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# Preparation and redeployment of house staff during a pandemic

Jessica Spiegelman<sup>a,\*</sup>, Aaron Praiss<sup>a</sup>, Sbaa Syeda<sup>a</sup>, Nancy Fang<sup>a</sup>, Rini Ratan<sup>a</sup>, Anne Davis<sup>a</sup>, and Cynthia Gyamfi-Bannerman<sup>a</sup>

<sup>a</sup>Department of Obstetrics and Gynecology, NewYork-Presbyterian Hospital/Columbia, University Irving Medical Center, New York, NY, USA

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## ABSTRACT

The COVID-19 pandemic created unique issues for house staff physicians. Gaps in surgical experience due to canceled cases, a focus on obstetrics over gynecology during the spring months when many senior residents and fellows are completing their case requirements and the stress of working with patients infected with a highly communicable disease all contributed to an unprecedented challenge facing residency and fellowship programs. Our objective is to describe how the Obstetrics and Gynecology residency and fellowship programs at Columbia University Irving Medical Center adapted to their changing landscape, redeployed their residents and fellows while assuring ongoing trainee education, wellness and scholarship during the peak of the pandemic.

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## Introduction

Severe acute respiratory syndrome coronavirus (SARS-CoV-2) was first reported in China in December 2019.<sup>1</sup> On March 1, 2020, New York City reported its first case of COVID-19, the disease caused by the coronavirus; on March 3, the second reported case in New York became a patient at NewYork-Presbyterian/Columbia University Irving Medical Center (CUIMC).<sup>2</sup> On March 11, the United States government officially declared a state of emergency and as of May 11, 2020, over four million people have tested positive for SARS-CoV-2 with over 250,000 attributable deaths worldwide. New York City quickly emerged as the epicenter of the pandemic in the United States and as of May 11, 2020 has lost nearly 20,000 people due to COVID-19.

NewYork-Presbyterian represents the largest hospital system in New York City and one of the largest in the United States; its combined training programs constitute the largest

training program in the country.<sup>3</sup> Staff at the academic institutions CUIMC and the Morgan Stanley Children's Hospital of New York (MSCH), located in northern Manhattan, perform approximately 4600 deliveries per year; staff at the Allen Hospital (AH), its affiliated community hospital, perform approximately 2300 deliveries per year. The department of Obstetrics and Gynecology at CUIMC/MSCH consists of generalist faculty and subspecialists, a residency program and fellowships in Maternal-Fetal Medicine (MFM), Gynecologic Oncology, Minimally Invasive Gynecologic Surgery (MIGS), Complex Family Planning and Reproductive Endocrinology and Infertility (REI). The residency program consists of 24 residents. The fellowship programs include 20 fellows: nine in MFM, three in Gynecologic Oncology, three in MIGS, two in Complex Family Planning and three in REI.

As the COVID-19 crisis escalated in New York City, the CUIMC Ob/Gyn Department and its training programs quickly adjusted to previously unanticipated changes including: delayed gynecologic surgeries and fertility treatments,

\*Corresponding author.

E-mail address: [jessica.spiegelman@nyulangone.org](mailto:jessica.spiegelman@nyulangone.org) (J. Spiegelman).

increased virtual office visits, emerging COVID-related acuity on Labor and Delivery and the creation of a new unit, the Obstetric Intensive Care Unit (OB-ICU), created to care for critically ill obstetric patients. Department leadership called upon residents and fellows to adjust their schedules to meet new critical needs while abiding by Accreditation Council for Graduate Medical Education (ACGME) and American Board of Obstetrics and Gynecology (ABOG) guidelines.

We aim to describe the changes in the residency and fellowship programs in response to the pandemic and the integration of education, wellness and basic requirements into the interim program structures.

## Residency program

There are 24 Ob/Gyn residents at CUIMC, six per year. Under usual circumstances, the resident schedule consists of four- to five-week- blocks, with 12 blocks in an academic year. Each resident rotates through core rotations including Labor and Delivery days and nights, benign gynecology, gynecologic oncology and MFM. Residents also rotate through REI, family planning, pediatric and adolescent gynecology, urogynecology and MIGS. At any given time, one senior resident is on elective and one to two residents are on vacation, which consist of four separate one-week breaks. On normal weekends, there is a four-person resident team, one resident of each post-graduate year (PGY) level, covering Labor and Delivery and the gynecology/gynecologic oncology services as well as consults and emergent gynecologic surgeries.

### *Restructuring: pandemic emergency status*

In March of 2020, as the volume of critically ill COVID-19 patients rose throughout New York City, several developments prompted a change in structure for the residency program. First, by March 22, 2020, with hospital leadership planning for ICU overflow by converting the majority of operating rooms into small ICUs and with the personal protective equipment shortage mounting, all non-urgent surgical cases at CUIMC were postponed indefinitely. Included in the roster of postponed surgeries were scheduled gynecologic and gynecologic oncology cases. Urgent surgical cases, such as surgical management of ectopic pregnancies, ovarian torsion, miscarriage and medically complex patients requiring dilation and evacuation, continued.<sup>4</sup> At the trainee level, this meant dwindling responsibilities for the residents assigned to these surgical services. Second, departmental plans for anticipated increased acuity on Labor and Delivery based on data from similar respiratory illnesses in pregnancy called for more providers on the unit.<sup>5</sup> Finally, it was recognized that the risk of any individual healthcare worker to develop COVID-19 increased with more frequent exposure to the virus through contact with infected patients.<sup>6</sup>

The ACGME defined three stages to serve as a framework from which graduate medical education can effectively operate during a pandemic:

1. Stage one: business as usual;
2. Stage two: increased but manageable clinical demand; and

3. Stage three (Pandemic Emergency Status): situations crossing a threshold beyond which the increase in volume and/or severity of illness creates an extraordinary circumstance where routine care education and delivery must be reconfigured to focus only on patient care.<sup>7</sup>

Within stage three, the sponsoring institution must ensure adequate resources and training, adequate supervision, work hour requirements and the unique ability of residents and fellows to function in their core specialty. Most notably though, in stage three, “all other Common Program Requirements and specialty-specific Program Requirements are suspended during the time of the declaration.”<sup>7</sup> In response to the COVID-19 crisis, on March 25, 2020, the Designated Institutional Official of the NewYork-Presbyterian Hospital system declared Pandemic Emergency Status to the ACGME.

Within the framework of Pandemic Emergency Status, residency programs across the institution restructured. The rapid influx of critically ill patients throughout April 2020 created a need for resident physician staffing in newly opened ICUs and designated COVID-19 units.<sup>8</sup> Many surgical sub-specialties outside of Ob/Gyn deployed residents to the medicine and critical care services to help meet these growing needs. Unlike in other surgical specialties, postponement of pregnancy-related services is not possible; therefore, internal redeployment to ensure adequate staffing of the obstetric services was the first priority for the Ob/Gyn residency.

From the end of March to early April, the number of SARS-CoV-2 positive pregnant patients admitted to the MSCH Labor and Delivery Unit increased.<sup>9</sup> Among asymptomatic patients admitted for delivery, 13.5% tested positive for SARS-CoV-2, contributing further stress to an already high acuity clinical space.<sup>10</sup> In early April, further increases in the number of non-obstetric COVID-19 cases at AH resulted first in the closure of its postpartum unit for use as a medical floor followed by temporary closure of Labor and Delivery. Subsequently, the AH obstetric units were consolidated with those of MSCH, resulting in a concentration in obstetrical volume. Physical and mental fatigue among providers working on the obstetric service was increasing; resident experience further diverged between those assigned to the increasingly light gynecologic services and those overwhelmed on the obstetrical services.

Accordingly, in early April, the residency program director and administrative chief residents reevaluated the resident schedule and implemented a modified interim schedule.<sup>11</sup> Vacations and elective rotations were suspended and all non-core rotations deferred. The existing rotation schedule was converted to a team-based “pod” schedule, which was implemented on April 4, 2020. Each of four pods, with six residents per pod, rotated through four different clinical settings for three days at a time: Labor and Delivery days, Labor and Delivery nights, clinic and remote work and time off (Fig. 1). The pod schedule, with its more frequent turnover of clinical duties, allowed each resident to limit individual exposure to COVID-19 and ensured equity in clinical responsibilities within each class (Fig. 2).

The new schedule maintained a full complement of residents on the obstetric services, assigned a smaller team to the inpatient gynecologic and gynecologic oncology services and created a new “remote team” of residents. The remote

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					4/2	4/3	4/4
DAYS	Pathway: Days > Remote > Nights > Off						TEAM A
REMOTE							TEAM D
OFF							TEAM C
NIGHTS							TEAM B
	4/5	4/6	4/7	4/8	4/9	4/10	4/11
DAYS	TEAM A			TEAM C			TEAM B
REMOTE	TEAM D			TEAM A			TEAM C
OFF	TEAM C			TEAM B			TEAM D
NIGHTS	TEAM B			TEAM D			TEAM A
	4/12	4/13	4/14	4/15	4/16	4/17	4/18
DAYS	TEAM B		TEAM D			TEAM A	
REMOTE	TEAM C		TEAM B			TEAM D	
OFF	TEAM D		TEAM A			TEAM C	
NIGHTS	TEAM A		TEAM C			TEAM B	
	4/19	4/20	4/21	4/22	4/23	4/24	4/25
DAYS		TEAM C			TEAM B		TEAM D
REMOTE		TEAM A			TEAM C		TEAM B
OFF		TEAM B			TEAM D		TEAM A
NIGHTS		TEAM D			TEAM A		TEAM C
	4/26	4/27					
DAYS		TEAM D					
REMOTE		TEAM B					
OFF		TEAM A					
NIGHTS		TEAM C					

**Fig. 1 – Resident pod schedule for the month of April 2020.**

team protected resident health amid the pandemic by allowing clinic preparation, patient follow-up via telehealth and virtual education to occur off-site without direct patient contact. Moreover, the remote team provided a complementary healthy cohort of residents able to substitute for residents who became ill or needed to quarantine. As of May 11, 2020, two of the 24 Ob/Gyn residents experienced presumed COVID infections; they were not tested due to testing guidelines at the time they were symptomatic. Both of these residents quarantined for seven days, experienced mild illness and did not require hospitalization. Two additional residents quarantined briefly with mild symptoms; both of these residents were tested and negative. The pod system allowed for flexibility in covering these residents while upholding ACGME work hour restrictions and complying with the institution's ACGME Pandemic Emergency Status.<sup>12</sup> With each resident belonging to a smaller team within the larger residency program, the pod system also fostered cohesion and solidarity within pods, giving the residents an additional

source of support as they worked through this unprecedented and stressful situation.

#### Wellness and education

Throughout the peak of the pandemic, with its exhausting patient care, emergency schedule changes and personal stress derived from living and working at the epicenter of the pandemic, resident wellness and education remained a priority. Previously, the residents would meet bimonthly with a psychiatrist at CUIMC for group reflection and discussion. These sessions increased to biweekly and over video in order to keep open lines of communication and provide a safe space for residents to share their stories, emotions and reflections. These group video sessions have allowed the residents to continue wellness sessions and openly discuss the hardships faced in the pandemic. Residents also designated time for video meetups with faculty mentors and with each other to help meet their emotional needs while social distancing

	DAYS	REMOTE (1/3 days is off)	NIGHTS	OFF
R4	L&D Day Chief	COVID telehealth	L&D Night Chief	OFF
R3/R4	Antepartum/OB-ICU	High-risk clinic/COVID telehealth	Antepartum/OB-ICU	
R3	ED Consults/Gyn OR	Low risk clinic/Continuity clinic prep work	Labor Management	
R3/R2	C/S, Triage	High-risk clinic/Continuity clinic prep work	ED Consults/Gyn OR	
R2/R1	GYN/GYN ONC (M-F)   Triage/Inductions (Sa-Sun)	Low risk clinic/Continuity clinic prep work	Triage/Inductions	
R1	Labor Management	Low risk clinic/Continuity clinic prep work	Triage/Inductions	

**Fig. 2 – Responsibilities of each resident within a pod.**

from their friends and family. Resident education continued in the form of remote lectures during the residents' designated weekly didactic time, both institution-specific and nationally available through the Council on Resident Education in Obstetrics and Gynecology (CREOG).<sup>13</sup> Grand rounds continued as another form of organized education. Finally, education through academic and scholarly activities increased as residents participated in, and often took the lead on, the swell of research initiatives that arose from the pandemic. Third-year residents continued their scholarly research projects, with a plan for Resident Research Day in June to proceed on-schedule, incorporating a mix of virtual- and socially distanced in-person attendance.

### **Case minimums, research and fellowship applications**

The COVID-19 pandemic occurred just as residents scheduled to graduate in 2020 were working toward completing their case requirements and as those applying to fellowship were submitting their applications. The ACGME recognized that canceled surgeries and resident redeployment could affect senior residents' ability to meet case minimums; therefore, the ACGME specified that the residency program director and the program's Clinical Competence Committee must assess whether graduating residents are prepared to practice unsupervised.<sup>14</sup> Some subspecialties delayed fellowship application deadlines; most fellowships have also announced a switch to virtual interviews over the summer months. The Ob/Gyn department has monitored these changes and helped those residents applying to fellowship stay informed. Program leadership is planning for mock video interview sessions and will provide a comfortable space for residents to conduct virtual interviews.

## **Fellowship programs**

Fellowship programs in the CUIMC Department of Obstetrics and Gynecology also restructured in response to the coronavirus pandemic. For the MFM fellowship, increased obstetrics volume and acuity demanded an increased presence of these fellows on clinical services and related staffing reorganization.<sup>9</sup> For the gynecologic subspecialty fellowships, a surgery hiatus left a surplus of fellows with diminished clinical responsibilities. Given the duration of these fellowships, two years for Complex Family Planning and three years for Gynecologic Oncology, MIGS and REI, delaying non-urgent surgeries also created a possible training gap.

### **Reassignment of responsibilities**

With cases postponed and related inpatient services shrinking, the department redeployed gynecologic fellows to assist with clinical care on Labor and Delivery, in compliance with ACGME guidance on fellows functioning in their core specialty.<sup>15</sup> Fellows from Complex Family Planning, Gynecologic Oncology, MIGS and REI were assigned an average of two 12 hour shifts per fellow, one day shift and one back-up night shift. The primary roles for the fellows included postpartum care, backup for the MFM specialists and generalists on Labor

and Delivery and performing cesarean deliveries in an overflow operating room created to absorb increased delivery volume after the AH merger. For the gynecologic fellows, this represented a rapid return to obstetrics not practiced since residency. To aid in this transition, fellows' duties did not include managing labor or interpreting fetal heart tracings. By entering the pool of surgeons and postoperative care providers, fellows continued using many of the usual skills developed in their fellowships.

Though the gynecologic services shrank during the peak of the pandemic and the gynecologic subspecialty fellows began to work in obstetrics, essential gynecologic care required staffing. Abortion services continued as essential, time-sensitive procedures; Complex Family Planning fellows continued to provide this care.<sup>16</sup> Pre- and post-operative visits for abortion care continued via telehealth. Postponed contraception encounters led to a major reduction in face-to-face office visits in Family Planning. In REI, patient volume decreased substantially as the majority of fertility services were suspended. As of April 17, 2020, fertility cycles for patients with diminished ovarian reserve, cancer or other time-sensitive conditions resumed. Consults for new fertility patients and follow-up visits also recommenced via telehealth. There were case-by-case allowances for continuation of gynecologic oncology services if delay would lead to loss of life, and the Gynecologic Oncology fellows remained available for these cases and for the residual inpatient service. MIGS fellows participated in gynecologic emergencies and cases that were unable to wait for the pandemic to pass as well as telehealth consults. With fewer residents allocated to rotations on these services, fellow involvement became more important than ever. Overall, fellows maintained some clinical time within their chosen subspecialty during their obstetric redeployment.

The MFM fellows, already a constant presence on Labor and Delivery, needed to restructure their roles in other ways. In this fellowship program, the bulk of the clinical responsibilities of inpatient Labor and Delivery and antepartum, high-risk clinic and ultrasound usually fall on the first-year fellows, while the second- and third-year fellows divide the remainder of the clinical work and overnight Labor and Delivery call. As the COVID-19 crisis escalated in New York City and the physical and mental toll on healthcare workers increased, the first-year fellows were no longer able to shoulder the bulk of the clinical responsibilities alone. The opening of the OB-ICU added an additional layer of responsibility for the MFM fellows, as they primarily staffed this unit during the day. Thus, the fellowship director and administrative fellows developed an alternate schedule that divided the clinical responsibilities between all three classes with the added role of the OB-ICU fellow and a fellow to help staff the COVID-19 obstetric telehealth clinic.<sup>17</sup> The new schedule also included a layer of backup, should any of the MFM fellows fall ill or need to quarantine. As of the time of writing, no MFM fellows have displayed symptoms of COVID-19. The interim schedule commenced on March 23, 2020 and continued through May 11, 2020. By May 4, the volume of the OB-ICU had decreased enough to allow its assigned fellow to provide coverage in a backup capacity. The implemented schedule changes meant that senior fellows were repeating rotations they had completed in their first year and that first-year fellows were not



securing the same clinical experience in their first year as their predecessors. At the end of the seven-week interim schedule period, the remainder of the academic year was reevaluated to ensure that the first-year fellows completed the year with minimal disruption in order to meet program milestones.

### **Duty hours, case minimums, research and thesis**

For the ACGME-accredited fellowships with ABOG certification—MFM, REI and Gynecologic Oncology—upholding those bodies' requirements were important considerations. These included duty hour restrictions and maintenance of core competencies. New schedules were compliant with the 80 h workweek and other duty hour restrictions as outlined by ACGME.<sup>18</sup> For the ACGME-accredited fellowships, ACGME has not revised case minimum requirements for graduation in light of the possible gap in surgical training caused by the pandemic. However, under leniencies adopted by ACGME for MFM, REI and Gynecologic Oncology and by the American Association of Gynecologic Laparoscopists (AAGL) for MIGS, unmet case minimums due to COVID-19 may not necessarily impede fellows from graduating. Each program will consider its fellows' cases at the end of their training and determine whether its fellow is competent to practice their subspecialty unsupervised.<sup>19</sup>

ABOG mandates completion and defense of a thesis for MFM, REI and Gynecologic Oncology fellows.<sup>20</sup> MIGS and Complex Family Planning fellows have research requirements for graduation as well, through their fellowship societies. On March 6, 2020, the CUIMC institutional review board (IRB) issued a temporary halt on non-COVID-related research unless granted a special exception. The IRB granted exceptions to studies that required in-person contact but conferred a direct benefit to participants or to studies that were able to continue via telephone contact with subjects or remote data collection, including retrospective analyses. With many fellows actively conducting clinical research planned to serve as their fellowship thesis projects, completion of a thesis or research project was of concern, particularly for fellows graduating in 2020 and 2021. For those fellows in ABOG-certified fellowships affected by the IRB halt, ABOG allowed for relaxation of some thesis requirements so that more research projects could qualify as a thesis.<sup>21</sup> Thesis defense is therefore proceeding as scheduled, with social distancing measures employed. For the MIGS fellows, the AAGL has granted a three-month extension of the fellowship's research requirement.<sup>22</sup> Complex Family Planning fellowships plan flexibility for research requirements impacted by COVID on a case-by-case basis.

### **Wellness and education**

Fellow wellness became a critical concern under these most stressful circumstances. Fellows increased communication with their program directors and hospital and departmental leadership ensured the availability of mental health resources. Video sessions with mental health professionals were available, both individually and in groups, to those who needed it. Though in-person wellness events, including a

Fellows' Retreat, could not take place in April of 2020 as in past years, plans for rescheduling this and other events designed to promote fellow well-being continue.

With fellows either busier than before the pandemic or deployed out of their primary division, maintenance of education was another concern during the COVID-19 crisis. Normally, educational requirements include structured activities beyond patient care and can include conferences, case discussions and lectures. For the various fellowships at CUIMC, these activities included multidisciplinary conferences led by fellows, weekly grand rounds and lectures.<sup>19</sup> In response to the pandemic, the ACGME developed a process under its already-existent Extraordinary Circumstances Policy to allow accommodations for trainees affected by the pandemic.<sup>23</sup> This allowed for a suspension of didactic activities while the program was in Pandemic Emergency Status. However, most individual fellowship guidelines still called for maintenance of education during the pandemic, though at the discretion of the individual program and program director.<sup>24</sup>

Throughout the pandemic, grand rounds continued virtually as a source of education. Formal didactics continued for some fellows, also via video, depending on their clinical responsibilities. Fellowship directors encouraged participation in streamed lectures from subspecialty societies, such as the Society for Maternal Fetal Medicine's COVID Online Learning Curriculum, the Society for Gynecologic Oncology's Educational and Core Lecture Series and the American Society for Reproductive Medicine's AirLearning Courses.<sup>25–27</sup> Family Planning fellows joined pandemic-related virtual lectures from The National Abortion Federation and The World Health Organization as a way to maintain education during fellows' non-clinical time. Academic productivity among fellows continued and even increased as they led research initiatives and writing projects dedicated to documenting their findings and experiences with obstetric and gynecologic COVID-19 patients.

### **Graduation and beyond**

For the residency and fellowship classes of 2020, graduation will take place as scheduled, though it may look unlike any graduations of the past. Residency and fellowship program leadership is still evaluating how best to celebrate the class of 2020 while remaining socially responsible and complying with public health guidelines. So too, the annual academic assembly, where graduating fellows and rising chief residents present their research projects, is slated to occur on its originally planned date. Whether these events will happen virtually, in-person or via some combination of the two is yet to be determined.

As of the time of writing, the ABOG specialty qualifying exam and subspecialty qualifying exams for MFM, REI and Gynecologic Oncology are proceeding but are postponed by just under three weeks. These exams are subject to the policies of the testing centers and may ultimately need to be reimaged or delayed further.<sup>28</sup>

Regardless of exam dates and graduation ceremonies, the residents and fellows who trained during the COVID-19 pandemic experienced a unique time in the history of medicine and learned invaluable lessons. Trainees demonstrated

immense personal flexibility and professional dedication by upending their schedules and reporting for duty wherever they were needed. Program and departmental leadership found new levels of creativity as they strove to utilize the residents and fellows for patient care while protecting their physical and mental health and continuing education in their chosen fields. Should residency and fellowship programs need to adapt to a prolonged disaster in the future, they will no doubt look to the response to COVID-19 as a roadmap for restructuring while maintaining wellness, education, scholarship and upholding training milestones.

## Declaration of Competing Interest

None.

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