

Medical Operations Coordination Centers (MOCC)/ Patient Load-Balancing: Summary of Lessons Learned during COVID-19

May 2022

Background

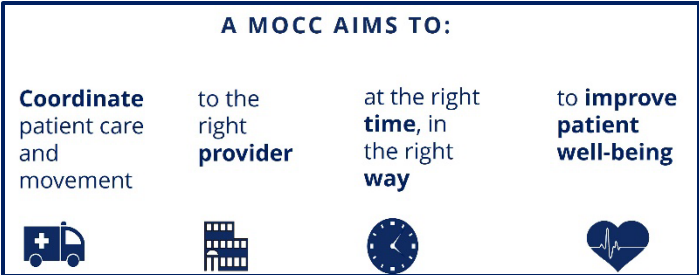
As defined in the [ASPR TRACIE MOCC Toolkit](#), Medical Operations Coordination Centers (MOCCs) are coordination elements at the sub-state, regional, state, or federal levels (e.g., Federal Emergency Management Agency [FEMA]/U.S. Department of Health and Human Services) that facilitate patient movement and resource allocation during a major response. These may be configured as a cell within a jurisdictional emergency operations center, a stand-alone center, or embedded in an existing healthcare system transfer center. They function as a single point of contact (POC) for patient transfer requests from all hospitals in a defined region as well as for other MOCCs.

[A study from NIH](#) found that nearly 1 in 4 COVID-19 deaths was potentially attributable to hospitals overwhelmed by surging caseloads.¹ Patient load-balancing involves not only pre-hospital distribution of patients and patient transfers to prevent overwhelming a single facility, but also the *secondary* re-distribution of patients to unload overwhelmed facilities. Load-balancing improves the use of resources in a region, thereby likely saving lives.

In spring 2022, ASPR TRACIE reviewed lessons learned from 10 states that utilized a MOCC or similar patient load-balancing structure during the COVID-19 pandemic. This document provides a summary of key findings from select MOCCs established prior to and during the COVID-19 pandemic and highlights challenges, gaps, and potential opportunities/considerations for other jurisdictions establishing MOCCs in the future.

Select ASPR TRACIE Resources

- [ASPR TRACIE MOCC Toolkit](#)
- [EMS Supplement for MOCC Toolkit](#)
- [Establishing MOCCs for COVID-19 \(Webinar\)](#)
- [Healthcare Coalition MOCC Resource Assessments \(TA Response\)](#)
- [Excess Mortality and COVID-19 Surges: Defining the Problem and Solutions \(Speaker Series Recording\)](#)
- [The Exchange, Issue 15](#)



¹ Kadri, S. et al. (2021). [Association between Caseload Surge and COVID-19 Survival in 558 US Hospitals, March to August 2020](#). Annals of Internal Medicine.



Key Findings

- The COVID-19 pandemic caused an unprecedented need for critical care services in hospitals. States opted for different approaches to coordinate care and facilitate patient transfers.
 - One state chose an integrated and public safety-based model at an existing state emergency medical services (EMS) coordination agency. An intensivist was consulted to determine whether patients needed to be transferred and coordination with an appropriate destination was carried out by the MOCC.²
 - Others established collaborative partnerships between healthcare facilities, public health, hospital associations, and healthcare coalitions.³
 - A few states leveraged existing coordination systems to function as transfer centers for hospitals. Functions, scope, and authorities were based on cooperative and voluntary agreements developed by stakeholders.
- Hospital participation in the MOCC was voluntary for 8 of the 10 respondents.
- A standard goal was to ensure a consistent level of available care and maximize use of available beds. In some cases, this merely involved bed brokering on a conference call. In others, virtual critical care support for in-place care was provided when transportation was unavailable or when care could safely be provided at the current hospital based on available resources.
- Coordination, communication, and partnerships were key in moving patients when traditional referral partners could not accept transfers. The ability to monitor bed availability in hospitals combined with quantitative surge indicators helped staff identify needs and available assets and determine the best support available for hospitals under surge stress.
- Hospitals in rural areas were significantly impacted by limited access to referral centers and benefited from regional coordination, particularly when beds were available. Requests from these facilities comprised over 50% of all requests in a summary of three states' experiences.⁴
- Authority over the MOCCs varied between states but most were linked to the state's department of health by contractual ties or an executive order by the governor. Comprehensive memoranda of understanding (MOUs) were established by several MOCCs and defined commitments and authorities between hospitals, healthcare systems, EMS, transport services, and skilled nursing facilities.
- Development of MOCC policy varied significantly between states. Some policies were developed by the state, some by hospital associations, some by the medical director/director, and some by the operating entity. Several states mentioned the lack of clear authority to institute policy as a challenge.
- Some MOCCs only focused on COVID-19 patients while others coordinated a mix of intensive care unit, medical/surgical, intermediate care, extracorporeal membrane oxygenation (ECMO), and pediatric transfers.

² Galvagno, S.M., Naumann, A., Delbridge, T.R., et al. (2021). [The Role of a Statewide Critical Care Coordination Center in the Coronavirus Disease 2019 Pandemic and Beyond](#). Critical Care Explorations.

³ Mitchell, S. H., Rigler, J., Baum, K. (2022). [Regional Transfer Coordination and Hospital Load Balancing During COVID-19 Surges](#). JAMA Health Forum.

⁴ Ibid.

- Staffing for MOCCs varied from state to state. A few MOCCs relied on emergency medical technicians and paramedics trained in transferring patients while others used hospital providers or contracted vendors to support operations. In most cases, a physician oversaw clinical decision-making during the transfer process. One state specified 5.7 full-time employees were required to staff the MOCC; another stated that personnel were scaled to demand.
- Eight of 10 MOCCs had both a virtual component and physical location (two MOCCs were virtual only).
- Seven MOCCs prioritized transfers based on acuity; one only did so during some periods of the operation. Two did not prioritize patients.
- Seven of 10 states in this review noted that their MOCC was established due to the pandemic with voluntary participation. Three were established prior, though the scope was noted in two cases to be significantly broader than prior efforts. All stated that they would continue to use a MOCC in future disasters.
- Seven of 10 MOCCs involved EMS or were managed by the state EMS agency.
- The number of patients placed ranged from less than 10 to approximately 9,800.
- Web-based systems were used to track bed availability and hospital resources. Platforms were state-wide, and most shared data with partners outside the MOCC. The vast majority of data input was manual.
 - One state outsourced informatics support to a vendor and partnered with the Health Information Exchange for real-time bed visibility.⁵
 - Another MOCC worked with Microsoft to build a platform for surveillance of COVID-19 patients and resource impacts.⁶
 - All MOCCs had a dedicated phone number with redundant communication pathways.
- Most MOCCs had expanded information-sharing functions beyond managing transfers. Two MOCCs had direct responsibility for request and distribution of other resources including supplemental staff. One MOCC used a common POC to process logistical requests between hospitals and other state operational elements with responsibilities for allocating travel nursing staff to hospitals across state lines.
- MOCC funding sources varied and included: the Coronavirus Aid, Relief, and Economic Security (CARES) Act, FEMA response funds, state mission assignment funds, Centers for Disease Control and Prevention Crisis Response Cooperative Agreements, Office of the Assistant Secretary for Preparedness and Response Hospital Preparedness Funds, EMS, and state general funds. One state noted they have received continued funding for the MOCC for the next two years.

⁵ Villarroel, L. et al. (2021). [Collaboration on the Arizona Surge Line: How COVID-19 Became the Impetus for Public, Private, and Federal Hospitals to Function as One System](#). NEJM Catalyst.

⁶ Michell, S. H. et al. (2020). [Western Washington State COVID-19 Experience: Keys to Flattening the Curve and Effective Health System Response](#). Journal of American College of Surgeons.

Challenges/ Gaps

- Creating and staffing a new MOCC was challenging during the pandemic, as there was limited precedent for obtaining medical consultation to prioritize transfers and provide clinical advice.
- Many hospitals did not understand the MOCC concept and there were concerns from smaller hospitals in one state who felt that larger facilities would use their size to capture transfers and market share.
- Load-balancing transfers from an overloaded hospital to one with capacity are not generally transfers to higher levels of care; therefore payments/reimbursements were problematic. One state worked in advance with major payors to ensure that transfers would be paid for. Others used an executive order to facilitate these transfers and payments.^{7,8}
- Scarce beds often resulted in long transfers to more distant hospitals, stressing EMS agencies, particularly those in rural areas.
- Most rural hospitals do not have the resources or expertise available to support intensive patient care.⁹ Telemedicine/virtual support was helpful, but there was often not precedent for providing this support to hospitals not affiliated with a parent system. The [National Emergency Tele-Critical Care Network](#) is a federal resource at least one state used to support several rural hospitals.
- Hospitals in one state were initially reluctant to share information as they did not want to divulge vulnerabilities to other facilities and the MOCC. This could be more of an issue when a MOCC is operated by the state, which may have regulatory authority over hospitals.
- One state noticed a gap in handling large-scale inter-facility transfers during patient surges early in their response. They used a pre-existing coordination system to function as a transfer center for hospitals.
- Real-time surveillance of hospital capacity was challenging due to the use of multiple tracking platforms, varying facility size, tracking too many resources, and limiting staffing/time for data input. Some states noted that it would have been helpful to have a real-time data platform for bed tracking instead of having to rely on manual input by staff.
- Many states noted challenges with convincing hospitals that had capacity to take patients to voluntarily participate in the MOCC. Without clear policies and authorities, there was often no way to compel a hospital to participate in a MOCC or help with load-balancing.
- At least one state encountered resistance to making their transfer line able to move both COVID and non-COVID critical patients from rural areas, which ultimately limited the effectiveness of the centralized transfer line.
- Hospitals and other partners lacked awareness of existing/new MOCC plans and processes in at least two states.
- Demand ebbed and flowed across the surges which complicated maintaining a stable staffing and response model.

⁷ State of Colorado. (2021). [Executive Order D 2021 135](#).

⁸ State of Arizona. (2020). [Executive Order 2020-38](#).

⁹ [Regional Transfer Coordination and Hospital Load Balancing During COVID-19 Surges](#) (n 3)

- When hospitals used shared wait lists, a patient could be listed at multiple hospitals and health systems as waiting for transfer. This caused duplication of effort; several hospitals erroneously thought they accepted the same patient. One state attempted to resolve this by creating a transparent centralized wait list, but some larger healthcare systems resisted, so it was not used.
- Triageing patients by priority and determining who can wait and for how long was extremely important. However, finding providers to do this and ensuring liability protection for them was challenging. “First-come, first-served” patient lists that some MOCCs wound up using were felt to be unfair, and hospitals with critically ill patients usually tried to work around these to expedite transfers.
- There is no source of ongoing funding for the majority of MOCCs.

Opportunities

- It is evident that MOCCs were useful and can ensure equal access and consistency of regional care in the future, particularly protecting disadvantaged populations.
- MOCC operations during COVID-19 were usually at the state level but can be valuable at the sub-state or inter-state level. Therefore interface, authorities, and operational constructs between MOCCs need to be clearly defined (this was particularly identified as an issue between the states in the northwest but affected many states where referrals often cross state lines).
- Baseline capacity and situational awareness data sharing is helpful even if facilities are not requesting MOCC transfers or resources during an event.
- Policies and mechanisms need to be in place to:
 - Assess patients for care/transfers needs
 - Provide in-place consultation and resource support when feasible/appropriate
 - Monitor hospital capacity and assign transfer/load-balance as appropriate
 - Provide a mechanism to ensure timely transfers when the current hospital does not provide the necessary services (e.g., dialysis) and a critical care consultant for the MOCC deems the need emergent, even if all hospitals are “full.”
 - Enhance EMS engagement in MOCC planning and load balancing. This may include operating the MOCC out of an existing public safety EMS coordination entity.
- Hospital associations and major healthcare systems may be well positioned to help lead MOCC planning or potentially host operations and provide subjective information sharing (some hospitals are wary of the state’s hospital regulatory powers versus sharing information about surge conditions). However, these associations and systems may not have the authority or desire to compel participation in the MOCC or transfers when inpatient capacity is reached.
- State executive branch and public health authorities, statutes, state rules, and MOUs should all be leveraged to create a system that engages all hospitals and medical transport resources, can transcend jurisdictional boundaries, and defines the operational policies in advance of an incident, with a clear process for incident-specific policy development, approvals, and authorities.
- The federal role in supporting MOCCs, both in the planning and operational phases (particularly as it affects inter-state coordination), should be defined and communicated to states.

- Regulatory and accrediting entities should consider requirements for regional MOCC participation during disasters.
- In some cases, provision of state and federal disaster response or program support to hospitals could be considered contingent on participation in a MOCC during disasters with participation, prioritization, and prescriptive transfer acceptance criteria shared in this resource.
- Further study needs to evaluate the potential impacts of MOCC operations as well as examine the ethics and equity issues associated with the *absence* of regional coordination.
- Indicators and triggers for initiating MOCC operations and sources of funding identified for operations once commenced should be clearly defined.
- States can identify additional disaster and daily functions that a MOCC may offer to benefit the community/region as appropriate and practical.