# Febrile Neutropenia for Bone Marrow Transplant Patients (BMT) 

Disclaimer: This clinical pathway is provided as a general guideline for use by Licensed Independent Provider's (LIP) in planning care and treatment of patients. It is not intended to be and does not establish a standard of care. Each patient's care is individualized according to specific needs.


Activate BMT Febrile Neutropenia Pathway (broadcast if not recognized in triage)

- Vital signs Q20 minutes for stable patients; Q5 minutes for unstable patients
- Cardiac monitoring and pulse oximetry
- Access port/CVL immediately.

If Lidocaine/Prilocaine Cream was not applied prior to arrival do not delay, use Pain Ease Spray.
All points of central venous access should be cultured (each line/each lumen).

- If Port/CVL not able to be accessed, initiate large bore PIV
- Full physical exam to identify possible sources of infection*

$10 \mathrm{ml} / \mathrm{kg}$ Sodium Chloride $0.9 \%$ bolus


## Maximum 500 mL over 30 minutes

Avoid bolus if concern or cardiac or renal dysfunction

- If patient is unstable after 2 boluses, start vasoactive agents
- Consult BMT on-call to discuss disposition

Admit to PICU, if unstable, requiring > 2 Sodium Chloride $0.9 \%$ boluses, or vasoactive agents

## Empiric Antibiotics*

Must be administered in the first hour of presentation

- Cefepime IV $50 \mathrm{mg} / \mathrm{kg}$ X1 (maximum $2 \mathrm{~g} /$ dose)
- Alternate for Cefepime allergy OR history of resistant infection: Meropenem $40 \mathrm{mg} / \mathrm{kg}$ IV (ID approval)
- Add Vancomycin $15 \mathrm{mg} / \mathrm{kg}$ X1 (maximum $2 \mathrm{~g} /$ dose), if hemodynamically unstable or active mucositis (What dose has patient been on that gave therapeutic levels?)


## Labs

To be obtained as soon as possible, do not delay bolus or antibiotic administration for labs

- Blood and urine culture**
- POC glucose
- CBC
- CMP, Mg++, Phos
- Procalcitonin
- VBG
- Respiratory Viral Panel
- If AMS, obtain ammonia
- LP if indicated/concern
- GI Pathogen panel and C. diff PCR (if diarrhea)


## Imaging

- Chest X-ray if concern for pneumonia

$$
\text { Consider hydrocortisone ( } 2 \mathrm{mg} / \mathrm{kg} \mathrm{X1} \text { ) if patient is unstable or had a recent steroid treatment }
$$

* If patient has RLQ abdominal pain consider Typhlitis and add Metronidazole $10 \mathrm{mg} / \mathrm{kg}$ (maximum $500 \mathrm{mg} / \mathrm{dose}$ )
** No catheter urine cultures
*** Chimeric Antigen Receptor CAR T-cell therapy patients will have a wallet card with instructions about ED management of Cytokine Release Syndrome.


## Admit to PICU if patient requires >2 Sodium Chloride $\mathbf{0 . 9 \%}$ boluses or vasoactive agents

Epinephrine Drip

- Drug of choice for inotropy in pediatric shock
- Recommended to start @ 0.05-0.2 mcg/kg/min
- Titrate in small increments based on perfusion

Norepinephrine Drip

- For warm shock

Norepinephrine in D5

- Recommended to start @ 0.05-0.2 mcg/kg/min
- Titrate in small increments to achieve normal MAP (per formula)

Milrinone

- No bolus dose; no titration
- Recommended to start @ 0.3-0.5 mcg/kg/min

Epinephrine in D5
$0.05 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ IV
Continuous

| Admit to PICU if patient requires > 2 Sodium Chloride $\mathbf{0 . 9 \%}$ boluses or vasoactive agents |  |
| :---: | :---: |
| Epinephrine Drip <br> - Drug of choice for inotropy in pediatric shock <br> - Recommended to start @ $0.05-0.2 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ <br> - Titrate in small increments based on perfusion | Epinephrine in D5 $0.05 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ IV Continuous |
| Norepinephrine Drip <br> - For warm shock <br> - Recommended to start @ $0.05-0.2 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ <br> - Titrate in small increments to achieve normal MAP (per formula) | Norepinephrine in D5 $0.05 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ IV Continuous |
| Milrinone <br> - No bolus dose; no titration <br> - Recommended to start @ $0.3-0.5 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ | Milrinone in D5 $0.3 \mathrm{mcg} / \mathrm{kg} / \mathrm{min}$ IV Continuous |

## Metrics

1. Time to first antibiotic
2. Time to first bolus
3. Order set utilization

CE\&O Tracking Metrics

## Contributing Members

Krystle McCarson, MD - Emergency Medicine Tonya Thompson, MD - Emergency Medicine Melissa Magill, MD - Emergency Medicine
Robert Saylors, MD - Hematology/Oncology
David Becton, MD - Hematology/Oncology
Arunkumar Modi, MD - Hematology/Oncology
Kevin Patton, PharmD - Pharmacy
Holly Maples, PharmD - Antimicrobial Stewardship Director
Emily Radar, RN, MSN - Clinical Effectiveness \& Outcomes Manager
Sophia Blythe, MHA - Clinical Effectiveness \& Outcomes Project Coordinator

