

# Pediatric Health Care Provision in Rural Oklahoma: A Disaster in Waiting

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## Pediatric Disaster Medicine in Oklahoma

Oklahoma, the famed Sooner State, is home to an estimated 4,019,800 people and is known for its cowboy culture, Native American heritage, energy, agriculture, and Route 66. The picturesque south-central plains are located in *Tornado Alley* and endure extreme heat, ice storms, earthquakes, flooding, thunderstorms, and tornados on an almost annual basis. Oklahoma is also no stranger to human-induced disasters, including the Trail of Tears, the Tulsa race massacre, and the Oklahoma City bombing, which have scarred the collective memory. According to the United States Census Bureau, the Oklahoma City and Tulsa metropolitan areas are home to 35 percent of the state's total population (United States Census Bureau, 2021). The remaining 65 percent reside in smaller rural communities inhabited by the older and younger generations as those of working age often migrate to larger conurbations or out of state in search of economic or educational opportunities (Straub et al., 2020).

Oklahoma ranks 44th in average family income (United States Census Bureau, 2024). Lower incomes and fewer economic opportunities may mean that health insurance, preventative care, and even acute medical care become less of a priority as families face a daily struggle to pay for rent, utilities, and groceries. Children from low-income rural areas are particularly vulnerable as they are less likely to be able to access medical care due to economic constraints, limited mobility, and social barriers. Oklahoma is served by only two pediatric hospitals, both located in the state's largest cities, meaning accessibility and capacity can also be problematic. Moreover, the state has experienced more than 250 natural hazard and human-induced disasters since the beginning of 2000, a total which is based upon Stafford Act declarations for major disasters, emergencies, fire suppression, and fire management (FEMA, 2023). Despite mitigation and preparedness efforts, this trend is likely to continue in the future. Consequently, extant steady-state pediatric health care provision faces the risk of being overwhelmed when disasters strike, thereby exacerbating pediatric vulnerability.

The National Academies Action Collaborative on Disaster Research convened a 2022 symposium to address knowledge gaps and scientific needs pertaining to pediatric health in disasters. The symposium affirmed that children are inherently more vulnerable to disaster events, noting that there are markedly few data sources that adequately measure disaster-related pediatric health consequences and that the conceptualization of what constitutes a disaster remains fragmented, which hampers scientific and practical growth in this vital area.

Modern society is a hyper-complex blend of political, economic, social, technological, environmental, and legislative systems that are becoming increasingly intertwined, resulting in a more interdependent health care system that is reliant on the resilience and cooperation of these critical systems. Societies in general, in Oklahoma especially, can no longer conceptualize disasters as unique, isolated, and temporal occurrences, nor can they continue to separate preparedness, response, recovery, mitigation, and steady-state operations as these are by necessity a fundamental and interrelated part of life. Preventative and acute pediatric health care provision is a vital part of these resilience building efforts. The well-being of future generations of Oklahomans is essential to the cultural, economic, and social prosperity of the state and, indeed, the nation, meaning barriers to the provision of timely health care constitute a very real disaster in waiting.

## Pediatric Health Care Capacity as a Disaster in Waiting

The meaning of the term “disaster” is a highly debated question; revered disaster scholars, including Alexander, Britton, Dynes, Quarantelli, Porfiriev, Stallings, and others have sought to define the term to no avail, concluding that “to be concerned by what is meant by the term disaster is not to engage in some useless or pointless academic exercise” (Quarantelli, 1998, 225). Nevertheless, there is increasing recognition that disasters can be the result of human agency rather than natural phenomena exclusively. This trend rejects

the outdated and passive conceptualization of disasters as *acts of God*, which, etymologically speaking, is grounded within the Latin word *astrum*, meaning “star” or “from the heavens.” Furthermore, scale, scope, and magnitude (i.e., complexity) are critical influencing factors as preparedness and response efficacy decreases when each of these factors increases (McAlevy, 2020). Flexible, innovative, and proactive approaches are therefore needed to mitigate the potentially devastating impacts associated with disaster events.

According to analysis of American Hospital Association annual survey data, US hospitals operated at approximately 64 percent capacity before the COVID-19 pandemic (AHA, 2019). However, the US Department of Health and Human Services frequently reports Oklahoma hospitals at 100 percent capacity, meaning there is little to no ability to surge for disasters. Consequently, even minor events, and especially disasters, can quickly overwhelm the state’s health care surge capacity. Moreover, the critical infrastructure needed to relocate pediatric patients out of state (e.g., specialist personnel and equipment, access and egress routes, and communication channels) may well be degraded or destroyed. Current steady-state and surge capacity, despite best efforts, are therefore unlikely to be able to mitigate increasingly complex incidents, meaning that pediatric health care provision in Oklahoma is a disaster in waiting.

### Can the Incident Command System Help Reduce Pediatric Vulnerability?

The Incident Command System (ICS) is a key component of the federally mandated National Incident Management System (NIMS) and is utilized at all levels of government. Its use has expanded beyond its traditional fire and emergency management domain, and it is increasingly employed in other sectors including the oil, gas, and health industries. ICS is commonly used in Oklahoma for disaster and emergency management, as it is in most states and localities. The key ICS principles of a standardized and modular organizational structure (operations, planning, logistics, finance/administration, intelligence/investigation functions), a single Incident Commander, common terminology, chain of command, and span of control consistently enhance response efficacy. Beyond the medical first responder community, NIMS and ICS are not readily applied within the medical community. In fact, the public health and medical components of a national response are not necessarily activated, even for major disasters. The structure is, however, designed to address medical and health considerations, and increased usage of ICS (in the form of the Hospital Incident Command System) was noted during the COVID-19 pandemic. Fortuitously, the Centers

for Medicare and Medicaid Services (CMS) expanded their Emergency Preparedness Rule in 2019 to include health care facilities. This requires health care facilities to assess risk, develop disaster plans, establish cogent policies and procedures, and embed these processes through ongoing training, exercise, and evaluation activities in order to receive Medicare or Medicaid reimbursements. The rule directly impacts 17 specific types of health care facilities, including disability and geriatric care centers, hospices, and mental health facilities. Significantly, pediatric facilities and the needs of pediatric patients are seemingly overlooked as they are not overtly listed (although they may be included under other facility types) and they are not explicitly addressed within NIMS/ICS. Health care in general, but especially pediatrics, could potentially benefit from a NIMS/ICS approach to better respond to pediatric needs in a disaster.

### Pertinent Knowledge Gaps and Scientific Needs

As noted previously, it is difficult to define the term “disaster.” Within the health care context, the CMS Preparedness Rule does not specifically define disaster, although it cites floods, hurricanes, pandemics, and terrorism as examples. It does, however, promote flexible preparedness and response measures that effectively integrate disaster response mechanisms within steady-state organizational functions. This may seem logical and straightforward, but the scientific base underpinning such measures remains lacking, most notably regarding the impact of organizational culture, norms, and values on pediatric health care facility preparedness and response efficacy. Moreover, there are few empirical evaluations of (1) if or when a hospital or other health care organization activates its disaster plan, (2) differences in health outcomes with or without the activation of an emergency operations plan, and (3) the efficacy of different aspects of disaster plans. Although there are numerous After-Action Reports available following a disaster, these are often anecdotal and, understandably, focused on the most recent disaster rather than preparedness for the next event. Of the limited evaluations available, Timm and Gneuchs (2011) determined that ICS/NIMS was ineffective within health care facilities, but the evaluation was confounded by the fact that disaster plans were rarely, if ever, used. This further highlights the need for rigorous scientific evaluations of the impact, efficacy, and efficiency of disaster plans, as well as the incident command and incident management structures used to implement those plans. Without this analysis, hospitals will likely continue to fall back on their existing management structures, fail to develop and utilize sufficient surge capacity, and,

unfortunately, fall short in meeting the needs of adult and pediatric populations in disasters. Hospitals and the broader health and emergency management communities owe it to the residents of Oklahoma (and the rest of the world) to develop, plan for, and implement scientifically driven, evidence-based disaster response plans and management structures. Because the next disaster is waiting.

## References

1. American Hospital Association (AHA). 2019. *AHA Annual Survey Database 2019*. Available at: <https://www.ahadata.com> (accessed July 14, 2024).
2. Centers for Medicare and Medicaid Services (CMS). 2016. Medicare and Medicaid programs; emergency preparedness requirements for Medicare and Medicaid participating providers and suppliers. *Federal Register* 2016(21404):63860-64044. Available at: <https://www.federalregister.gov/documents/2016/09/16/2016-21404/medicare-and-medicicaid-programs-emergency-preparedness-requirements-for-medicare-and-medicicaid> (accessed September 21, 2024).
3. Douthit, N., S. Kiv, T. Dwolatzky, and S. Biswas. 2015. Exposing some important barriers to health care access in the rural USA. *Public Health* 129(6):611-620. <https://doi.org/10.1016/j.puhe.2015.04.001>.
4. Federal Emergency Management Agency (FEMA). 2024. *OpenFEMA Dataset: Disaster Declarations Summaries - v2*. Available at: <https://www.fema.gov/openfema-data-page/disaster-declarations-summaries-v2> (accessed July 14, 2024).
5. McAleavy, T. 2020. Perceiving the impacts of scale on command and control. *Journal of Emergency Management* 18(2):91-104. <https://doi.org/10.5055/jem.2020.0453>.
6. Quarantelli, E. L., ed. 1998. *What is a disaster?: A dozen perspectives on the question*. New York: Routledge.
7. Straub, A. M., B. J. Gray, L. A. Ritchie, and D. A. Gill. 2020. Cultivating disaster resilience in rural Oklahoma: community disenfranchisement and relational aspects of social capital. *Journal of Rural Studies* 73(2020):105-113. <https://doi.org/10.1016/j.jrurstud.2019.12.010>.
8. Timm, N. L., and M. Gneuhs. 2011. The pediatric hospital incident command system: an innovative approach to hospital emergency management. *Journal of Trauma and Acute Care Surgery* 71(5):S549-S554. <https://doi.org/10.1097/TA.0b013e31823a4d28>.
9. United States Census Bureau. 2024. *Median household income by state 2024*. Available at: <https://worldpopulationreview.com/state-rankings/median-household-income-by-state> (accessed July 14, 2024).
10. United States Census Bureau. 2021. *Oklahoma: 2020 Census*. Available at: <https://www.census.gov/library/stories/state-by-state/oklahoma-population-change-between-census-decade.html> (accessed July 14, 2024).

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## Conflict-of-Interest Disclosures

None to disclose.

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