

JPPT | Invited Commentary

# Weathering The Storm: Commentary on the Hurricane Helene IV Fluid Shortage

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**ABBREVIATIONS** IV, intravenous; TKO, To-Keep-Open

**KEYWORDS** medication policy; medication safety; medication shortages; pharmacy supply chain

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The situation we face today bears an uncanny resemblance to the circumstances we endured in 2017, following Hurricane Maria. During that time, Puerto Rico's Baxter plant, also a major supplier of intravenous (IV) fluids to many hospitals in the United States was damaged by severe weather, triggering a nationwide shortage scenario.<sup>1</sup> We adapted then, as we are adapting now, but the experience raises important questions about how prepared we are for such disruptions and what can be done to prevent them in the future. The feelings of déjà vu trigger a mix of fatigue with the familiar sense of urgency in meeting the newest supply disruption head on. Facing a similar situation years later reinforces that not enough has been done to address the gaps in the pharmaceutical supply chain for critical medications and supplies.

Hurricane Helene's devastating impact on North Carolina significantly disrupted Baxter's North Cove facility, which is responsible for producing a sizable portion of the nation's IV fluid supply.<sup>2</sup> It produced a ripple effect which has permeated hospitals nationwide, and we are again compelled to reconsider treatment options for our patients. As a country, we are fortunate that hurricane Milton, which followed closely behind Helene, did not impact the B. Braun facility located in Florida, lest a true "black swan" event unfold. St. Jude Children's Research Hospital continues to ensure that no patient experiences delayed chemotherapy because of the shortage, but these occurrences have profound implications for pediatric patient care across the United States.

While Baxter has increased allocations of IV fluids for children's hospitals (those who belong to the Children's Hospital Alliance) to 100% (and this is appreciated as we were uncertain that we could continue chemotherapy as usual in the first week of the shortage) the reality is that this doesn't fully solve the problem. Some hospitals with pediatric services that aren't classified as children's hospitals are still receiving only 60% of their usual supplies. This has forced providers in these facilities to make tough decisions about how to allocate

limited resources.<sup>3</sup> Even in our hospital, which has been prioritized for supplies because we are a standalone pediatric facility, we face the constant challenge of managing the needs of our patients with the resources at hand (secondary shortages resulting from the IV shortage continue to creep up as adult facilities look for creative solutions and grey market entities shop for opportunities). There's an ever-present concern about whether the next shipment will arrive on time.

St. Jude Children's Research Hospital continues to implement strategies aimed at stretching our limited supplies to serve our patients. In the hope of being helpful for others, we outline our steps below. Upon realizing the situation we were in with Hurricane Helene, our drug shortage management team pulled directly from our drug shortage repository to jump-start efforts:

- Establishing the most accurate count of our supply was our primary responsibility and this could only be done by consolidating our supply in a centralized location. We focused on the highly used agents which also happened to be the most affected for us. We chose to centralize the IV fluid supply in our pharmacy department from most nursing units, but continued to stock them in the high acuity settings where patients might need rapid fluid resuscitation, such as our acute care clinic and intensive care unit. We are a large clinical research hospital, so we quickly enacted a plan to scrutinize fluid distribution on all laboratory use of IV fluids that were affected by the shortage, allowing us to prioritize what supply we had for patient care.
- Upon reviewing our previous mitigation strategies used during Hurricane Maria, some had never been retired, such as extended hangtimes, and others were quickly identified as appropriate strategies to re-implement during this shortage. Recommendations such as standardizing To-Keep-Open (TKO) rates to the smallest rate and volume needed, limiting outpatient IV hydration

orders to a maximum dispense of 24 hours, and changing some dispensing practices for small volume chemotherapy (when appropriate) were communicated to all clinical staff, along with the reminder to use oral medications.

- Perhaps the most significant practice change was a multidisciplinary team of physicians, nurses, dietitians, and clinical pharmacists gathered to develop a clear guidance document for clinical staff to direct prescribers on oral hydration orders pre and post chemotherapy as well as pre surgical. This group also created electronic ordering smart phrases within our electronic health record. While oral hydration is likely standard practice at pediatric institutions, our pediatric oncology hospital where most patients have IV access and many often have limitations to oral fluid intake, the creation of such a resource with a quick turnaround time required a collaborative team of healthcare providers.

In short, adaptations to ensure that every patient receives the necessary care require constant vigilance and teamwork among providers.<sup>4</sup>

We should also consider the pathway forward. The events surrounding Hurricane Maria and Hurricane Helene illustrate the pressing need for systemic supply chain changes to protect our most vulnerable patients in the future. We firmly believe that there are clear lessons from these hurricane scenarios and the time to learn is now:

- There exists an urgent need for a diversified supply chain, both at a manufacturer and a wholesaler level. By spreading production across multiple manufacturing sites in different geographic regions, and doing the same for storage of redundant supply, we can safeguard against the effects of natural disasters on critical medications and supplies. This strategy could ensure that if one facility is compromised, others could step in to fill the gap, or that there is redundant supply warehoused in multiple geographic regions which could be rotated to meet strategic needs in the next shortage scenario.
- Panic is the enemy of good patient care in any shortage scenario and the ability to meet shorter term needs could help avoid a rush to procure supply while also stifling grey market entities who might seek to profit from the opportunity.
- Space can be a challenge in resilience planning—thus, another promising strategy for enhancing resilience is virtual sequestration (where inventory is virtually segregated) through wholesalers. This approach would allow for the rotation of stockpiles between multiple sites, minimizing waste and ensuring that supplies are available where they are most needed. Government agencies or advocacy groups should help underwrite the

carrying costs of these programs, making them more sustainable and effective.

- We must enhance our disaster preparedness and response strategies through strategic sourcing. At St. Jude, we refer to this effort as supply and “medication acuity scoring,” or assessing the specific medication and/or supply needs at the facility level and planning to maintain adequate supplies for defined time periods (such as one month of essential medications). By planning for challenging times during more stable periods, we can mitigate the impact of future shortages.

We cannot accept shortages and disruptions as the norm. The care we provide to our patients, particularly in pediatric settings, must remain uncompromised.

For now, our teams are focused on managing the current crisis. We will continue our work to ensure that all IV fluid is used efficiently, communicating closely with suppliers and other healthcare facilities to share resources and strategies. The critical lesson from both hurricanes is that our resilience in providing care depends on our ability to identify and address the supply chain vulnerabilities. While we will never be without risk, we cannot rest until each of these situations has been addressed with adequate redundancy.

## Article Information

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