

## SITUATION

Missouri hospitals have reported impacts from the temporary closure of the [Baxter](#) manufacturing plant in Marion, N.C. as the result of damage from [Hurricane Helene](#). All facilities are expected to be impacted, even if Baxter is not their primary vendor. Depending upon level of impact, conservation, contingency and alternate care strategies will be needed.

On Oct. 9, Baxter [announced](#) allocations are increasing from 40% to 60% which will provide some relief, however, most conservation strategies will need to remain in place. Baxter expects to be at 70% by the end of October and 90% to 100% by the end of the year.

## BACKGROUND

This Baxter facility is a critical supplier of intravenous and peritoneal dialysis solutions, producing approximately 60% of the IV solutions used domestically. Baxter is actively working on remediation efforts and exploring alternative production sites to mitigate the impact. Additionally, alternative vendors have put customers on allocation for protective reasons but intend to also ramp up production to mitigate these challenges.

## ASSESSMENT

The disruption in supply of these items may impact patient care. A current inventory and use rate of these items can clarify which conservation strategies will prove most helpful. A detailed use rate, or burn rate, for IV fluid type and location is helpful. Develop both short- and long-term strategies to address these shortages.

- [Baxter fluid disruption spreadsheet to determine burn rate](#).
- Evaluate clinical needs - learn which care units, interventions, procedures and other common situations such as dialysis require the largest amount of IV fluids.
- Identify alternative vendors
- Identify potential modifications to policies and procedures as well as care plans.
- Identify and review alternative therapeutics.
- Identify potential variances needed to continue patient care.



### [Missouri Hospital Association Supply Chain Shortages](#)

Hospitals are asked to report current or anticipated supply chain shortages, disruptions or problems.

### Updates from Call with HHS and Baxter – October 10, 2024:

- Baxter officials have established a dedicated email address, [hurricanehelenesupport@baxter.com](mailto:hurricanehelenesupport@baxter.com), that hospitals can use to contact the company with questions related to the supply disruption, especially if they are in dire need of the product. Dedicated Children's hospitals may have their allocations for IV solutions and nutrition products increased to 100% by working with the company.
- The FDA instructed hospitals to hold expired products included in this disruption as the FDA anticipates they will likely extend the shelf life of some of these products.
- The FDA is temporarily importing products included in this disruption while ensuring product quality and safety for use in the U.S., in addition to products already being imported from Baxter's Mexico plant. This [table](#) has more information about which products are being sourced and from where.
- The B. Braun manufacturing plant and distribution center in Daytona Beach, FL were temporarily closed on Wednesday due to Hurricane Milton. Products were proactively moved out of those facilities prior to hurricane landfall. Both sites were not seriously damaged in the hurricane and operations are planned to resume Friday, Oct. 11.

## RECOMENDATIONS

### Conservation Strategies:

- Use the smallest possible volume of IV fluids necessary for the indication.
- Regularly review patients receiving IV infusions to determine if they can switch to oral hydration or other routes of administration.

### Alternative Routes and Solutions:

- [Consider using oral hydration or enteral fluids when appropriate.](#)
- [Utilize alternative IV fluids or electrolyte solutions that may be more readily available.](#)
- Consider transitioning to IV Push medications in place of IV drips or piggyback administration.
- Consider the use of IV syringe pumps if you have them available.

### Operational Adjustments:

- Consider activating incident command.
- [Implement mix-on-demand IV products to reduce waste.](#)
- Leverage EHRs with reminders and hard stops when ordering IV fluids that are in shortage.
- Leverage EHRs with reminders or require assessment before reordering for non-critical care patients with each bag of IV fluids used.
- Create Oral Hydration Order Sets [Sample Order Set Build from Nebraska Medicine.](#)
- Consider [Extending IV Fluid hang times](#) for non-additive solutions.

### Considerations for Specific Areas of Hospitals:

#### PRE-HOSPITAL Considerations

- Start a saline lock but hold IV fluids unless clinically indicated.
- Leverage oral glucose vs dextrose infusions when clinically appropriate.

#### EMERGENCY DEPARTMENT Considerations

- Patients arriving by EMS that have IV fluids initiated, continue use.
- Implement PO fluid challenges prior to IV fluids for mild to moderate dehydration.
- Encourage PO fluids to avoid the need for short-term maintenance fluids.
- Leverage Sepsis guidelines for vasopressors for clinically appropriate patients.

#### MEDICAL SURGICAL Considerations

- Encourage and optimize ORAL hydration & medications where possible. (*Pharmacists support providers in IV to PO interchanges.*)
- Leverage antibiotic stewardship principles, implementing hard stops to consider transitioning to PO antibiotics when indicated.

#### INTENSIVE CARE Considerations

- [Implement IV Fluid Stewardship principles.](#)
- [Operationalize an IV Fluid Stewardship program.](#)
- [ATS Clinical Recommendations: 10 Steps for Hospitals Facing Intravenous Fluid Shortages](#) (Compiled in response to Hurricane Maria)

#### SURGICAL Considerations

- Consider a ["sip to send"](#) strategy to help reduce the need for IV fluids in patients pre- and post-operatively.
- Consider the use of IV pumps for fluid management where appropriate.
- Consider pausing elective procedures.

#### DIALYSIS Considerations

Highlights from the ESRD, [End Stage Renal Disease recommendations:](#)

- Overall approaches should prioritize bag-sparing, rather than solution-sparing.
- Use of a PD prescription calculator, such as the AREP ([Tools – Advanced Renal Education Program](#)) calculator or Sharesource Adequest, may be useful to model changes to provide adequate therapy and decreased bag use.

- If using two different concentrations of PD solution for APD, prioritize higher concentration solution as final fill, leading to improved ultrafiltration.

### Medications

- Loop diuretics should be continued in patients with residual kidney function to maintain euvoemia and BP control. Higher doses are required to achieve adequate diuresis.
- Assess utilization of ACE inhibitors or ARBs to support preservation of residual function.
- Start K binders to prevent hyperkalemia if needed.

### Access to peritoneal dialysis for new patients

- If considering prioritization for new PD starts, pediatric patients, those with exhausted vascular access, or those with urgent medical indications for PD may be considered high priority.

### Communication and Coordination:

- [Ensure purchasing agents have active backorders and are obtaining allocations as they become available.](#)
- [Stay in communication with suppliers, group purchasing organizations, and other stakeholders to stay updated on the status of supplies.](#)
- Communicate strategies and progress with clinical leaders and front-line staff.

MHA is prepared to work proactively with member organizations to develop strategies that will prevent risk to patients. Should you have additional information to share or have questions please contact Keri Barclay, Manager of Clinical Preparedness at [kbarclay@mhanet.com](mailto:kbarclay@mhanet.com), or Kara Amann-Kale, Director of Hospital Preparedness Programs at [kamann-Kale@mhanet.com](mailto:kamann-Kale@mhanet.com).

## RESOURCES

### American Society of Health-System Pharmacists (ASHP)

- [Fluid Shortages - Suggestions for Management and Conservation](#)
- [ASHP Guidelines on Managing Drug Product Shortages](#)

### Baxter

- [Hurricane Helene Updates](#) – Updated Mondays and Thursdays
- [Impacted Supplies and Conservation Strategies](#)

### Healthcare Ready

- [2024 N.C. Baxter Plant](#)
- [2024 Hurricane Helene](#)
- [2024 Hurricane Milton](#)

### SCCM Critical Connections Articles

- [Importance of Effectively Communicating Drug Shortages](#)
- [Navigating Hospital Drug Shortages: Bringing the Team Together](#)
- [Multidisciplinary Management of Drug Shortages and Associated Ethical Dilemmas](#)

### Other

- [FDA IV Fluid Shortage Website](#)
- [American Hospital Association IV Fluid Shortage Dedicated Page](#)
- [Region VII Disaster Health Response Ecosystem \(R7DHRE\) Dedicated Page](#)
- [Vizient IV Adult and Pediatric IV Push Reference](#)
- [Vizient Product Disruption Brief](#)
- [ATS Clinical Recommendations](#)
- [CDC Health Advisory on IV and Peritoneal Dialysis Solution Shortage](#)
- [FDA Temporary Policies for Compounding Certain Parenteral Drug Products](#)
- [Operational Considerations for Sterile Compounding by Pharmacy Compounding Not Registered as Outsourcing Facilities During Public Health Emergencies and Natural Disasters](#)
- [USP monographs during Public Health Emergency](#)