National Advisory Committee on Children and Disasters (NACCD)

Metrics of Baseline Vulnerability in Pediatrics Health Care Services Report

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DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

ASPR

NACCD Brief Task: Identifying Metrics of Baseline Vulnerability in Pediatrics Health Care Services

Introduction

This When Hurricane Maria struck Puerto Rico in September 2017, every aspect of life and infrastructure on the island was devastated. The healthcare delivery system was not immune to this impact. Access to healthcare was tenuous and inadequate for many months after the storm, and still falls short of the optimal. The reasons for this are many: some relate to the tremendous scope of damage from Maria, but there are other characteristics related to the geography and pre-hurricane infrastructure, economy, and healthcare system.

The concept of a Regional Disaster Health Response System (RDHRS) rests on the aspiration of a strong and resilient local healthcare system that can withstand, respond to, and recover from disasters and public health crises. The different effects and recovery trajectories from the three major U.S. hurricanes of 2017 – Harvey, Irma, and Maria – invite inquiry as to why some areas can respond better and faster than others after disaster. A baseline assessment of vulnerabilities in healthcare delivery would be invaluable in predicting an area's need for outside assistance and prognosis over short, medium, and long-term timescales, enabling a more targeted direction of resources.

The Assistant Secretary for Preparedness and Response (ASPR) asked the National Advisory Committee on Children and Disasters (NACCD) to develop a list of metrics that could define the baseline status and vulnerability of an area's ability to deliver pediatric healthcare. The NACCD addressed this question at its in-person meeting on June 28, 2018 in Washington D.C., and identified the following indicators:

Community Characteristics

- Geographic isolation (possible definition: distance to two closest major metropolitan centers)
- % children receiving free or subsidized school lunch
- Baseline power grid penetrance and capability for rebuilding
- Baseline high-speed internet/cell phone/4G availability
- # of children with technology-dependent medical conditions (identify through Medicaid claims data)
- Homeless population per capita
- Baseline water capacity, frequency of water disruptions and shortages

Pediatric Services

- Availability of pediatric primary care (identify through Health Professional Shortage Area (HPSA) designation; also utilize AMA Physician Masterfile (1), AAP Chapter, insurer rosters as additional data sources)
- Availability and breadth of pediatric medical and surgical specialists, focusing on 24/7 coverage
- Availability of pediatric behavioral and mental health services (outpatient and inpatient)
- Availability of pediatric nurses
- Inpatient capacity (pediatric bed capacity, average % filled, surge capacity)
- % of area hospitals which are Critical Access Hospitals
- Access to pediatric trauma care (Pediatric Level I/II trauma centers)
- Pediatric transport capacity
- Pediatric extracorporeal membrane oxygenation (ECMO) availability and capacity

Other Indicators

- Average Medicaid to Medicare payment ratio (amount paid by Medicaid as a % of Medicare)
- Hospitals' days cash on hand
- Hospitals' inventory of specialized pediatric equipment and supply chain replenishment capability
- Robustness of local healthcare coalition participation, functionality, funding, pediatric drills

Recommendations

The NACCD recognizes that this list is a first step in developing a measure of baseline vulnerability in the pediatric health system. Specifically, the NACCD recommends the following next steps:

1. Assess the ability to quantify each of these metrics using existing data sources. Some of the proposed indicators will be very easy to obtain and quantify, such as health professional shortage area (HPSA) score. Other measures may be more challenging or subjective, or will require consensus on definition, such as capability for rebuilding a power grid or availability of pediatric nurses.

2. Refine the list by identifying the metrics most useful in determining baseline pediatric health system vulnerability. Some of the proposed indicators will be more readily available or carry greater weight than others. Utilization of a weighted scoring system, such as a Cause and Effect Matrix, may be helpful here.

3. Attempt to validate the refined list by retrospectively applying it to areas that have experienced disaster and comparing the results to assessments of healthcare access and status in recovery in these areas.

Appendix A: Notes

Shipman SA, Lan J, Chang C, Goodman DC. Geographic maldistribution of primary care for children. Pediatrics. 2011;127:19-27. Available at: www.pediatrics.org/cgi/doi/10.1542/peds.2010-0150.

Appendix B: NACCD Roster

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