

SPECIAL COMMUNICATION

Clinical Redeployment of an Academic Family Medicine Department in an Early, Severe COVID-19 Pandemic in the Bronx, NY

Anna Flattau, MD, MSc, MS, Jessica Cristallo, MD, Mary Duggan, MD, Maria Gbur, MD, Marie-Louise Fabienne Daguilh, MD, and Peter Selwyn, MD

Introduction: A severe surge of the COVID-19 pandemic in spring 2020 infected 33% of the population and caused more than 7000 deaths in the Bronx, NY. The Department of Family and Social Medicine at Montefiore Medical Center rapidly and strategically reconfigured clinical services to meet the needs of patients, communities, and the health system.

Clinical Reconfiguration: Family medicine hospitalist services tripled in size within 2 weeks to cover 71 beds and cared for 447 patients between March 24 and June 10, 2020, of whom 279 (62.4%) had COVID-19. Community health centers reorganized to maintain primary care services, shifting abruptly to telemedicine while maintaining 95% of the previous year's visit volume, and address intensified patient needs related to viral infection and mental health impacts. Core principles for redeployment included role flexibility, communication, responsiveness, and safety and wellness.

Discussion: During a pandemic surge, academic family medicine departments have an important role in expanding hospitalist services and redesigning primary care services. The ability to reconfigure work to meet unprecedented demands on health care was facilitated by family medicine's broad scope of practice including training in hospital medicine, interpersonal communication, behavioral health, care across settings, collaborative partnerships with specialists, and adaptability to communities' needs. (J Am Board Fam Med 2021;34:466–473.)

Keywords: Community Health Centers, COVID-19, Emergency Preparedness, Family Medicine, Hospital Medicine, Hospitalists, New York, Pandemics, Primary Health Care, Telemedicine

Introduction: An Unprecedented Public Health Emergency

Family physicians are at the forefront of the COVID pandemic across the globe.^{1–4} In this article, we describe how an academic family medicine department in the United States, in the Bronx, NY, reconfigured to provide crucially needed medical care during a pandemic surge that rapidly swept through a third of the community

population. Our experience may help to inform other academic departments and family medicine groups as they envision, plan for, and implement restructured care in similar emergency scenarios within their communities.

Clinical Reconfiguration of an Academic Family Medicine Department

In March 2020, the first severe surge of COVID-19 in the United States arrived in the Bronx,⁵ a diverse, predominantly low-income borough of New York City. Within several months, more than 7000 people had died, and antibody testing indicated that 32.8% of Bronx residents had contracted COVID.⁶ The Bronx has 1.4 million residents, of whom 28% live below the poverty threshold; 71% of residents receive Medicaid benefits⁷ and 10% are uninsured⁸; 30% identify as non-Hispanic Black and 56% as Hispanic or Latino.⁹

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From the Department of Family and Social Medicine, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY (AF, JC, MD, MG, M-LFD, PS).

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Corresponding author: Anna Flattau, MD, MSc, MS, Department of Family & Social Medicine, Montefiore Medical Center, 3544 Jerome Avenue, Bronx, NY 10467 (E-mail: aflattau@montefiore.org).

Montefiore Medical Center is an academic medical center with 3 hospital campuses in the Bronx. At the peak of the surge in mid-April, the medical center had 1148 people simultaneously hospitalized with COVID. This volume of need required a dramatic expansion of hospitalist, intensive care, and emergency services. The Department of Family and Social Medicine fundamentally altered all roles, including 50 primary care and hospitalist faculty members and fellows and 30 family medicine residents, to maximally contribute to this effort.

Leadership and Coordination

Departmental leadership communicated multiple times per day via cell phone at all times for individual or group consultation. Rapidly evolving redeployment was managed in close collaboration between the hospital medicine director, residency program director, vice-chair for clinical services, and primary care medical directors. Coordination across care settings was important because of the high frequency with which physicians were redeployed from primary care and other activities to hospital expansion, sick leave, and sick call. The department worked with the health system's central administrative offices to communicate changes such as shifts from part-time to full-time status, per diem approvals, and emergency credentialing for voluntary providers. The timing of hospital team deployment was closely coordinated with inpatient medical leadership.

Clinical guidelines were frequently updated, as at the time of this surge little was known about COVID-19 management, and recommendations changed quickly. Guidance from a variety of clinical subspecialists was disseminated via e-mail across the medical center and was redistributed in our internal communications to faculty, staff, and trainees with training to reinforce new knowledge for hospital teams.

Transformation of Roles

Providers were called on to be extraordinarily flexible in their roles. Attendings and residents at high risk of complications from COVID worked via telehealth only. All other physicians assumed roles on hospitalist teams; in primary care, including in-person care for prenatal care, young children, and reproductive health; and/or on labor and delivery. Physicians assigned to primary care also were on call to replace hospital providers who fell ill.

Several providers covered Emergency Department shifts as time allowed.

Early in the surge we established an approach for oversight of family medicine faculty redeployment. This included (1) identifying early which providers had medical or age-related contraindications to face-to-face patient care and assigning them to telehealth roles; (2) growing our clinical bandwidth by asking part-time providers to temporarily work full-time; suspending nonessential administrative, teaching, and research roles held by clinicians and reassigning this time to clinical work; and reaching out to alumni and affiliated family medicine groups to solicit additional personnel that could be reassigned or work per diem; (3) specifying which in-person services would remain open in the primary care setting and ensuring that remaining on-site providers included those with needed special skills (such as reproductive health procedures and advanced prenatal care training); (4) identifying attending providers and fellows whose roles made inpatient reassignment difficult (those with labor and delivery responsibilities); (5) determining the level of hospital medicine skills for attending providers, including their ability to cross-cover resident roles (recent graduates) and their need for pairing with stronger mentors or more senior residents on their team (providers without recent hospital experience); (6) assigning providers to hospital teams to launch serially as demand intensified, including attending providers and fellows working in primary care or labor and delivery who formed a sick call pool; and (7) setting up time for attendings and fellows to shadow on the inpatient COVID units before redeployment, to gain skills and confidence. Recognizing that knowledge and experience in the COVID units made for stronger teams, we preferentially pulled in 3 experienced sick call attendings instead of rotating through the entire sick call pool. At the same time, we maintained a larger pool, recognizing that we needed to be prepared for frequent sickness and/or need for emotional relief. A spreadsheet was used to track where each attending provider was deployed and to track which providers in the primary care environment were on tier 1 and tier 2 of sick call for the hospital teams.

Montefiore declared Level 3 Pandemic Status with the Accreditation Committee for Graduate Medical Education on March 25, 2020. Educational requirements were suspended except those related to supervision, duty hours, and personal protective

equipment (PPE). Resident rotations and noninpatient didactics were suspended for 2 months and resumed in mid-May. All residents and fellows across the medical center were redeployed to hospital settings, excepting only those with medical accommodations. Our department kept all family medicine residents within teams led by our family medicine faculty. Residents rotated through roles including weekday day shifts, weekday night shifts, weekend day shifts, or weekend night shifts, usually in 2-week blocks. All roles required 60 hours or less of scheduled work per week. At least 3 residents were available to cover sick calls at any time. Attempts were made to preserve resident learning whenever possible, with lectures from faculty in family medicine and other specialties provided via video conference. Third-year residents had telehealth primary care sessions while on sick call, to continue engagement in primary care and allow coordination of patient handoffs before graduation. Because chief residents were busy with clinical demands, a project manager who usually works in primary care transformation was redeployed to cover administrative chief resident duties.

Despite the clinical demands on our service, we maintained standard time off for all clinicians and maintained our usual hospital attending schedule of 7 days on service followed by 7 days off. All residents were given 2 days off each week with neither clinical nor sick call duties. Vacations were honored unless the provider requested a postponement. We felt this to be critical for the well-being, performance, and sustainability of our clinical teams.

Communication

Clear communication was essential given the speed and degree of change and the importance of transparency to reduce providers' anxiety.¹⁰ To the extent possible, we reached out to providers individually or in small groups to discuss their redeployment and address individual concerns. Primary care doctors who were on sick call for the hospital teams were kept abreast of whether they were next to be called if needed or were on a secondary coverage tier. Weekly provider meetings allowed hospitalists and outpatient providers to share best practices and guidelines and to connect for mutual support. We used multiple modalities to communicate within our department, including texts, e-mails, and phone calls. WhatsApp was used for real-time administrative communications such as

important changes to clinical protocols or alerts to updated schedules. Schedules were kept in a Google drive. At times we chose to send the same message using multiple modes of communication to ensure the information was seen and retained.

Daily e-mails were sent to all departmental faculty and staff with current surge numbers, important announcements, and summaries of new protocols and guidelines. These e-mails included photographs that allowed members of the department to see each other despite being abruptly scattered across different settings and socially distanced. Primary care providers who were caring for patients of redeployed colleagues submitted quotes of gratitude and well wishes from patients, which were included in the daily e-mail. Like all forms of communication, daily e-mails served not only as information exchange but also as ongoing connection between colleagues. The e-mail was sent consistently every evening regardless of how much or how little new information it contained.

We invited all members of the department to communicate with departmental, hospital, and clinic leadership via cellphone or e-mail so that issues could be addressed in real time and escalated as needed. Recognizing that medicine can be hierarchical, and some individuals may be hesitant to reach out, frequent phone or text check-ins were also done to ensure attendings, fellows, residents, and administrative staff alike felt supported and had the ability to raise issues and share observations.

Hospitalist Service Reconfiguration

Within 2 weeks, the family medicine hospitalist service tripled its number of teams, from 2 to 6 teams, covering 71 beds. In usual times family medicine teams preferentially admit patients from our own primary care practices, but we suspended this protocol during the surge. Overall, 21 attending family physicians, 29 residents, and 6 chief residents/fellows covered the teams in rotation. This group included physicians who stepped in when colleagues were out sick with COVID or COVID-like symptoms. In our department and across the medical center, the need for the team role traditionally filled by residents was a rate-limiting factor in launching new teams. Many attendings and fellows stepped into what are traditionally resident roles and tasks to make the new teams possible.

New teams launched into hospital units that had been emptied of non-COVID patients to become COVID-19 wards. At the time of a team's launch, approximately 12 acutely ill COVID-19 patients were transported to the empty floor in rapid succession. Extra physicians were deployed to the new team on these days to ensure efficient and safe admissions and reduce provider stress. Throughout the surge, a senior resident "floater" was scheduled to support any team under stress due to critical patients, multiple admissions, and/or sick or fatigued team members.

Family medicine hospitalist teams cared for 447 patients, of whom 279 (62.4%) had COVID-19, between March 24 and June 10, 2020. COVID-19 patients had high acuity: 87 (31.2%) were evaluated by critical care/pulmonology and 34 (12%) spent time in the intensive care unit. Oxygen was required for 239 patients (86%); 86 (31%) were on mechanical ventilation, 17 (22%) received noninvasive positive pressure ventilation, and 38 (14%) had high-flow nasal cannula.

COVID-19 was a novel disease with treatment protocols that evolved from day to day. Faculty provided both attendings and residents with didactic and bedside training, materials, and coaching in COVID-19 management. Topics included respiratory failure, acute respiratory distress syndrome, and mechanical ventilation; sepsis; coagulopathy; arrhythmias and cardiac complications; renal failure; management of diabetes during acute illness and of hypo- and hypernatremia; end-of-life care and symptom management; and communication with patients and families about goals of care, death, and dying.

Teams drew on the intellectual resources of our own faculty and specialist colleagues. For example, a faculty member who had worked in epidemics overseas, including an ebola outbreak, developed workflows to support appropriate use and storage of PPE. Innovations included use of baby monitors to observe patients and incorporation of some nursing tasks into physician rounds, both of which conserved PPE. Residents had multiple levels of round-the-clock support.

Many patients required end-of-life care: 84 (30%) had do-not-resuscitate/do-not-intubate orders, and 49 (18%) received palliative care consultation. Seventy-eight patients with COVID-19 (28%) died. The strength of family medicine training in interpersonal communication skills and in family systems was

crucial in a time when families were not allowed to visit critically ill patients. Providers gave ongoing updates to families on the status and care plans of loved ones, set up virtual family visits, and communicated with families on patients' deaths.

Primary Care Outpatient Reconfiguration

The department's 2 Federally Qualified Health Centers (FQHCs) together care for approximately 24,000 patients. Early in the surge, both sites experienced COVID-19 staff outbreaks that necessitated emergent clinic closures and sudden shifts to telehealth. All 36 physicians and staff members at our FQHCs who contracted COVID-19 recovered.

Redeployment of attendings, residents, nurses, and staff created shortages and sometimes unpredictable variability in primary care staffing. Furthermore, colleagues were absent due to illness, sometimes for weeks. This loss of providers in primary care was counterbalanced by reassigning faculty time for education, research, and administration to clinical work and by increasing 4 part-time providers to full-time. Hospital physicians who were at home with mild COVID-like symptoms conducted telehealth visits while in isolation. Behavioral health faculty intensified their clinical commitments to support patients' mental health needs. Remote-only roles included highly experienced physicians with age-related or medical contraindications to in-person care, and these colleagues were crucial to our ability to respond to community needs. Providers who remained in primary care each covered messages and requests from the patient panels of 3 to 4 other physicians, including residents and attendings.

Demand for primary care services remained high. COVID-19 affected many patients with viral symptoms ranging from mild to severe. Patients continued to require chronic disease management, acute care, prenatal care, reproductive health visits, newborn visits, and early childhood visits and vaccines. In-person visits were limited to prenatal patients, young children requiring vaccines, and reproductive health procedures. Essential workers make up 39% and 28% of the working population in our community health centers' neighborhoods, respectively.¹¹ There was therefore a large influx of patient requests for documentation for medical accommodations and/or documentation and guidance related to absences for COVID exposure or illness. People afraid of contracting COVID-19 in

the emergency department or reluctant to seek care in very busy emergency settings contacted primary care practices instead. Ill patients who warranted in-person evaluation frequently declined to present for emergency care despite providers' recommendations, because of their fear of COVID-19 exposure. These patients required multiple frequent follow-up contacts by providers endeavoring to keep them safe. Overall, visit volume in March to June 2020 was sustained at 95% of the visit volume for those months of the previous year (17,090 vs 17,972 visits). However, this encompassed an abrupt reduction in in-person visits in the third week of March accompanied by rapid implementation of telehealth. Whereas telehealth had never been previously offered in our system, from April to June 86% of visits were via telehealth, at first by telephone then with introduction of video visits as well.

The top 20 most common diagnostic codes during the surge's peak in April 2020, compared with the top 20 diagnoses in April 2019, included 4 newly frequent diagnoses related to viral illness (COVID-19, cough, contact with viral disease, and viral infection) and 3 related to anxiety disorders or counseling. Diagnostic codes for chronic disease (such as hypertension, diabetes, asthma, chronic kidney disease, nicotine dependence, hyperlipidemia) remained in the top 20 most common diagnoses, as did preventive codes for childhood examinations and immunizations. In contrast, codes for adult preventive care, such as well adult visits and behavioral health screening, as well as codes for chronic pain, obesity, and low back pain, dropped off the group of top 20 codes during this time period.

Although only 790 of our primary care patients were documented as COVID-19 positive with a positive test or diagnostic code as of June 10, 2020, this number is clearly an underestimate. Widespread testing shortages meant many patients were never tested, outside testing records were unavailable, and assignment of diagnostic codes for presumed but unconfirmed COVID cases was variable. During the surge, 285 of our primary care patients were admitted to our medical center, including 144 (50.1%) hospitalized for COVID-19. These data do not include hospitalizations at other health care facilities. Our family medicine hospitalists cared for 37 of these patients, including 22 with COVID. At least 68 primary care patients died during the surge. Those who died at

home or at other medical facilities may not be identified in our data.

COVID-19 broadly affected our patient communities through loss of family members, friends, and acquaintances. Deep repercussions on the financial, social, psychological, educational, and physical well-being of patients were evident during the surge and will persist into its aftermath.

Physical and Psychological Safety

The response to the COVID-19 surge came at personal cost to all.¹²⁻¹⁴ Physicians and their family members contracted COVID-19. Normal environments and relationships, both personal and professional, were disrupted. Physicians experienced distress and sadness for the magnitude of loss that was witnessed and experienced and for the persistent racial and economic disparities highlighted by the pandemic.

Physical and psychological safety for clinicians were both deeply important. We benefited from extraordinary efforts by our medical center to procure and provide PPE and strong leadership on infection control.¹³ We placed high value on keeping our faculty and residents together as family medicine teams, as opposed to being dispersed through the medical center as part of a centralized redeployment process, as a way of maintaining camaraderie, morale, and mutual support among known colleagues. Physician schedules included standard time off and planned sick coverage. Peer support services were offered by our department's psychology faculty and by the department of psychiatry. Our various communication channels kept our department's members connected and recognized their achievements.

Material as well as emotional support for providers was paramount. Generous donations supported meal delivery twice daily to hospitalist teams and provided transportation assistance, extra scrubs, fresh produce, and other essentials. Meals ensured that providers were nourished in a context in which time constraints and safety concerns limited access to food stores, and they created a social context for mutual support within and across care teams. A residency education coordinator was redeployed from her usual role to organize fundraising and material support for the hospital teams.

In the hospital, teams came together to debrief after difficult patient experiences such as codes or

Table 1. Principles of Redeployment

	Goals	Strategies
Role flexibility	<ul style="list-style-type: none"> • Balance necessity of redeployment with respect for individuals' personal and family situations • Recognize and adapt to shifts in community's health care needs • Identify and use existing expertise within the department • Quickly create structures to uptrain and support individuals in new or different roles 	<ul style="list-style-type: none"> • Identify providers who need medical accommodations • Understand the universe of clinical needs that need to be covered by the team • Acknowledge unavoidable losses including disruption of residency program, with commitment to support overall learning plans • Use consistent systems to determine how roles are distributed across department • Reassign time from suspended activities (administration, education, research) to clinical support • Plan for several layers of sick coverage • Frequent leadership huddles with medical directors and residency leadership • WhatsApp thread for rapid administrative communications eg, sick call coverage • Daily departmental e-mails that incorporate team photos, shout-outs, and quotes with well wishes from primary care patients • Weekly provider meetings for hospitalists and for primary care physicians • Identify and disseminate educational resources early and on an ongoing basis • Leverage family medicine and specialist faculty for teaching on novel or newly salient clinical skills • Communicate clearly with operational leadership to support system-wide planning • Create strong relationships with experienced colleagues for coaching and/or consultation • Iterate primary care team-based workflows to meet new and shifting demands • Ensure personal protective equipment (PPE) is consistently available at point of care • Implement "buddy system" to ensure providers including residents consistently follow proper PPE protocols • Deploy family physicians together as teams, instead of dispersing them in redeployment throughout the medical center • Include standard time off and sick coverage • Address concrete needs for hospital teams such as food, transportation, parking, extra scrubs
Communication	<ul style="list-style-type: none"> • Maintain connection between socially distanced colleagues • Rapid dissemination of information • Reduce anxiety by discussing upcoming changes • Feedback on and troubleshooting of new structures and processes • Recognize a range of contributions from providers and staff in different roles 	
Responsiveness	<ul style="list-style-type: none"> • Adopt and/or apply clinical skills in high demand during COVID-19 surge • Reorient community health services to match patient and community needs • Provide support to a hospital system under unprecedented stress 	
Safety and wellness	<ul style="list-style-type: none"> • Maximize physical safety • Maximize psychological safety 	

distressed family interactions. Art supplies were donated and were used by physicians for personal use to process experiences, to make encouraging signs for patients' rooms, and to create celebratory signs on patient discharges.

De-Escalation of Redeployment

As the initial severe surge subsided, hospital teams were sequentially released from service. As each team disbanded, remaining COVID patients were signed out to hospital areas that were to remain designated for COVID-positive cohorts. Conversely, patients who were COVID-free were transferred onto our family medicine hospitalist service.

Providers on the disbanded teams were given several days off before returning to regular clinical duties. Educational and research activities resumed. Residents returned to rotations as normal hospital operations reopened again, with priority given to required rotations and continuity care. Part-time clinicians and alumni who had rejoined us returned to their usual jobs. Primary care services opened more face-to-face capacity in the context of lower community rates with PPE, screening protocols, and social distancing in place. Active outreach sought to re-engage older patients, those with chronic disease, and those without recent visits. At multiple meetings, including a department-wide community forum, we sought to review

and acknowledge the efforts of members of the department.

Discussion

The strength of our department's response to the COVID-19 surge highlights the important role that an academic family medicine department can play in emergency response. Key strategies used in redeployment are summarized in Table 1.

This experience has implications related to the scope of practice of family medicine and to the structure of family medicine clinical services within large academic medical centers. In the context of pandemic planning, health systems should support family medicine hospital training as an important resource not only for ongoing inpatient services but also as an important reserve in crisis situations. Family physicians' care of hospitalized patients is commensurate with that of hospitalists in terms of cost, mortality, and readmissions,¹⁵ but the proportion of practicing family doctors who provide hospital-based care is lower than the proportion who intend to do so on residency graduation¹⁶ and has been decreasing over time.^{17,18} Our department's hospital teams during the surge blended career hospitalists, outpatient physicians with recent hospital experience, and physicians who had not been in the hospital in years as well as trainees at various levels. The teams were able to provide excellent clinical care because of a strong pre-existing cohort of family medicine hospitalists who led and supported the expanded teams.

Our experience reinforces the value of family medicine training and skills to respond effectively to a pandemic surge through both hospital and community responses. These include skills in interpersonal communication with patients and families, behavioral health, care for patients across settings, collaborative partnerships with specialists and interdisciplinary colleagues, a culture of ongoing assimilation of new knowledge and skills, emphasis on adaptation to patient and community needs, and advocacy skills. Above all, the efforts of individuals across our department reflected an ongoing dedication to the communities we serve and a commitment to adapt to their needs. Our experiences demonstrated that during a severe COVID-19 surge a family medicine department can rapidly expand hospitalist services and redesign primary

care services to help meet the needs of patients, communities, and health systems, leveraging a broad scope of practice to meet a spectrum of intense clinical demands.

To see this article online, please go to: <http://jabfm.org/content/34/3/466.full>.

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