

DPM NEWS

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MLREMS Awards

Peruse down to *page 4* and see if you know any of the 2020 MLREMS EMS Award winners! I'm sure they would appreciate an "attaboy" from you.

Tired?

Dr. Galton frequently injects a human touch into the newsletter and does so once again with his article on great partners and lifelong friends on *page 5*.

#Science

Looking for an edgy take on the state of science? I give you one on *page 6*.

As spring turns to summer and illness calls wane while trauma calls wax, it is a refreshing reminder that in emergency medicine things are always changing even as they stay the same. I hope you enjoy the summer edition of DPM News while relaxing on a lake, beach, backyard, or pool. Or, if that is not to be, at least from the front of an ambulance with functioning A/C - even if it requires you to kick in the high idle.

Eric Rathfelder
Editor-In-Chief

The Bees are Back (and Ready to Attack)

Aaron Farney MD, NREMT-P

A Case of Lawn Mowing Gone Awry

Your BLS ambulance is on duty covering the local summer fair on a hot July afternoon when you are dispatched along with ALS to a nearby residence for a 75-year-old male stung by a bee, not alert, priority 1. Enroute, you are updated by first responders that the patient is unresponsive. You arrive on a location a couple minutes later to find a lethargic elderly male sitting on a kitchen chair in care of first responders, ashen and mottled, with ineffective respiratory effort. He has a weak and bradycardic carotid pulse. His tongue is edematous and partially obstructing his airway. His skin is cool and diaphoretic with delayed capillary refill. No signs of trauma.



The patient's wife, who is standing nearby relates the patient was outside mowing the lawn when he suddenly rushed inside the house and told her he had been stung by several yellowjackets. His wife had administered an expired Epi-Pen but he rapidly deteriorated as she was calling 911. His past medical history is most notable for allergy to "bees." He is otherwise quite healthy.

ALS is three minutes out. What is your management of this patient?

Upcoming Events

Melinda Johnston

For more information about any event listed below, please visit the training calendar at MLREMS.org

July

12 - EMS Journal Club

February

17- REMAC

19 - MLREMS Council

19 - REMAC Case Review

August

16 - REMAC Meeting

September

19 - EMS Quality Academy (start)

20 - MLREMS Council

20 - RSI Case Review

Vespidae, however, which includes yellow jackets, hornets, and wasps, are responsible for the majority of “bee” stings that require medical attention. These more aggressive insects tend to nest in trees, walls, or the ground, and do not like to be disturbed. When bothered, they are not fond of apologies or excuses. They will defend their nests aggressively, and are capable of repeated stings. Their venom contains all sorts of nasty ingredients, including histamine and melittin, the latter of which causes degranulation of basophils and mast cells. Yellow jacket venom in particular is prone to sensitizing immune systems and causing allergic reactions on repeat exposure. To make matters worse, there is cross reactivity between Hymenoptera species. In other words, if you are allergic to hornets, you are probably allergic to wasps.

Clinical Presentation

Most individuals stung by bees, hornets or wasps typically experience localized symptoms only, starting with pain from the sting, occasionally followed by some local erythema, swelling, or itchy hives (urticaria). Stings to the eyes and face, for obvious reasons, can be more serious. More extensive localized reactions may cross joints. More significant reactions are characterized by systemic symptoms, such as diffuse urticaria, respiratory, cardiovascular, or GI system involvement.

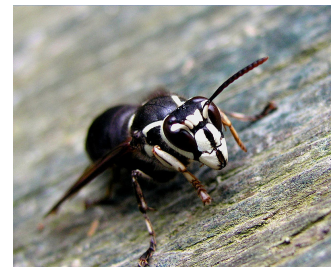
Background

Summer has officially arrived, and along with it another year of yellowjackets, bald faced hornets, and other flying stinging critters. As I’m on the phone with my friendly local bee service while staring (from a safe distance) at a wasp nest on my eaves, now seems like a good time to refresh on envenomation associated anaphylaxis!

Bees, wasps, and hornets belong to the order Hymenoptera, which also includes ants. This order of insects is responsible for more human fatalities than any other group of insects or arthropods (e.g. spiders). The subgroup Apidae, which includes honeybees and bumblebees, are usually relatively docile and are rarely responsible for medical emergencies. In fact, male honeybees do not possess a stinger at all. Female honeybees can sting but the barbed stinger lodges in the victim, eviscerating and killing the bee...which I’m sure gives her some pause prior to stinging! Because of this, the honeybee can only sting once. Africanized, or “killer” honeybees, have the same venom as regular honeybees, but are much more aggressive – an entire hive may attack. Fortunately, these are not known to be in our area!



Honeybee (usually docile)



Bald-faced hornet (aggressive)



Yellowjacket wasp (aggressive)

Anaphylaxis

Anaphylaxis is a true emergency that requires prompt recognition and treatment. Anaphylaxis should be considered in any patient who has been stung by Hymenoptera, especially Vespidae, and who now has respiratory and/or cardiovascular compromise. Signs and symptoms may include respiratory distress, stridor, wheezing, respiratory failure, syncope, hypotension/shock, cardiovascular collapse, and even cardiac arrest. Understand that the patient may present at any point in this continuum. Additionally, anaphylaxis should also be suspected in any patient with a known Hymenoptera allergy and who has two or more findings, such as diffuse urticaria/angioedema and abdominal pain or vomiting, regardless of respiratory or hemodynamic status. Anaphylaxis is often under recognized. If the diagnosis is in doubt, err on the side of caution and consult online medical control for guidance.

Treatment

Any patient with symptoms after a bee sting, especially Vespidae, warrants a thorough evaluation. Localized symptoms in a low-risk patient can be safely monitored and treated by BLS. Any patient with evidence of systemic involvement warrants evaluation by ALS and transport. Patients with isolated diffuse urticaria will experience relief from diphenhydramine administration. Patients with angioedema warrant steroid administration (e.g. 10 mg dexamethasone dripped in over 10 minutes).

Any patient in anaphylaxis warrants rapid administration of intramuscular (IM) epinephrine. The dose is 0.3 mg for adults (30 kg and up); 0.15 mg for pediatrics, and is standing order for CFR and higher. CFRs must utilize autoinjectors; EMT-B and higher may administer syringe epinephrine. A dose may be repeated if needed in five minutes. Patient who are hypoxic or in respiratory failure require oxygen and assisted ventilations, respectively. Wheezing patients need inhaled or nebulized beta agonist therapy. All anaphylaxis patients need parenteral steroids and antihistamines. Hypotensive patients warrant crystalloid fluid bolus(es). In the case of refractory hypotension, either additional IM epinephrine or vasopressor infusion is necessary. While norepinephrine is standing order, epinephrine infusion may be beneficial in the setting of anaphylactic shock refractory to IM epi. Epinephrine infusion requires consultation with online medical control.

....Case Continued

The patient is lowered to the floor and your EMT partner initiates ventilations with a bag valve mask and O₂. You (EMT-B) rapidly draw up 0.3 mg (0.3 mL) of epinephrine 1 mg/mL, perform a medication cross check with your partner, and inject it IM one minute after making patient contact. Two minutes later, ALS arrives; there has been no change in patient condition. Vascular access is established with an IO in the right proximal tibia. The patient loses pulses and chest compressions are initiated. ALS administers 1 mg IO epinephrine (1 mg/10 mL) and starts a 1,000 mL IO fluid bolus. At the next pulse check, the patient has regained pulses. Shortly thereafter, he starts to wake up and pushes the BVM off his face. He is transitioned to an oxygen mask and packaged for transport. Enroute to the hospital, a second IV is established. Diphenhydramine and dexamethasone are administered. A 12-lead EKG shows no ST segment aberrations. Fifteen minutes out from the receiving hospital, the patient becomes hypotensive and confused. An additional dose of epinephrine 0.3 mg is administered IM. In consultation with medical control, an epinephrine drip is mixed up: 1 mg of epinephrine in injected into a 1 liter bag of NS and labeled "Epinephrine 1 mcg/mL." The drip is started at 2 mcg/min and titrated to maintain SBP > 90.

On arrival at the hospital, the epinephrine drip is continued. A central venous catheter and arterial monitoring catheter are placed. The patient is admitted to the ICU and does well. On hospital day #3 he was discharged home with a referral to Allergy and Immunology. On his way home, he picked up two new epinephrine autoinjectors and stopped by his friendly local bee spray service.

In Closing

Summer time brings warm weather, lots of sun, and with it yellowjackets and wasps. Stings from these insects can produce a range of symptoms from minimal to life-threatening anaphylaxis. First responders, EMTs, and paramedics must have a high index of suspicion for anaphylaxis, be able to readily identify it, and know the treatment cold, especially IM epinephrine dosing. More severe cases may be refractory to initial treatment. Do not hesitate to consult with online medical control when appropriate.

Questions, comments? You can reach me at Aaron_Farney@urmc.rochester.edu. More information on the Medication Cross Check program can be found here: <https://mlrems.org/GetFile.aspx?fileID=27165>.

References

Tintinalli, Judith. Tintinalli's Emergency Medicine: A Comprehensive Study Guide. 8th edition. 2019 New York State EMS Collaborative Protocols, Version 002.

MLREMS Award Winners

MLREMS PIER Committee

This year, the PIER Committee joined forces with UR Trauma to create a hybrid Stop the Bleed Training for the Community! This included a pre-recorded online training for folks to do as a prerequisite before they headed out to one of our local participating agencies for some hands on training. Thank you to all of the agencies that participated in hosting and teaching this life saving course for our community members!

This year with social distancing and masking we were able to have a small in person awards ceremony with some of our winners that we also shared live over Zoom! Congratulations to all of our award winners!

ALS Provider of the Year – **Robert Sparks**

BLS Provider of the Year – **Christian Cruz & Alonzo Mora**

EMS Communication Specialist of the Year – **Raymond Horn**

EMS Educator of Excellence – **William Comella**

Harriet C. Weber EMS Leadership Award – **Tim Kelly**

Paramedic Rookie of the Year – **Angelica Fogg**

Registered Professional Nurse of Excellence – **Dianna Lyko**

Physician of Excellence – **Jeremy Cushman, MD**

EMS Agency of the Year – **Livingston County EMS**

More information on the Stop the Bleed campaign can be found here: www.stopthebleed.org.

The Right Partner

Christopher Galton MD, EMT-P



Full disclosure: I was very, very lucky over the course of my career.

I want to start with a perfect EMS quote that is dead on target for this article (pardon the pun). *“Friends help you move. Real friends help you move bodies.”*

We all have people that make us cringe when we see their name next to ours on the schedule. On the other hand, and hopefully more often, we get assigned partners that make us happy to be at work. Some partners keep us laughing through tough times. Some keep you grounded and continuously remind you that you got into emergency services for all the right reasons. Some have the best instincts for food throughout the day. Some just hit on all cylinders and not only make work fun, but you are able to develop lasting friendships. Those are the best partners, and I was lucky enough to have a handful of them during my career.

My EMS career started at Penn State when I was in college, where I spent 3.5 years cruising around campus in an ambulance. That had to be the most fun job I have ever had. I earned \$4.25/hour and worked from 1600-0800. What really made it great though was the two other EMTs I was platooning that rotation with. We spent our time working Saturday nights on a college campus. As you can imagine, we spent the majority of our time picking up soaking wet, half naked coeds. To this day I don't understand the instinct to put the passed out drunk in the shower. They both went on to be outstanding people. I looked forward to every shift I worked with them, and they made me a better human being.

My first long term partner in Denver was ironically from Troy, NY. We bonded pretty quickly over tales of grey skies, skiing, and trekking around the Adirondacks. Although we had similar geography in common, what really brought us together was our love of the night shift and the calls that go along with it. We ended up forming a group that would routinely get out of work in the morning and go golfing, head to the amusement park and float in the lazy lagoon, or make some turns skiing. We bonded and this gave us the opportunity to decompress after many tough shifts. EMS providers need that decompression time. Taking our baggage home is a bad idea, which makes your partner a key person for you and your family's well-being.

My luck with great partners continued all the way through my last ground EMS job at SEQ. Although I would have loved to work more, my other career got in the way, and my boss at home limited me to Sunday shifts. Even with such a limited schedule, I had the privilege of working with Vince Brennan, Bob Breese, Laurie Clark, Brian Goodness, and Ben Sensenbach pretty regularly. It was no easy feat taking in a know-it-all physician from Denver, teaching him about EMS in Rochester, and then having to push him out of the way on every call. The friendly competition that grew from grabbing jobs, pushing each other to be better, and the routinely educational discussions that erupted after an interesting call was the stuff that EMS should be made of. Those interactions have kept me in the business far past my expiration date and will inevitably be the reason I end up looking for another paramedic job when it comes time to retire from the OR and the ICU.

My partners were the people that took my money playing poker, laughed at me when I kicked the wrong door in, put their arm around me after a tough call, and made me a better paramedic and person everyday. They become awesome people doing phenomenal things. My partners over the years became NYPD officers, apple farmers, physicians, Denver PD SWAT officers, and run major EMS agencies around the country. Even the apple farmer continues to provide care to those in need with his local volunteer ambulance service. They all continue to be incredible people, doing incredible things, and impact lives every day in positive ways.

It's easy to overlook just how important that person sitting in the seat right next to you really is. They are the closest tie to reality we have in the frequently ridiculous world we live in. There are few other jobs that you spend so much time, right next to someone else, doing the stressful work that you do. After this tough year that we have all lived through, take a minute to thank them for being there for you. Buy them lunch one day and say thanks for being your partner. If your trajectory is anything like mine, you will remember them for decades to come and they might be the reason for your successful career - whatever path it takes.

To the many bodies we have moved and will move together!

Please feel free to drop me a line at christopher_galton@urmc.rochester.edu.

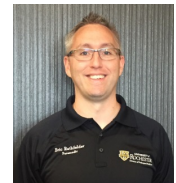
#Science - Process Over All Else

Eric Rathfelder MS, EMT-P

I love science. I love the purpose of seeking knowledge and truth. The rigorous standards. The data analysis methods meant to minimize bias, confounding variables, and errors. The ingenious methods and setups scientists develop to use in experiments to verify their hypotheses. The welcoming of criticism and counter-experiments which attempt to disprove one's results. And the speculation and wonderment that often drives science to conclusions which are more strange than fiction.

But what is science? For the record, I am not much of a great scientist myself. I did earn a Bachelor of Arts degree in physics and taught science at the high school level for years but, as we all know, "those who can - do; those who can't - teach". And those who can't teach - teach PhysEd. So, I would say I am more knowledgeable than the average person about this topic but most certainly no expert. In my evaluation, more than anything, **science is a PROCESS**. No institution, individual, or politician holds a trademark on Science™.

We can all likely remember learning about this process via the scientific method which probably involved something similar to the diagram to the right. The only quibble I have with diagrams like this, and the way the scientific method is frequently taught in school, is that in real-world science, it is rarely as neat, linear, and orderly as we learned. In reality, that nice circle or flow chart would likely involve arrows crossing each other in every which way to bounce back and forth between all of these different steps within the scientific method. However, it is still a great way to understand the process of science.



Which, in recent years and especially when related to popular or controversial topics, has been completely bastardized. Watching politicians, policymakers, journalists, activists, administrators, and yes, even medical professionals, use the term “science” over the past few years is frequently painful on a logical and emotional level. You, too, have heard science wielded as a club used to squelch dissent. As a capital word synonymous with a deity or religion. As an institution. Or, perhaps worst of all, as a hashtag. And almost every single time its use in these manners is antithetical to the process itself. It is taking science and using the term in a fashion that is 180 degrees out-of-phase with the process that actually represents science.

A great philosopher once said,

*“1500 years ago, everybody **knew** that the Earth was the center of the universe. 500 years ago, everybody **knew** that the Earth was flat. And 15 minutes ago, you **knew** that humans were alone on this planet. Imagine what you’ll **know** tomorrow.”*

Well, it was actually Tommy Lee Jones in *Men in Black*, but the quote and context is still fabulous as related to this topic. If you have a second, search and watch the clip - it’s a lot more meaningful in the movie than on paper. His point about the fallibility of certainty amongst humans has been proven constantly in the realm of science. That is why science as a process has so many built in safeguards and is undergoing constant revision as new data, hypotheses, and phenomena are incorporated into our collective awareness.

I am gravely concerned for the future standing of science as a process and, therefore, for the benefits we gain as a society from scientific endeavors. The COVID-19 situation seems to have accelerated two historical mistakes when it comes to the use of science: overstating confidence in certain perspectives/ results and censorship of dissenting thoughts. In these two areas, society ignores history at its own peril.

History is littered with the reputations, and sometimes even the bodies, of scientists who dared question the prevailing popular “knowledge”, the religious heterodoxy, or the ruling class’s perspective even when they were later proven to be correct. Socrates was allegedly forced to drink lethal Hemlock tea when he refused to recant some of his philosophical ideas. Copernicus chose to recant his belief in the correct heliocentric model of the solar system rather than face torture and further damage to his reputation. And throughout the past year, a collaboration of institutions, traditional media, and social media has sought to censor scientists who do not offer particular viewpoints related to current understandings of COVID-19.

One obvious example of this attempt, and sometimes success, at censorship relates to the so called “lab leak theory” as the origin of the pandemic. Throughout the past year individuals who wrote about the possibility of COVID-19 originating in a virology lab in Wuhan China (either purposefully or incidentally through a leak or accident) have had their writings labeled as “misinformation” on social media platforms or, even worse, have actually had their work removed from Twitter, Facebook, and Youtube. In traditional media, these individuals were labeled as conspiracy theorists or heretics. At least, until a few weeks ago, when suddenly this theory was deemed to be “plausible” and can once again be discussed after nearly a year of being censored. But was it ever reasonable to remove a plausible explanation for the origins of COVID-19 from large swaths of public discourse? Did it make efforts to determine the origins of COVID-19 more or less effective? Did these instances of censorship help or harm public faith in the institutions and scientists working on this problem?

I myself was “censored” on a social media platform when I posted a factual, data-based analysis comparing the mortality risk to children 0-17 years old from COVID-19 during the pandemic to the mortality risk (for this age group) from the common flu during a typical flu season. It was a very narrow, specific claim supported by the CDC’s own data meant to be thought-provoking and to provide context. Maybe even to reduce irrational anxiety in the juvenile population. But even that was deemed dangerous misinformation which could not be allowed the light of day or be subject to review and challenges by other people. It was unceremoniously removed from the platform even though it was grounded in government data.

These are some very minor, contemporaneous examples of the broader issue. I wasn’t threatened with excommunication or presented options on how to end my life, but the stifling of debate, especially related to science, through any means at all represents an imminent danger to the process of science. These instances were often justified by the organizations acting out the censorship because the “controversial” thoughts were in opposition to the opinions of an institution or expert used as the benchmark. But if an institutional or expert opinion, or “consensus”, is all that is necessary to hush reasonable challenges to an idea or hypothesis then we are ignoring thousands of years of history and tossing aside the messy scientific process that is responsible for many of our accomplishments as a civilization. Science must strive for truth and knowledge; never for silence and consent.

The appropriate way to challenge ideas in science is through logic, evidence, and communication. If a particular idea is scientifically sound, dissent must be welcomed. Every dissenter will never be convinced and conspiracy theories will always circulate. However, censorship or personal attacks against those presenting reasonable challenges to an idea only serve to increase the perception that the challenge is a legitimate threat to the “accepted” theory. There are no individuals or institutions (and certainly no hashtags) with the right to claim to be the arbiters of science. The best scientists engage in continuous revision of their findings as new data or new ideas lead them in that direction.

Limiting challenges and overstating confidence in a concept are hallmarks of insecurity. They have no place in legitimate scientific endeavors which must actively seek dissent. If a scientific theory cannot hold up to scrutiny, then the theory needs more work. If a concept is supported by overwhelming evidence and is not being embraced by a large portion of the population, then the concept requires more effective communication. And most importantly, every scientist needs to be open to revising his or her faith in every theory because it is a certainty that some of what you “know” today will be disproven tomorrow.