply with social distancing measures. We handed out the packets of reference materials to each RN and emphasized the principles of life safety, such as knowing where the emergency equipment is kept in each unit and knowing that fire pull stations are located at exits.

During the orientation, CNEC staff members offered to provide additional hands-on sessions, and the OR nurses enthusiastically agreed to take advantage of this offer for additional practice. The CNEC personnel assisted us with teaching and reinforcing the following skills:

- performing a patient assessment (eg, head-to-toe assessment; skin assessment, including hospital-acquired skin breakdown, peripheral IV lines, and complications),
- maintaining safe patient handling using ceiling lifts,
- using physiological monitors,
- performing point-of-care testing, and
- using IV medication pumps.

Each nurse demonstrated competency by successfully completing the online modules and posttests, completing the CNEC competencies, and passing the hands-on demonstration evaluations during the four-day orientation.

Electronic documentation was challenging because OR nurses use a different documentation platform in the EMR system than inpatient nurses. Fortunately, there were documentation specialist nurses with expertise in all aspects of the EMR system who were available to help teach the OR nurses how to document care for patients on inpatient units. These nurse experts took groups of five RNs for a four-hour hands-on session working in the “playground” system of the EMR. Despite this education session, it was difficult for many of the OR nurses to learn an entirely new documentation program in such a short period of time.

## Logistical Concerns

We needed to address several logistical concerns, particularly for the RNs who came to the main campus from other locations (eg, ASCs). These nurses needed security access, access to the medication-dispensing systems, scrubs (during the COVID-19 surge, most RNs wore hospital-provided scrubs), locker assignments, and help with navigation around the hospital and on specific units. We

used a spreadsheet to keep track of individual needs and completion of tasks. This spreadsheet required several iterations until we were able to capture all necessary information. Different systems in the hospital require varying sources of identification for access: the medication-dispensing system requires the user’s log-in information, the point-of-care testing system requires the user’s e-mail address, and security services requires the employee’s identification number for access to inpatient units.

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We worked closely with MGH police and security personnel, pharmacy personnel, and perioperative administration leaders to address these issues. Many of the RNs from off-campus facilities feared getting lost in a facility that is so large. We assisted them by walking the most expeditious routes, pointing out entrances to various units, and identifying important locations.

## Emotional Support

Emotional support for all the nurses was very important. In general, this was a stressful time for everyone. For the OR nurses, the stress was magnified because of their uncertainty with an unfamiliar nursing practice and their new environments and team members. Our perioperative leaders had already designed a robust peer support program and we reminded the group to take advantage of that resource. The purpose of the program is to provide perioperative nurses with tools for emotional and psychological healing and self-efficacy. We frequently reminded staff members that this includes addressing the stressors related to caring for patients with COVID-19. When particularly stressful situations arise, we advise our clinicians to acknowledge the stress, focus on what they can control, and remember that there always is a nonjudgmental resource with whom to talk. We encouraged staff members to take advantage of this resource whether they

## Key Takeaways

- ◆ When the novel coronavirus SARS-CoV-2 began spreading globally, resulting in the coronavirus disease 2019 (COVID-19) pandemic, it became paramount to mitigate the effects of the surge in sick patients overburdening health care systems. The US Surgeon General called for the cancellation of elective surgeries, leaving perioperative personnel available to help on other hospital units.
- ◆ At a large academic medical center in the Northeast, perioperative nurses were deployed to intensive care units and general care units, and perioperative areas (eg, postanesthesia care unit bays) were converted into temporary intensive care units. Perioperative nursing practice specialists were tasked with preparing and educating OR nurses for inpatient care in a short period of time.
- ◆ The nursing practice specialists conducted a brief needs assessment and developed a curriculum that incorporated online modules, hands-on skills sessions, and reference materials for OR nurses being deployed to inpatient units. The nursing practice specialists addressed logistical concerns (eg, security access), provided additional skills training (eg, IV pump use), and taught OR nurses how to document in the inpatient electronic medical record system.
- ◆ Overall, the OR nurses were successful in their new roles on the general care units based on feedback from unit leaders. The nurses expressed their pride in rising to the challenge but also admitted that the process was stressful. Leaders sought to provide emotional support during this difficult time via frequent check-ins with the deployed OR nurses.

remained in our department or were deployed to other units. The nursing practice specialists involved in this initiative and the leaders of the peer support program reached out to the group on a weekly basis and provided emotional support as needed. We also encouraged the nurses to communicate any concerns and questions to the leaders on their new units.

### Nurse Responses

One way that we addressed the emotional well-being of the OR nurses was by periodically sending reassuring e-mails to check in with the group. We responded to each reply individually. Many of the deployed nurses responded to our queries and their comments were honest and varied. One nurse wrote, "Very stressful and anxiety-provoking to learn the documentation and floor nursing in general after more than 30 years off the general floors. I am being treated kindly..." Another responded, "Thanks for checking in! So far so good, everyone is kind and appreciative of the help." One nurse eloquently summed up the experience:

*I understand that we are going through an extremely tough time right now and I am more than willing to serve and help our*

*patients, but this experience has been quite exhausting... I am honored that I am serving my duty as a nurse, but it has been difficult.*

We also received kind words about the efforts of deployed perioperative RNs from inpatient unit leaders:

*We had the pleasure of working with two OR RNs ... They were so helpful and happy to assist the staff in caring for our complex medical patients. The staff were so appreciative of their help. We have several total care patients on any given day of the week and when the floor RN looked for assistance, the patients were already cared for! They were our silver lining in this pandemic!!! I will miss them...*

The deployed OR nurses appreciated comments such as these that help validate the role that perioperative nurses contribute in the all-out effort to care for every patient.

### CONCLUSION

Curriculum development often is a very logical and deliberate process that begins with measurable objectives

and a needs assessment. However, when the situation demands urgency, it is possible to create an effective program quickly. It is vital to define the most pressing learning needs and develop an educational intervention to address those gaps. Leaders should continually ask for feedback and use that information to adjust their education offerings. Finally, identifying resources assists in maximizing the efficiency of the learning process, and allowing time for hands-on learning and skills practice decreases the learner's anxiety.

**Acknowledgments:** *The authors thank Nancy Wyman, RN, critical care nurse, Department of Anesthesia, Critical Care, and Pain Medicine; and Lucy Milton, RN, MSN, CPN, CAPA, Perioperative Services, Massachusetts General Hospital, Boston, for their assistance with this project.*

## REFERENCES

1. Huremović D. Brief history of pandemics (pandemics throughout history). In: *Psychiatry of Pandemics*. Cham, Switzerland: Springer; 2019:7-35.
2. Kain T, Fowler R. Preparing intensive care for the next pandemic influenza. *Crit Care*. 2019;23(1):337. <https://doi.org/10.1186/s13054-019-2616-1>.
3. Contini C, Di Nuzzo M, Barp N, et al. The novel zoonotic COVID-19 pandemic: an expected global health concern. *J Infect Dev Ctries*. 2020;14(3):254-264.
4. World Health Organization. Virtual press conference on COVID-19 – 11 March 2020 [transcript]. <https://www.who.int/docs/default-source/coronaviruse/transcripts/who-audio-emergencies-coronavirus-press-conference-full-and-final-11mar2020.pdf>. Accessed September 28, 2020.
5. Sheikhbardsiri H, Raeisi AR, Nekoei-Moghadam M, Rezaei F. Surge capacity of hospitals in emergencies and disasters with a preparedness approach: a systematic review. *Disaster Med Public Health Prep*. 2017;11(5):612-620.
6. AHA letter to Surgeon General re: elective surgeries and COVID-19. American Hospital Association. <https://www.aha.org/lettercomment/2020-03-15-aha-letter-surgeon-general-re-elective-surgeries-and-covid-19>. Published March 15, 2020. Accessed November 3, 2020.
7. State guidance on elective surgeries. Ambulatory Surgery Center Association. <https://www.ascassociation.org/asca/resourcecenter/latestnewsresourcecenter/covid-19/covid-19-state>. Updated April 20, 2020. Accessed November 3, 2020.
8. An Act to Provide Liability Protections for Health Care Workers and Facilities During the COVID-19 Pandemic, S 2640, 191st GC (Mass 2019–2020). April 16, 2020. <https://malegislature.gov/bills/191/s2640>. Accessed October 15, 2020.

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