

20 Questions – July 2015

Things that go BOOM

1. We're well into trauma season. If you have a patient with traumatic arrest what are the things they really need?
2. How quickly should the traumatic arrest be in a hospital (ideally a trauma center)?
3. If you have a patient with a traumatic arrest and they get a thoracotomy in the STAB room, what are their chances of survival?
4. You're called to a GSW pt late on a Saturday night. After the scene is safe, you see two wounds on the lateral neck. No other injuries are apparent. Do you put this person in a C-collar while you're going Code 3 to the hospital?
5. On the same shift, you get called to another GSW. Scene is Code 4 and this time the patient has been shot three times. Twice in the abdomen and once in the leg. It's an otherwise healthy 20 y/o male who says he feels fine. VSS. Is this patient a red or yellow?
6. What if you find out the gun used was a .22 caliber handgun?
7. Does a small bullet wound mean less internal trauma?
8. True or False? When a patient reports their injuries are from an intentional stabbing or any gun shot the providers in the ED are required to report the incident to police.
9. On a hot and sunny July afternoon, people are out enjoying the gun range (or backyard). Since it's so nice, they break out the Tannerite targets. What does this mean?
10. Some kids looked up how to make explosives on the internet and had an accident. Even though they stood back your patient was hit with shrapnel to the calf and right about the inguinal crease. Significant bleeding on scene. What are the two important temporizing measures he needs while getting efficiently transported?
11. What are the four different classifications of blast injury?
12. A bomb has gone off near Boom Island and you're the first truck one scene. As you set up EMS Command and request additional resources you notice that the walking wounded don't seem to be responding to the voice of your partner (EMS Operations). What's likely going on?
13. Of the various types of primary blast injury, which organ system is responsible for the most common cause of mortality?
14. If you're taking care of a blast victim. You go through the ABC's then does your attention turn towards the "typical" trauma or do you focus specifically on primary blast injuries?
15. What is the name of the pole that runs along the bottom of a sail to give the sail it's shape on a watercraft powered by wind?
16. Where does everybody get those really good fireworks? I'm talking Roman candles, shells, etc. Things that go boom.
17. What types of consumer fireworks cause the most injuries?
18. I thought sparklers were safe, how hot could they really be?
19. On July 4th, how likely is a fire to be caused by fireworks?
20. What's the name of the sound created when an object moves faster than the speed of sound?

20 Answers – July 2015 Things that go BOOM

1. Patients that have a traumatic arrest need one of a couple things: blood and/or surgery. I would go ahead and count on them needing large amounts of both. We often see these patient's hearts on ultrasound just before they arrest and the heart is pumping crazy heart but it's empty. So often when they lose pulses it's just because they're out of blood to circulate. This is the reason that Level 1 Trauma centers save lives - plenty of blood, experienced ED's and trauma surgeons ready at moment's notice.
2. 20 minutes before the time you arrive on scene... Another example of BLS care saving lives, these patients need to move as fast as possible to a hospital. The guidelines for an ED thoracotomy (based on survivability) say that in penetrating trauma the patient needs to have lost pulses within 15 minutes and within 5 minutes for blunt trauma.
3. While there aren't huge studies on this, the best numbers available suggest that for blunt trauma (in patient's within those strict time windows) the chance of survival is 1.4% and the chance of neurologically intact survival is even lower. For penetrating trauma, the numbers are higher at about 19% survival. In practice, this is most successful with stab wounds to the chest. GSW's to the chest have more associated injury.
*Take home point is that pt's with traumatic arrest need our most aggressive cares but will likely still have low chances of survival. This is the proverbial "Hail Mary" in a dying trauma patient.
4. No. Despite what may feel intuitive and natural, in patients with penetrating trauma we end up doing more harm than good with a rigid cervical collar.
5. This may seem silly. Always a Red. Sometimes it's tough, but don't get lulled into complacency by "normal" vitals in young people. If you're concerned about the mechanism with penetrating trauma start in the STAB room - things happen much faster there.
6. The short answer is that there should be no change in management. Any high speed projectile is extremely dangerous to the internal organs. However, commonly used handgun sizes include ("smallest" to "biggest"): 0.22 (twenty two) - 0.380 (three eighty) - 9mm (nine millimeter) - 0.40 (forty caliber) - 0.45 (forty five caliber).
7. No. The important physics to remember is that Energy is equal to mass (i.e. "size" of the bullet) x velocity. So although the 0.22 caliber round is essentially the same size as the 0.223 (assault rifle round) caliber round, the two have hugely different amount of velocities and therefore energy. The more energy imparted, the larger the internal shock wave of damage will be regardless of the size of the permanent wound tract.
8. True. Probably best not to discuss with the patient while en route, but all these cases are reported to PD prior to their discharge.
9. Tannerite is a brand of an increasingly popular target made for those practicing with distance shooting. They are made to be shot at from at least 100-200 yards away. These targets are made out of a chemical mixture that explode upon being shot. Not everyone has the best judgment, so people have been known to get too close or shoot quantities too big. This can give you the typical types of blast injury in severe cases.
10. Tourniquet and wound packing. Hemorrhage control is critical.
11. Primary - caused directly by the over-pressurized tissue; Secondary - caused by flying objects or shrapnel; Tertiary - injuries caused by the patient being thrown through the air from the explosion; Quaternary - all other injuries incurred from the explosion
12. TM rupture from the vast changes in pressure is quite common. People can also get hemotympanum without perforation or in some cases ossicle fracture. You may need to use hand signals or quickly generate some signs to help control the scene.
13. Pulmonary blast injury is the most commonly fatal primary blast injury. This can range from pulmonary contusion to full ARDS.
14. ABC's then the typical trauma first. Stop the bleeding, treat the sucking chest wounds, etc. Those things kill patients much faster, think about treating the blast specific injuries later. Plus, most of what those patients need anyway is supportive care.
15. Boom.
16. MN and WI are fairly restrictive with regards to fireworks laws. Iowa is even more so. However, if you drive west to North Dakota the array of what's legally available gets bigger. If you get to South Dakota their laws allow pretty much anything that's not dynamite. Don't forget possession of these is illegal in MN regardless of where you bought it.

17. According to the National Fire Prevention Association's (NFPA) most recent data, the top three most common offenders are: small firecrackers (18% of injuries reported), sparklers (16%), and reloadable shells (14%)
18. Sparklers burn at more than 1000°F or 538°C. As a reference this is about as hot as the end of lit cigarette.
19. In a typical year on Independence Day in the US, fireworks account for about 2 of every 5 fires reported. Making this the most common cause of fires.
20. Sonic Boom.