

## SITUATION

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

On Oct. 9, Baxter [announced](#) allocations increased from 40% to 60% and further increases were communicated on Nov. 26. This provides some relief, however, conservation strategies likely will need to remain in place as impacts are expected at least until the end of the calendar 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 also intend to ramp up production to mitigate these challenges.

## ASSESSMENT

While the shortage is ongoing, hospitals are encouraged to continue evaluating the effectiveness of conservation strategies and adjust as necessary. These supply disruptions may continue to 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.

#### **Baxter Updates:**

- Updated allocations for several IV product groups were communicated to customers on Nov. 26. It will take one to two weeks for product to flow through the full distribution network.
- Baxter provides weekly updates every Thursday on their [dedicated website](#).
- Baxter anticipates increasing allocations again in mid-December and reaching 100% allocation for several IV product codes by the end of the year.

#### **FDA Updates:**

- Several lots of IV fluids are being released with a small number of products with defects in the lots. Instructions to screen for defects are being sent with these products.
  - One lot of Baxter sodium citrate 4% (250ml) with illegible lot number (12/3)
  - Eight lots of B. Braun 0.9% Sodium Chloride Injection, USP with overwrap defects (11/25)
  - Four lots of Baxter IV fluids with leaks in some bags (11/20)

## 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 who 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 euolemia 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](#)
- [Email address for customers: hurricanehelenesupport@baxter.com](#)

### 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 Compounders Not Registered as Outsourcing Facilities During Public Health Emergencies and Natural Disasters](#)
- [USP monographs during Public Health Emergency](#)