Responding to disaster: Form and function of a pharmacy incident command structure

In March 2020, the World Health Organization characterized coronavirus disease 2019 (COVID-19), caused by the novel SARS-CoV-2 coronavirus, as a global pandemic.[1] At that time, Yale New Haven Health (YNHH) deployed its system incident management (SIM) structure to oversee systemwide pandemic response efforts. YNHH hospitals utilize the hospital incident command system (HICS), a comprehensive incident management system used to manage threats, planned events, or emergency incidents. The HICS is based on the same principles as the incident command system (ICS) component of the National Incident Management System (NIMS), issued by the US Department of Homeland Security.[2] The ICS is a standardized approach to the command, control, and coordination of incident management utilized by all levels of the US government and many organizations in the private sector. The ICS provides a common hierarchy within which personnel from multiple organizations can operate effectively and specifies an organizational structure for incident management that integrates and coordinates a combination of procedures, personnel, equipment, facilities, and communications.[3] The HICS, an adapted version of the ICS for the healthcare setting, is a versatile and scalable system that can be used by all hospitals, regardless of size, location, patient acuity, patient volume, or type of incident.[2] The YNHH incident response system will be referred to here as the SIM-HICS, as each hospital in the system operates a local HICS with system-level oversight provided by SIM, the unified command structure for the overall healthcare organization.

The YNHH pharmacy enterprise provides services to 2,475 licensed inpatient beds across 7 hospitals, ambulatory hospital clinics, and an expansive cancer care center network. These areas are operationally served by 7 traditional inpatient pharmacies, 2 service line–oriented inpatient pharmacies, and additional sterile product preparation facilities serving the cancer care center network. In addition to inpatient and clinic operations, the pharmacy enterprise also provides outpatient, specialty, and home infusion pharmacy services. The pharmacy workforce comprises approximately 800 team members and is led by the chief pharmacy officer and pharmacy directors in service line– and site-specific roles. This consultation aims to share the methods of forming a pharmacy incident command structure (PICS) and its functions, which promote integration with health-system incident response efforts while also meeting the unique needs of the pharmacy enterprise. Colleagues have recently published information about the PICS in reports describing specific processes, initiatives, and outcomes of select teams collaborating within this structure.[4,5] This consultation intends to describe the formation of the PICS, the roles and responsibilities of participants, and integration with health-system response efforts.

PICS structure. The PICS creates a hierarchy of roles and teams contributing to pharmacy-specific incident response efforts (Figure 1). The chief pharmacy officer serves as the incident commander and directs all activities of the PICS. The structure is divided into 6 sections—communications, employee safety, clinical, drug-use policy/formulary, operations, and logistics, each led by a section chief. Each section of the PICS contains multiple pharmacy action teams, each of which is assigned an action team lead. The pharmacy action teams strategically align and integrate with those of the SIM-HICS. Several pharmacy action teams have a correlating SIM-HICS team, while others operate internally to meet pharmacy-specific needs. For those with a correlating SIM-HICS team, pharmacy action team leads also participate as members of the SIM-HICS team and act as liaisons between the PICS and SIM-HICS.

Pharmacy directors were appointed to section chief roles by the incident commander and are responsible for providing leadership and oversight of all activities within their domain. Pharmacy managers, supervisors, coordinators, and specialists serve as pharmacy action team leads. Section chiefs and action team leads were appointed to positions based on their current leadership role, subject matter expertise, and skill set. Alternate leaders were assigned to the incident commander, section chief, and pharmacy action team lead roles. They participated in the same capacity as the primary leaders to ensure continuity of the PICS activities. Health-system pharmacy administration and leadership (HSPAL) residents and pharmacy administrative support staff were assigned to project manager roles for each PICS section. Project managers were responsible for maintaining updated project plans, prioritizing action team tasks, and assisting with administrative tasks, such as scheduling virtual team meetings. Pharmacy specialists, residents, and technicians participated in the PICS as pharmacy action team members, playing a critical role in decision-making processes and plan execution.

The corporate structure of the YNHH pharmacy enterprise created a unique opportunity to establish the PICS. The need for accountability, clear communication, manageable leader expectations, and integration among system pharmacy teams led to its inception. Principles of the HICS were utilized to create the PICS and ensure alignment of pharmacy response efforts to those of the SIM-HICS. The HICS establishes roles for a complete hospital incident management team and identifies 5 primary management sections

Figure 1. Pharmacy incident command structure. Adapted from reference 4. COVID-19 indicates coronavirus disease 2019; HICS, hospital incident command system; ICU, intensive care unit; SIM, system incident management.
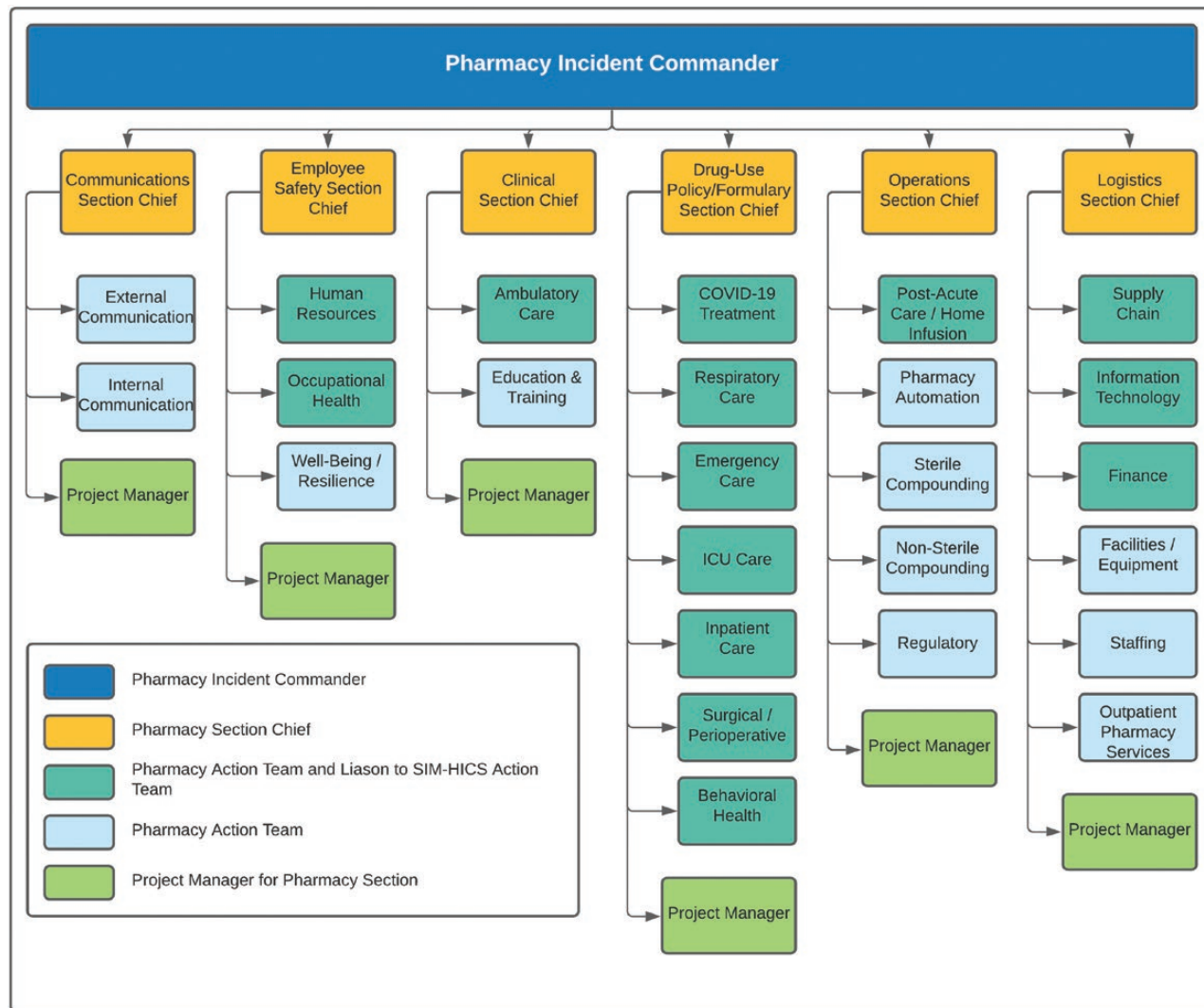

(ie, command, operations, planning, logistics, and finance/administration), each of which has additional associated branches or teams.[2] Following an internal assessment, modifications were made to the HICS sections to optimize the structure for pharmacy use and COVID-19–related challenges. Three unique sections—communications, employee safety, and drug-use policy/formulary—were incorporated into the PICS. Addition of the communications section was driven by the need to frequently communicate both internally to a large pharmacy team and externally to various stakeholders across the healthcare system. The uncertainties of COVID-19 and its potential impact on team members drove the formation of the employee safety section. With adequate medication supply being a top priority of the health system, the drug-use policy/formulary section was strategically incorporated into the PICS to leverage pharmacy expertise. Additionally, the planning and finance/administration

sections of the HICS were collapsed in the PICS, and related responsibilities were reassigned to other PICS sections. A timeline of the PICS development and activities during the first several months of the COVID-19 pandemic is represented in Figure 2.

Response. *Planning and assessment.* COVID-19 response planning was facilitated by conducting virtual scenario planning sessions and utilizing a health-system pharmacy department–specific assessment tool. The scenario planning sessions were conducted to assess potential extremes. Twelve scenarios were assessed, including infusion center changes and support, staff shortages, new patient locations (internal and external), patient census surge, vulnerable ambulatory populations, sterile compounding changes (to decant or plan to insource), severe drug shortages/outages, personal protective equipment shortages, staff burnout,

Figure 2. Timeline of pharmacy incident command structure activities. COVID-19 indicates coronavirus disease 2019; HICS, hospital incident command system; PICS, pharmacy incident command structure; SIM, system incident management; WHO, World Health Organization; YNHH, Yale New Haven Health.
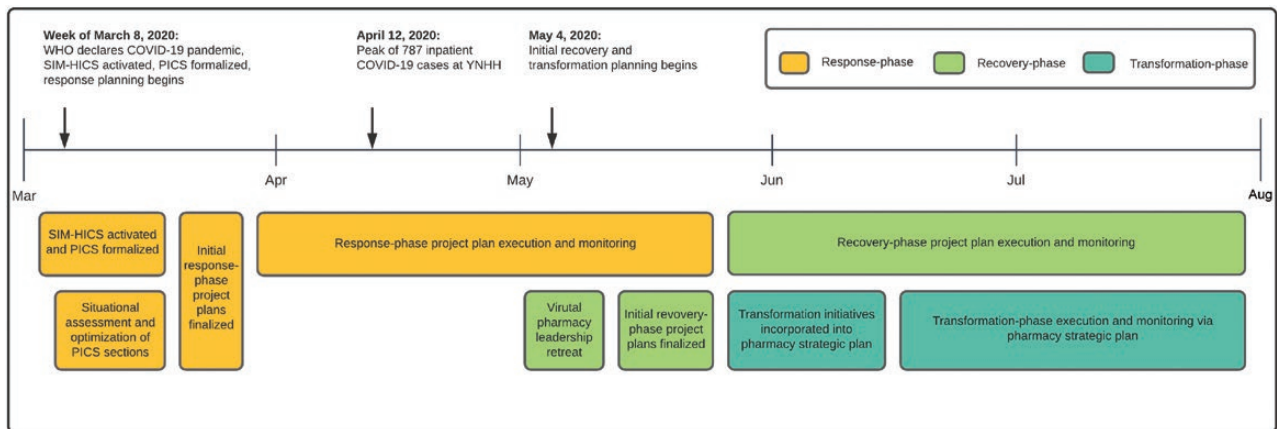
education and training needs, communication and coordination, and financial impact. The goal of this exercise was to prepare the PICS for worst-case scenarios. Each planning session utilized the HICS incident action plan (IAP) form to document potential challenges, solutions, and resource needs.[6] The American Society of Health-System Pharmacists (ASHP) COVID-19 pandemic assessment tool for health-system pharmacy departments was utilized to identify gaps in readiness across the pharmacy enterprise. The 6 categories in the tool, including integration with institutional planning, departmental leadership, public and professional education and training, medications and supplies, staffing, and public affairs/communications, were assessed for vulnerabilities.[7]

Plan execution. Communication and collaboration were critical to project plan execution; thus, a dedicated space was created on the pharmacy collaboration website to house project plans and related material. Findings from the scenario planning sessions and assessments were translated into specific objectives, strategies, and tactics before being incorporated into a pharmacy action team project plan. All pharmacy action teams utilized a standardized project plan template to facilitate timely project execution and reporting. Do and colleagues[5] recently published additional detail on the template, including example items from the PICS ambulatory care action team project plan. Pharmacy action team leads met with their respective team members and project manager to review progress and update the project plan. Meeting frequency varied based on individual team needs but ranged from twice-weekly to daily occurrences with additional working meetings as required. Section chiefs regularly met with their action team leads and project manager to obtain a report on project plan status and provide teams with direction. The health system's proximity to New York City, an early epicenter of the COVID-19 outbreak, contributed to rapid increases in patient census. In response, 887 beds were added, increasing the system's total inpatient capacity

to 3,362 beds. Participants of the PICS often worked around the clock, devoting most hours to PICS activities to ensure adequate pharmacy support for new beds and increased patient volume. Teams were required to practice flexibility, replacing traditionally perfect execution with being comfortable with "good enough," as quick decisions and actions were needed.

The incident commander, section chiefs, and project managers convened daily to evaluate project plan status, highlight successful strategy completion, and discuss potential barriers. Newly identified strategies were assigned to pharmacy action team project plans at this time to avoid duplicate assignments between groups. Action team leads were occasionally invited to this meeting to report on critical initiatives and receive guidance. The content of internal and external communications was reviewed daily by the incident commander and section chiefs. The unique communication strategies utilized by the PICS have been described previously.[4]

The incident commander participated in a daily SIM-HICS report-out with other senior health-system executives. During this time, the incident commander utilized information recently reported by PICS section chiefs to share status updates on hot topic items, such as drug supply. Integration with the SIM-HICS at this level allowed for collaboration across disciplines and increased access to invaluable system resources. For example, when sharing challenges related to drug supply monitoring, this integration allowed for a quick connection with the Office of Strategy Management (OSM). Members of the PICS supply chain action team were then able to collaborate with the OSM, who helped build robust reporting tools that allowed for precise monitoring of the health system's supply of critical drugs. Pulk and colleagues[4] have previously described the methods utilized to leverage big data to support drug procurement efforts.

Recovery and transformation. *Planning and assessment.* As the COVID-19 patient census began to wane and the health system began recovery efforts, it became apparent that the system would not revert to "normal" practices but would instead define a new normal. The acknowledgment of this transformation led to renewed PICS initiatives that aimed to leverage efficiencies gained during the emergency response, build upon enhanced communication and collaboration, and inspire the adoption of technology to transform our way of doing business.

A virtual pharmacy leadership retreat was held over 2 days focused on identifying recovery and transformation strategies with the theme "be bold enough to leave the past behind." Pharmacy leaders, including the PICS incident commander, section chiefs, and action team leads, participated in the retreat. Pharmacy action teams were instructed to evaluate existing response-phase project plans in terms of the categories "start," "stop," or "continue," to brainstorm new objectives, and to identify resources needed for COVID-19 recovery efforts. Leaders also participated in virtual breakout sessions to discuss prompted transformational topics such as turbocharging decision-making, envisioning sustained remote work, and accelerating actionable analytics. At least one individual with expertise relevant to the subject matter was assigned to each group.

During the retreat, feedback from PICS participants was gathered via a survey that assessed pharmacy efforts during the emergency response and changes needed to streamline the PICS for recovery and transformation. Overall, participants agreed on a reduced frequency for report-out and team meetings. Additionally, many action team leads requested more involvement in meetings with the incident commander and section chiefs. One significant change to action team structure that resulted from this survey involved combining the pharmacy automation, information technology, and facilities/equipment action teams.

Plan execution. Response-phase project plan assessments and breakout session findings from the leadership retreat led to modifying both PICS project plans and the pharmacy multiyear strategic plan. The incident commander, section chiefs, and project managers reviewed the "start," "stop," or "continue" categories assigned to each PICS response-phase project plan strategy. The remaining items resulted in recovery-phase action team project plans. Findings from the transformation breakout sessions were translated into actionable objectives, strategies, and tactics before being incorporated into the strategic plan.

The incident commander and section chiefs altered the PICS to streamline recovery-phase action team project plans, align with health-system recovery efforts, and incorporate participant feedback. Overall, recovery-phase initiatives continued to be executed and monitored similarly to the previous response-phase efforts. In alignment with the SIM-HICS, the PICS incident commander's meetings with section chiefs were reduced to twice weekly. Action team leads were invited to this meeting once weekly to provide reporting. The execution and monitoring of transformation initiatives included in the pharmacy strategic plan followed prepandemic processes. The pharmacy strategic planning committee utilizes strategic planning execution software to assign projects and provide defined objectives. Leaders responsible for project oversight input data and provide progress updates monthly for review.

Conclusion. The development of the PICS structure had several advantages that supported team function, reach, and agility. Engagement and integration with the SIM-HICS were pivotal to efficient communication with stakeholders. Centralized documentation created a collaboration platform for sharing, planning, and accessing information for quick decision-making. Project managers were essential for maintaining updated documentation, coordinating meeting times, and prioritizing activities.

To proficiently navigate the COVID-19 pandemic, engagement of both leadership and frontline staff was critical. The PICS enabled us to reinvent the pharmacy enterprise's governance structure, focus on the pandemic's immediate demands, expedite decision-making processes, and execute plans while maintaining the flexibility to pivot based on ever-changing information. The structure allowed us to create coordinated system communications, assess and redeploy staff based on demand, and establish a process for daily consensus updates to drug-use policy guidelines. Additionally, integration of the PICS with pertinent SIM-HICS teams afforded the ability to pool resources, release capital allocations, and document support for governmental stimulus and assistance. The precipitous nature of the COVID-19 pandemic tested the will of both pharmacy leaders and frontline staff. The successes of the YNHH pharmacy enterprise were the result of coordinated, collaborative, and unprecedented efforts.

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