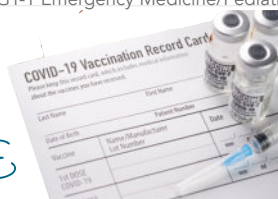


By Elizabeth Ogunsanya, MD, PGY-1 Emergency Medicine/Pediatrics

## getting the COVID VACCINE



## How is Our Community Doing?

### History has Shown

time after time that social determinants of health significantly impact morbidity and mortality of vulnerable populations. In the current COVID-19 pandemic, the mortality rate in Black, Hispanic, Pacific Islander and Asian populations is significantly higher than their White counterparts. Racial minorities, especially Black persons in the United States, have experienced higher rates of COVID-19 related unemployment, housing evictions and hospitalizations.

Now that there are efficacious vaccines available, one would expect to see higher rates of vaccination in these communities. However, quite the opposite is true. University of Chicago's Associated Press-NORC research group conducted a survey that revealed Black Americans were less likely than White Americans to say they have received the shot or whether they will definitely or probably get it (57% compared to 68%). CDC reports that as of Feb 26th, 7% of Marylanders were fully vaccinated. However, the majority are White (291K vs 65K Black and 28K Asian). In Maryland, the highest vaccine rate is in Kent County at 22%, and the lowest is in PG County at 7%, with Baltimore City coming in at 11%.

The state of Maryland continues to have obvious discrepancies in infection rates and now vaccination rates have followed suit. Governor Larry Hogan has repeatedly cited vaccine hesitancy among minority groups as the key cause for the lagging rates, quoting at one point that Black and Hispanic residents in Prince George's County, who represent 84 percent of the county's population, are "refusing to take the vaccine." What people fail to understand are the socioeconomic and cultural reasons as to why this difference exists.

### 1. Access Access Access

In 2021, everything is essentially electronic. Most of Maryland's vaccination sites require signing up online. This in turn necessitates having a computer, internet, and the ability to navigate the web. Citizens also need to be aware of the frequently changing eligibility requirements, and phase of vaccination the state is in. To get the vaccine, one must also be able to physically travel to vaccination centers. This may require transportation which some citizens do not have access to. Finally, for most of the vaccines, citizens may need to take time off from work twice, which could pose a challenge for some vulnerable populations who do not have the luxury to miss work.

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## 2. Misinformation

Unfortunately, incorrect information continues to permeate vulnerable communities. This includes the rhetoric that the vaccine was "rushed", causes infection or that it does not work. A recent survey asked Hispanic respondents in Maryland why they did not want to get the vaccine. Of those polled, 68% felt that the vaccine will be ineffective, 62% were concerned with potential adverse health effects given their pre-existing co-morbidities, 61% responded not trusting the Trump administration and 60% were convinced that it would be too expensive.

## 3. Distrust in the Medical Community

It is not new that Black Americans have had poor experiences with medicine in America. The most notorious case is the Tuskegee syphilis experiment, in which Black men with syphilis were not informed of the details of the clinical trial and were intentionally withheld treatment. Similarly, in 1907, California began mandating forced sterilization of those men and women deemed "mentally inferior" or otherwise "unfit to propagate." By 1964, the state had sterilized 20,000 people, who were mostly poor, Black and Hispanic immigrants. Historically and to some extent now, people of color and women were included at very low rates in clinical trials, if at all, compared to

Cont'd on page 5



### PINK INFECTIOUS CONJUNCTIVITIS EYE

#### VIRAL

- Most common cause of infectious conjunctivitis
- Clues: Minimal or serous discharge, "pink eye" with limited additional symptoms

1. Adenovirus: Most common cause of "pink eye," very contagious

2. Herpes Simplex Virus: Look for classic serpentine dendritic ulcer on fluorescein staining, treat with topical and oral antivirals

3. Varicella-Zoster Virus: Ocular involvement often occurs with Hutchinson's sign; presence of vesicles on the tip of the nose, suggesting infection of nasociliary branch of the trigeminal nerve. Treat with oral antivirals and refer to ophthalmology with close follow up

4. Measles: Can present with cough, conjunctivitis, coryza

5. Coronavirus: Does not commonly cause conjunctivitis, with studies showing <1% of infected individuals develop conjunctivitis during course of illness; however, SARS-CoV-2 has been detected in the conjunctiva of infected individuals, and can lead to viral transmission and spread

## Past, Present and Future: Rebirth After Trauma

by V'onica Colbert, B.S, RN - Forensic Nurse Trainee, UM PGHC



Receiving love from anyone should never be harmful or painful. Yet many relationships here in the U.S. are guided by a false premise that love may hurt. Making an excuse for the perpetrators is not acceptable. All forms of hitting, biting, strangulation and/or painful, unwanted sexual acts should be taken seriously and falls under the umbrella of domestic violence and sexual assault.

Research shows that 85% of women and 10% of men out of a large sampling have been victim to intimate partner violence (IPV) according to a study by the Department of Justice. Here in Prince George's (PG) County, those numbers are staggering. With the hope of giving survivors of sexual assault and/or domestic violence a fighting chance, PG Hospital created the Domestic Violence and Sexual Assault Center (DVSAC) and opened its doors to victims of IPV in 1973. Since then, PG Hospital has increased its support to include victims of human trafficking. The heroes who provide this encompassing care include advocates for the victims, counselors, forensic nurse examiners, community educators and a team of Emergency Department healthcare providers.

The DVSAC at PG Hospital is located on the main level and provides the following services: confidential counseling, 24-hour hotline help, prophylactic medications, STI testing, group counseling, sexual-assault nurse exams (SANE), sexual-assault forensic exams (SAFE), community outreach and advocacy support services. All the services provided are victim focused and applicable to adults, teens, and children.

With the move of PG Hospital to a new area of PG County in the summer of 2021, the Center will continue to provide comprehensive services tailored to the victim and ultimately help them move forward by supporting their journey of overcoming adversity at their own pace.

## EMERGENSEE ocular emergency pearls

By Victoria Hammond, MD

#### BACTERIAL

- Second most common cause of infectious conjunctivitis
- Clues: Mattering and adherence of eyelids upon waking, crusting of the lid margin
- Treatment with topical antibiotics only

1. Staphylococcus aureus: More common in adults

2. Streptococcus pneumoniae: More common in adults

3. Haemophilus influenzae: More common in children

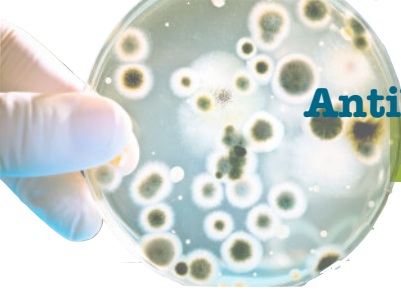
4. Moraxella catarrhalis: More common in children

#### STI

- Requires treatment with systemic + topical antibiotics
- Neonates require full septic workup
- Clues: lack of response to therapy in high risk (often sexually active) individuals, vaginal delivery in neonates

1. Neisseria gonorrhoeae: Often hyperpurulent discharge, can lead to corneal ulcer and perforation

2. Chlamydia trachomatis: Most common cause of blindness worldwide



## Antibiotic Dosing for Sepsis: Do you have the right dose?

### Background

By Olakunle Gbadamosi, PharmD & Peguy Touani, 4<sup>th</sup> year pharmacy student

Sepsis and septic shock contribute to more than one third of all hospital deaths. A key component of first-line management is the administration of early and appropriate IV antibiotic therapy. In patients with septic shock, giving an optimal first dose (loading dose) of antibiotics is equally as important to the timing of administration. There is evidence that low antibiotic serum concentrations are associated with worse outcomes in ICU patients. A loading dose allows for the rapid achievement of therapeutic levels of a medication. It is most useful for medications that are eliminated relatively slowly as they will require a longer time to reach steady state. Sepsis causes increased permeability of the microvascular endothelium and consequent alterations in extracellular body water. This will result in a larger than predicted volume of distribution and a larger required loading dose.

### Choosing a Loading Dose

Administering a high loading dose as early as possible should be standard practice in patients with sepsis. For time-dependent antibiotics (e.g. beta-lactam & vancomycin), a large initial dose ensures good tissue penetration, while for concentration-dependent antibiotics (e.g., aminoglycosides and fluoroquinolones), a high initial dose is essential for maximum bactericidal effect. Administering a high loading dose of aminoglycosides has been associated with lower mortality.

### With severe renal dysfunction, how should the loading dose be adjusted?

The short version of the answer is that the loading dose does not change. The time to reach therapeutic concentration (steady state) depends on half-life and thus is related to the volume of distribution and clearance. This means that for antibiotics with a long half-life, time to reach steady state may be too long, necessitating a loading dose. This loading dose depends on volume of distribution and not on renal clearance. **Therefore, in situations of severe renal dysfunction, the loading dose should still be given in full.**

### With severe renal dysfunction, how should the antibiotic maintenance dose be adjusted?

In cases of severe renal dysfunction, time dependent antibiotics require prolongation of the dosing interval. Concentration-dependent antibiotics require a decrease of the maintenance dose and spacing of the dosing interval.

### What loading dose should be utilized for patients who present with sepsis at UM CRH?

AGENT	IV LOADING DOSE
Piperacillin-Tazobactam	4.5g
Vancomycin	25 mg/kg (Max 2g)
Gentamicin	7 mg/kg
Cefepime	2 g
Aztreonam	2g
Clindamycin	600 mg
Azithromycin	500 mg
Metronidazole	500 mg
Fluconazole	800 mg
Ceftriaxone	2 g

## Carbon Monoxide Poisoning

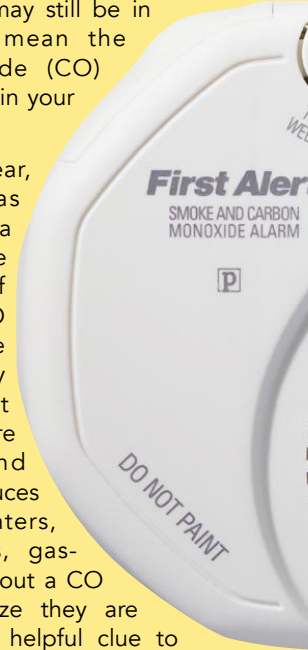
By Sabrina Kratz, MD

Although the weather is warming up, in typical DMV style, cold days or blizzards may still be in the forecast. This might mean the occasional carbon monoxide (CO) poisoning patient showing up in your ED.

Carbon monoxide is a clear, colorless and odorless gas making it impossible for a person to realize they are being poisoned, unless of course they have a CO detector. Hence why these devices are so priceless...they DO save lives! The most common sources of CO are household appliances and anything that uses or produces gas: stoves, furnaces, heaters, chimneys, generators, cars, gas-powered equipment etc. Without a CO detector, families don't realize they are being affected and this is a helpful clue to clinicians. If multiple people from the same household present with similar symptoms, consider CO toxicity. Symptoms include headaches, nausea, lightheadedness, weakness and feeling "foggy." More serious symptoms include chest pain, syncope and change in mental status.

The first step and the first line treatment should always be placing the patient on 100% oxygen via nonrebreather (NRB) mask until you obtain confirmation. The pulse ox is not an indicator of poisoning and will likely be normal. The reason for placing them on 100% oxygen is to competitively displace the CO from hemoglobin. Secondly, the pre-hospital Rad-57 is not sufficient, so it is important to obtain a venous carboxyhemoglobin (COHb) level as soon as possible. While this is the most accurate test to determine if poisoning has occurred, the serum level is not absolute. It should be taken in the context of patient symptoms. While a COHb level of  $\geq 25\%$  is indication for a call to the hyperbaric oxygen specialist, lower levels with concerning symptoms should also prompt a consult. In pregnant patients the threshold is much lower at  $\geq 15\%$  due to the fetal hemoglobin having a stronger affinity for binding to CO. Other helpful ED tests include an EKG, chest x-ray, lactate and troponin. Abnormalities in these tests can help determine the severity of exposure.

If the exposure seems to be mild, then the mainstay of treatment is keeping them on 100% oxygen via NRB (NOT nasal cannula) until their CO level is low and they are symptom free. We recommend 6 hours on the 100% NRB mask for mild cases. For more serious/severe exposure, or if you are simply not sure, call us at the Hyperbaric Chamber at Shock Trauma via Express Care and we can discuss the patient case with you to determine if transfer is warranted. Hyperbaric oxygen therapy mitigates short and long-term sequelae of CO toxicity and timely referral is important.







# Moral Injury:

Why is it a Plague in Emergency Medicine?

By Rita Manfredi MD, FACEP

It's amazing how resilient Emergency Medicine Clinicians (EMC) can be. But there is a limit. Since the Covid-19 pandemic began, EMCs gown-up not only in layers of personal protective equipment; they also safeguard themselves with a protective emotional barrier so they can carry on in times of extreme stress. This is parallel to soldiers in battle who arm themselves psychologically and try not to think about the carnage and death that surrounds them. Moral injury occurs every day in Emergency Medicine. **It is the constant conundrum of being confined in a double bind when every choice we make can result in a compromised outcome.**

Every day in the Emergency Department (ED), we are confronted with multiple episodes of moral injury. These events accumulate, blossom and balloon into what we know as "burnout." Moral injury can range from something blatant where a consultant recommends outpatient follow up for a patient with acute cholecystitis but no health insurance, to more subtle examples of multiple online mandatory trainings or adjusting one's practice to enhance patient satisfaction scores and clinician ratings.

Long before Covid-19, approximately 50% of Emergency Physicians (EPs) were burned out and many considered leaving the specialty at increasingly high rates. Moral injury has been lurking in Emergency Medicine, and Covid-19 has merely uncovered this threatens us all. The moral injury is its realize it's there looking for it. EMCs act in the moment, problem, and forge may feel fine and moral injury while when there is down pause, that we all those locked intensively caring process the misery surrounding them until they have some time to themselves and that is where the danger resides. Some EMCs would rather vanish than appear weak and we know the EM profession affords little space and time for vulnerability and helplessness.

So, what is the solution? The key may be to normalize the processing of these emotions. No one can be a hero 100% of the time. You can't meditate or "yoga" your way to wellness! Organizations and departments must provide humane solutions: consider staffing above 100%, offer backup so that EMCs can decompress when they need (not when the organization says they should decompress), provide the opportunity to process grief and trauma and offer resources for EMCs who may be faltering. The solution must be a coordinated plan with input from "in-the-trenches" EMCs communicating to C-Suite leaders so there is a trickledown effect. The result? Everyone in the department feels empowered to contribute towards joy at work---a proven method to beat back moral injury and burnout.

**EMCs are programmed to act in the moment, work through the problem, and forge ahead**

plague which unless you are are programmed to work through the ahead. Initially we process only sips of working in the ED. It's time or we take a START experiencing away feelings. EMCs for patients may not

By Jessica Downing MD, Stephanie Cardona DO

# THICKER THAN WATER: Heme/Onc Emergencies

**"Anywhere you have blood, you can have symptoms"**

Dr. Sharleen Yuan

## WHAT IS TUMOR LYSIS SYNDROME (TLS)?

TLS describes a range of critical electrolyte derangements caused by rapid cell turnover, due to either growth or destruction of cancer cells. The latter occurs most often after the initiation of chemotherapy, with the greatest risk between 6 hours and 1 week of treatment. It is most often associated with hematologic malignancies such as ALL, but can occur in the setting of solid tumors, particularly those with high tumor burden or when treated with certain immunomodulators such as monoclonal antibodies or tyrosine kinase inhibitors.

## CLINICAL PRESENTATION OF TLS

TLS causes critical hypocalcemia, hyperkalemia, hyperphosphatemia, hyperuricemia, and elevated LDH. Clinical manifestations range from fatigue and flu-like symptoms to seizures, dysrhythmias and sudden death. The Cairo-Bishop definition guides diagnosis of TLS and groups patients into three categories: no TLS (does not meet laboratory and/or clinical criteria), laboratory TLS, or clinical TLS (Figure 1). TLS severity is determined by the presence of arrhythmias, seizures and/or kidney injury.

### CAIRO-BISHOP DEFINITION of TLS

Laboratory	Clinical
<p>≥2 abnormalities within 3 days or up to 7 days after initiation of cytotoxic therapy</p> <ul style="list-style-type: none"><li>• Uric acid ≥ 8 mg/dL</li><li>• K ≥ 6 mEq/L</li><li>• Phos ≥ 4.5 mg/dL</li><li>• Ca ≤ 7 mg/dL</li><li>• 25% change from baseline of any of the above</li></ul>	<p>Laboratory TLS plus ≥ 1 of the following:</p> <ul style="list-style-type: none"><li>• Creatinine 1.5x ULN</li><li>• Cardiac dysrhythmia</li><li>• Seizure</li><li>• Sudden death</li></ul>

Figure 1. Cairo-Bishop definition of TLS

## TREATMENT OF TLS

Initial treatment includes aggressive fluid resuscitation (with a goal UOP>2 mL/kg/hr) and treatment of hyperkalemia.

- **Hypocalcemia:** Only treat if patients are symptomatic and/or have EKG changes such as prolonged QT.
- **Hyperuricemia:** Consider rasburicase in severe hyperuricemia. Rasburicase converts uric acid into an excretable form. The recommended dose is 0.1-0.2 mg/kg/day in 50 mL of NS solution administered over 30 minutes. Many institutions have protocols guiding its use and should be administered only after consulting Heme/Onc specialist.
- **CRRT or HD:** Patients with severe hyperkalemia, AKI, refractory electrolyte derangements, or who develop volume overload may require CRRT or HD. Those with a "calcium-phosphate product" (calculated by multiplying the serum calcium and phosphorus) > 70 mg<sup>2</sup>/dL<sup>2</sup> are candidates for CRRT or HD.

Cont'd on page 5

## How to Combat These Issues

The first thing is to acknowledge these differences and respect people's opinions even if it may not align with one's own beliefs. People need to feel heard, especially when history has proven time after time that this does not happen. Dr. Fauci has been involved with prominent members of the Black, Hispanic and Asian communities to help create transparency and build trust. He has used social media to hold events with community leaders, churches, barbershops, Greek fraternities and sororities, as well as celebrities. Other ways to combat this issue include referring people to the COVID-19 hotline and explaining the process of getting vaccinated, filling out application paperwork for individuals and following up to make sure they have transportation arranged. Lastly the Biden-Harris administration has created the Equity Task Force, with the goal of "mitigating the health inequities caused or exacerbated by the COVID-19 pandemic."

*So, how IS our community doing?*

Now that we know the barriers to vaccination, we as front-line responders can initiate the **COVID SHOT CONVERSATION** and help bridge the gap both at work and within the community.

**DON'T RISK IT!**  
Good advice for bad situations

### Make Communication the Standard of Care

By Priya Kuppusamy, MD

Think about how eager and excited you WEREN'T when you contemplated your most recent dental appointment. For many people, a visit to the Emergency Department elicits anxiety-ridden thoughts and fears. They're often uncomfortable and afraid, in an unfamiliar setting for hours at a time, with minimal privacy and strangers coming and going randomly in and out of their room. The COVID pandemic and the restricted visitor policies have only amplified these perceptions.

So what can we do to alleviate fears and improve the patient-clinician experience during these unprecedented times? **Communicate, Engage and Innovate.**

**Communicate** - Make communication a priority with each patient encounter. While most patients acknowledge the importance of current visitor restrictions, they also fear that this will lead to overall decreased communication and access to information, creating a form of emotional isolation. Utilize the phones in patient rooms to check-in frequently, reassess your patient's status and provide updates. If a phone is not available in the room, use the patient's cell phone as an alternative. If neither of those are options, make it a point to go into the room at least twice, if not more often, based on their length of stay.

**Engage** - Engage family members and emphasize their importance. They can often provide valuable information and including them as part of the patient encounter (whenever applicable) can help establish rapport and build trust with the patient in a short period of time. This is often a challenge in the Emergency Department setting where care can be fragmented. Ask the patient if they would like for you to speak with a family member and provide an update. Express empathy by acknowledging patient and family frustrations with not being able to have visitors. This will help mitigate feelings of vulnerability and build confidence in the care team.

**Innovate** - Use technology to your advantage. Most patients have a smart phone that will allow video calls. When you're in the patient's room, inquire whether you can meet their family members virtually via video to introduce yourself, provide an update or wrap up a visit with a review of discharge instructions. Even if this ends up being the only time you spend with them, that extra effort is what they're sure to remember.

So for your next shift, remember to Communicate, Engage and Innovate. Despite the ever-changing and difficult circumstances, we must stay committed to providing consistent, compassionate care.

## WHAT IS NEUTROPENIC FEVER?

Clinically significant neutropenia is defined by an Absolute Neutrophil Count (ANC)  $< 500$  cells/mm<sup>3</sup> **or**  $< 1000$  cells/mm<sup>3</sup> with anticipated decline to  $< 500$  cells/mm<sup>3</sup> within 48 hours. Patients often reach their nadir neutrophil count 5-10 days after chemotherapy. Fever in neutropenic patients is defined as a single oral temperature  $> 101^{\circ}\text{F}$  ( $38.3^{\circ}\text{C}$ ) or a temperature  $> 100.4^{\circ}\text{F}$  ( $38^{\circ}\text{C}$ ) for at least one hour (Figure 2). Patients may lack typical signs of infection due to poor inflammatory response. All patients with neutropenia merit a thorough exam including inspection of skin, mucous membranes and all indwelling lines.

Neutropenic Fever	
Neutropenia	Fever
ANC: WBC x (%bands + %neutrophils) ANC $< 500$ <b>OR</b> ANC $< 1000$ with anticipated decline to $< 500$ in next 48hrs	Single temperature $\geq 101^{\circ}\text{F}$ ( $38.3^{\circ}\text{C}$ ) <b>OR</b> Temperature $\geq 100.4^{\circ}\text{F}$ ( $38^{\circ}\text{C}$ ) x $\geq 1$ hr

Figure 2. Definition of neutropenic fever

## TREATMENT OF NEUTROPENIC FEVER

Empiric treatment is recommended, specifically monotherapy with any one of the following:

- Cefepime 2g IV q8h
- Pip/tazo 4.5g IV q6h
- Imipenem 500mg IV q6h
- Meropenem 1g q8h (preferred for patients on levofloxacin for outpatient prophylaxis)

Vancomycin is not part of initial empiric therapy, but should be added for toxic-appearing patients and those with pneumonia, skin and soft tissue infections, suspected line infection, severe mucositis and/or MRSA risk factors.

Antifungals may be added to those who do not respond to initial therapy in 4-6 days but are not often initiated in the Emergency Department, with the exception of patients at high risk for fungal infections. Antivirals are recommended for those with influenza.

Patients should receive fluid resuscitation and vasopressors per usual sepsis protocols, and hydrocortisone should be considered for refractory shock. The vast majority of patients require admission.

Patients who are clinically well-appearing with an anticipated duration of neutropenia  $< 7$  days and few co-morbidities may be candidates for discharge on ciprofloxacin plus either Augmentin or clindamycin after discussion with their oncologist. Scoring tools are available to assess risk (i.e. MASCC index score).

Cont'd on page 6



## Micro Corner: *M. genitalium*

Because let's face it, we all love talking about  
**SEXUALLY TRANSMITTED INFECTIONS**

By Amanda Quiller PA-C



Although this exciting microbe is not exactly new on the block, you may not think of *M. genitalium* all that often. Maybe you should have this bug in mind the next time you sign up for that yet-another-STI-complaint on the ED tracking board...

**WHAT IS IT?** *Mycoplasma genitalium* is a slow growing, very small, atypical bacterial organism in the *Mollicutes* class, lacking a cell wall and therefore not visible when Gram stained. This means that if we don't think about *M. genitalium* when we send our typical STI swabs/cultures (wet prep, GC/chlamydia), we won't find it.

**WHAT DOES IT DO?** Asymptomatic infection is common, but classically, *M. genitalium* causes male urethritis and is responsible for ~15-20% of nongonococcal urethritis (NGU), 20-25% of non-chlamydial NGU and ~30% of persistent/recurrent urethritis (as per the CDC). It has less commonly been implicated in cases of epididymitis, balanitis and prostatitis. In females, it can cause 10-30% of cervicitis leading to PID. Its symptoms are nonspecific and similar to those caused by gonorrhea and chlamydia. **It should be on your radar for patients with recurrent/persistent urethritis, cervicitis or PID, especially if they have been treated empirically and/or have tested negative for gonorrhea and chlamydia.** The typical patients affected are sexually active, 18 to 30 year-olds. As with other STIs, it's often not the only STI on board.

**HOW IS IT DIAGNOSED?** Nucleic Acid Amplification Tests (NAAT) – either PCR or transcription mediated amplification tests. Up until January 2019, there were no FDA-approved tests for diagnosing *M. genitalium*, although testing is now available. This may be one of the reasons we don't consider it as much as we should. At Capital Region Health, it's necessary to have a genital swab or urine sent in a viral transport media obtained from the lab with the order "Urogenital ureaplasma & mycoplasma species by PCR" which also needs approval from pathology. Of note, this is not in our PICIS order set so it would need to be written on an "add on slip." Routine screening for this infection in asymptomatic individuals is not currently recommended in the US.

**HOW DO WE TREAT IT?** *M. genitalium* is intrinsically resistant to a number of antibiotics, including doxycycline (cure rate ~30%). Cure rates with macrolides have been reported anywhere from 85% down to 40% with 1g single dose of azithromycin. Despite the resistance data, if the initial treatment did not include a macrolide, it may be reasonable to start with azithromycin to treat an uncomplicated infection such as cervicitis or urethritis. The patient would then follow up in 3 weeks for a test-of-cure. Consider moxifloxacin in cases of treatment failure or complicated disease. However, bear in mind that treatment failures have also been reported with quinolones.

**THINK OF *M. GENITALIUM*** in cases of persistent/recurrent urethritis, cervicitis/PID, especially if you have ruled out other possible etiologies. Remember that our usual empiric STI treatment options of azithromycin and now doxycycline do have some efficacy in treating this infection, so continue to use good antimicrobial stewardship, consider moxifloxacin for treatment failure and refer your patients for follow-up, especially since we may not be able to easily test for this bug here in the ED.

## WHAT IS BLAST CRISIS?

Blast Crisis is most commonly a complication of CML caused by proliferation of blast cells (>30% in the blood or bone marrow). Key complications include infections, thrombocytopenia, and leukostasis, AKA hyperviscosity syndrome (Figure 3). Leukostasis occurs with WBC >50-100K, increasing blood viscosity and leading to poor tissue perfusion and end-organ damage, including respiratory failure. Neurologic deficits may occur secondary to hyperviscosity or intracranial hemorrhage due to coagulopathy and thrombocytopenia. Due to the high risk of neurologic sequelae, all patients with Blast Crisis should have a thorough neurologic examination and this should be repeated with any change in clinical status.

## TREATMENT OF BLAST CRISIS

IV fluids may be used to temporize the effects of hyperviscosity state. Definitive treatment includes emergent administration of induction chemotherapy and possible leukapheresis. Blast crisis warrants ICU admission in a facility capable of providing such services.

BLAST CRISIS >30% blasts in peripheral blood or bone marrow	
Infection	Elevated WBC count but functionally neutropenic
Coagulopathy + Thrombocytopenia	High risk of bleeding (including ICH)
Leukostasis Hyperviscosity	<ul style="list-style-type: none"> <li>Neurologic deficits</li> <li>Respiratory failure</li> <li>End-organ damage</li> </ul>

Figure 3. Key complications seen in blast crisis

**Call for Authors!!**

Have you been thinking about writing, blogging, journaling, or any other writing besides EMR charting? It's time to let out your inner author or become that writer you envisioned for yourself. We would love to hear from you. Email us at [aakomeah@som.umaryland.edu](mailto:aakomeah@som.umaryland.edu) with your ideas for articles or content.

Here's what we're looking for:

1. High yield EM clinical content with 3-5 main practical "take home" points
2. Nonclinical content is welcome
3. Hot new topics or new takes (what's new or different) on old favorites