



Naturopathic Advanced Life Support

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Welcome to the program designed specifically to meet your needs when dealing with emergencies. We know that you know how to take a history and interview a patient. We want to take those pre-existing skills and apply them to all emergencies.

The program is laid out as follows:

- Online pre-test.

- Study manual sent out in advance.

- A 6-hour classroom portion that is heavy on practical skills.

Classroom

Experienced instructors will put you through realistic scenarios that will require timely intervention(s) to stabilize patients. The instructor will demonstrate the scenario and then students will practice each scenario. Scenarios will last no longer than ten minutes in order to expose everyone to the role of leader. All students must act as group leader twice during the day.

There are also skill stations that must be demonstrated by each candidate.

You must pass both segments to get a certificate. The certification will be valid for two years. You must also have a current CPR-C course before this course starts. This will be offered the evening or day before the practical portion of the course if your CPR training is not current.

All treatments in this guide are using equipment and/or drugs that are available in the Emergency Kit (EMK) as laid out by your college.

IN THIS MANUAL



Review



Skills



Treatments



Really?

Fundamentals of Emergency Response – Initial Assessment and Basic Procedures

The key to emergency response starts long before the emergency. It starts with being mentally prepared. Not many people jump out of bed in the morning and think, “I sure hope we get an emergency today that taxes every ounce of my brain because I really love the surge of adrenalin and the fast heart rates associated with it.” For this reason, we must be prepared in every way. Having our office and staff prepared will go a long way to helping us mentally. Yes, you are going to be stressed before and after the event. That is only natural! Please consider the following:

You are in your clinic when the office assistant comes to you and says there is a patient who appears to have collapsed in the waiting room. As luck would have it your office door does not lock from the inside and you are on the fourth floor, so there is no avenue of escape. You go into the waiting room and see what amounts to chaos and confusion. You enter the room, and everyone looks to you for advice and direction. “Does anyone know what happened?” you ask. You are met with an uneasy silence. You approach the patient to see if he is awake and breathing. Naturally he does not respond and in fact looks quite blue. You direct someone to call 911 and then go back to caring for the patient. Satisfied that the patient is not breathing you start chest compressions. During this time an office assistant in tears brings you the office emergency kit. This is the first time you have ever laid eyes on it. I wonder what is in it you think? You reassuringly thank the assistant and continue doing compressions. During this time you cannot help but notice the three patients who are watching you with much interest. One is taking pictures with their phone. You continue to do compressions. Bravely you ask the assistant who is still in tears to please open the emergency kit. She opens the kit. You are delighted to see some bandages and a pair of scissors. You doubt they will be very useful as they are covered in dirt from the wrench and screwdriver that are stored in the kit as well. You note that there is also a pocket mask and you have the assistant grab it for you and open it. You place it over the patients’ mouth and nose and breath in through the rather large hole in it. You then realize that the mask is still collapsed. You press on it so it opens and then try again. You do this rather slowly as you have been doing compressions prior to that and you are a little tired. As you place the mask with the rather large hole over the patient’s mouth and nose you again try to ventilate the patient. At this point they appear to vomit and you get to enjoy their lunch. Then on the floor you see a little package that reminds you of the one-way valve you learned about in CPR...

OK, so maybe I exaggerate a little. Unknown to you, in a parallel universe the same thing is unfolding, but with a slight difference.

Doctor I think someone has collapsed in the waiting room. "Call 911 and report back to me please," you say. As you cross the room you see the patient on the floor is blue. "Does anyone know what happened?" Is there anyone here with him? As you get down to check the patient you ask your assistant to empty the waiting room. You have started compressions and ask your assistant to get you the emergency kit. "Do you know CPR?" you ask her. Yes, she says but I have never done it for real just when we took the class. "That makes two of us," you say in a calm voice. When she arrives back with the emergency kit you explain to her that you need her to do compressions. After making sure she is doing good compressions you open the kit and take out the pocket mask. You pop it out and grab the one-way valve for it. You then ask her to stop and you put in two breaths. "You are doing very well!" you tell her, I will relieve you in two minutes unless you get tired...

The key to success is called "Preparing to Respond". It is about what you do to get ready beforehand that will be useful when you come up on a situation. When I was working in EMS (Emergency Medical Services) we started our shift by checking out all our equipment. This accomplished two things; first, it made sure I was ready to do my job and second it served as a good reminder of where everything was. Also, I was not the only one on my crew that knew where all the equipment was. This is the team approach. In pre-hospital care my ambulances and kits were set up the same way. Can you imagine if every office had the same setup for emergencies? At least the emergency kits and trays. Just saying...

The reason we encourage folks to take programs like, first aid, CPR and so forth is so we at least all have the same approach. Believe it or not a first responder, a member of the public, and physicians have something in common. We should all respond to emergencies in the same way. Everyone seems to have slightly different ways of doing things but at the end of the day the concepts are the same. I like to use the "H's" to remember stuff.

How - did it happen?

Hazards - This is the most important. Is it safe for me and my team? Then I worry about my patient's safety.

How - many patients are there?

Help - What do I need in the way of help? (Police, Fire, EMS, and so on)

Health – mine - Am I wearing Personal Protective Equipment (PPE to its friends).

If you remember nothing else please remember, **WHAT HAPPENED?** This will tend to give you a clue about safety (hazards) and what you may be facing. BOTH of these principles are unforgettable. **That is, DO NOT FORGET them!**

So hopefully we can see both the humour and reality of the above scenarios. The second scenario showed someone (and office staff) who was prepared. The first scenario showed absolute chaos and was presumably a bad experience for all involved. I know we tend to make all serious patients a cardiac arrest. But the fact is you do not know how each situation will play out.

So, what do you do?

The answer is the same answer that emergency responders have. You prepare yourself first and foremost, and then you prepare your staff, and your equipment. In the perfect world everyone would be prepared and know what to do. At the very least, we need the one person who everyone will expect, to be prepared. That person is you!

Preparing means having the knowledge, the equipment and most importantly a plan.

The fact is, you may not always have the equipment; depending where you are, but two out of three isn't bad. If you have the knowledge and a plan things will hopefully go better. It is not good to assume that you will necessarily have the equipment. For example, not all offices have an Automated External Defibrillator (AED). Also, as a side note on equipment, if you have it you need to know how to use it!

Hazards – (Number 1) This is the most important. Is it safe for me and my team? Then I worry about my patient's safety.

How many patients are there?

Help What do I need in the way of help? (police, fire, EMS, and so on)

Health – mine - Am I wearing Personal Protective Equipment (PPE to its friends).

Let's talk about being prepared.

Have you and your staff kept up their certifications such as:

- NALS training for physicians.

- CPR level HCP (This allows for child and infant CPR as well as two-person CPR and AED use.)

Make sure you have an emergency response plan? (it can be as simple as who calls 911, who clears the waiting room, is the front door unlocked?...)

Is your equipment available, up to date and working?

Do you and your staff know where the equipment is?

Who is responsible for its upkeep? (This includes but is not limited to:)

- Are the drugs up to date?

- Is it properly stocked? (A check list is extremely valuable).

- Is it properly organized?

- Is the AED ready to go, in-date pads and battery?

Fundamentals of Emergency Response-Initial Assessment and Basic Procedures

We all have a different approach to how we examine a patient. You must be organized in your approach to the physical exam and the oral history. Remember your patient may not be the one providing you with the information.

Regardless of our approach the information we require is the same. In an emergency setting this is what I need to know to assess and treat a patient.

Remembering that we all have our own style of questioning a patient, we cannot forget that we still need to ascertain certain information.

OPQRRRST is a mnemonic that is helpful in remembering the important points.

O – Onset - Was it gradual, sudden?

P – Precipitated - Did anything cause it such as exertion, medication ingestion, resting?

Q – Quality - Is it sharp, dull, aching, heavy, tight?

R – Region - Where exactly are you feeling it, (All over, my jaw, neck, chest, back, abdomen, legs)?

R – Relief - Does anything make it better or worse?

R - Relative history to the complaint. - Have you had this before? If so, what was it?
Do you have any nausea, vomiting or diarrhea?

R - Radiate – Is the pain localized or does it spread?

S – Severity - How bad is it? Does it compare to other pain like kidney stones or childbirth? Can you rate it for me out of ten, ten being the worst?

T – Time - How long have you had it for?

O - Onset

P - Precipitated

Q - Quality

R - Region

R - Relief

R - Relative history of chief complaint\Symptoms\Nausea, vomiting, diarrhea?

R - Radiate

S - Severity

T - Time

Another useful pneumonic is **SAMPLE**

S - Symptoms-Pain, discomfort, dizzy, blurred vision, nauseated?

A – Allergies - This can be to environmental influences, medications, food? One should always ask what happens when exposed to whatever their allergy is. If my patient tells me they are allergic to Morphine. I ask them what happens when they have Morphine. They tell me they get nauseated. That is in fact a side effect of Morphine and not an allergy.

M – Medications - What do they take prescribed or otherwise. When did they last have them?

P - Past or pertinent medical history. A stubbed toe two years ago is hardly relevant to a patient who is short of breath. Three previous heart attacks on the other hand is of interest to me.

- L** - Last oral intake. This is relevant in several situations. Obviously potential surgery is the main reason we want to know this. But consider the Insulin dependent diabetic. If they took their medications but did not eat, that may be the reason they are confused.
- E** - Events leading to now - A patient complaining of chest pain states “I ran up the stairs because I was late and did not want to miss my appointment.” That may well give you the clue as to what is going on. Patients who have an Altered Level of Consciousness may not be reliable enough to give you accurate information. If the information can be extracted from family or witnesses that is great. Otherwise you will just be dealing with what you see in front of you.

Please read the following to pick out the **OPQRRRRST** and **SAMPLE** history.

The medical office assistant Cindy tells you that the patient that she just left in a treatment room is not feeling well.

As you go into the room you see a fifty-year-old male who is conscious and alert but pale and diaphoretic. Cindy says “are you OK sir”?

“Cindy is quite a good listener” he says. He goes on to say, “I have had this chest pain for about an hour now and it has me a little worried. It is the first time I have ever had pain like this in my chest. Do you think it could be my heart?”

So, let’s look at what we have so far.

SAMPLE OPQRRRRST

Not too bad for a short conversation, all things considered. We know that we don’t need the patient to talk and talk, as he is obviously apprehensive. As he is pale and diaphoretic, we would like to see the back of him leaving our office as soon as possible. We also know that he is alert as he is answering our questions. (We will go into much more detail on level of consciousness or LOC, in a bit).

Obviously, it is important to establish the level of consciousness. Anything but Alert should cause concern

So where do we go from here?

Airway, breathing and circulation should rate pretty high as far as importance goes.

The fact he can talk to me means he is has an airway and is suggestive of adequate breathing. (We will discuss the quality of the breathing more later.) The continued ability of the patient to stay awake and chat with me implies some form of circulation. A quick radial pulse will tell me if he has a blood pressure of at least 80 mm\Hg.

Moving to your SAMPLE history. When the patient is responsive I need to know the symptoms or chief complaint. Sometimes the two are slightly different, but they can be used reasonably interchangeably. Allergies are particularly nice to know if we have a chance to get that information. Medications are a big one. As you are aware; medications, prescriptions or over the counter drugs, may have interactions or side effects. A pertinent past medical history is extremely important. If for example the last time they felt like this, they had a heart attack that is very pertinent. Last oral intake is important if we think they could be surgical or even become unresponsive and require ventilation assistance. A patient who has eaten recently will pose a very high risk for aspiration if we must support ventilations. If I know a patient has recently ingested food, I will use a device to protect the airway such as a King Airway to reduce the risk of aspiration. Events leading to the chief complaint or symptoms can be paramount in letting us know what is wrong with the patient. The patient tells you that they have just taken a new medication that they have not had before for a sore throat and now they are having trouble breathing.

The gender of a patient may well dictate some extra questions. Consider that the patient is a female. Knowing the date of her last menstrual cycle could be paramount in making a diagnosis.

Let's also look at OPQRRRRST. If I were allowed to ask just one question out of this category it would be "Q". What is the quality of the pain? Imagine the patient tells that his\her chest pain feels like there is a bus parked on their chest. Or one my favorite attention replies, the pain feels like it is tearing or ripping. While all the questions are important, this is the one I will always ask. We need to look forward not backwards sometimes. What do I mean by that? Simple, let us surmise that the patient with a tearing pain in their chest has an Aortic Aneurysm. How long (Time) they have had the pain is not the issue. What we are going to do about it moving forward is. If you think about it, how important is the Onset, or the Provocation, or Region, Radiate, Relief, Relative history, or Severity, or Time at this point.

To get back to the original question what should I focus on now that I have the patient's initial complaint of Chest Pain? I want to know the quality of it.

Sharp - worse with breathing - Consider pulmonary embolism (PE).

Sharp - worse with breathing - Consider Pneumonia.

Sharp - worse with breathing - Consider spontaneous pneumothorax.

Sharp - worse with movement - Consider rib fractures.

Dull, squeezing, tight, pressure, heavy - Consider Acute Coronary Syndrome (ACS) or Angina.

Tearing - Consider aortic aneurysm.

You ask him what it feels like and if it goes anywhere?

So your patient said the pain came on suddenly just a few moments ago. It feels like there is an elephant on his chest. I have never felt anything like this. It is in the middle of my chest and radiating to my left arm. Upon questioning he says he takes no medications and has no allergies that he is aware of.

So, let's look at what we have so far. After the first line of questioning we had-SAMPLE OPQRRRRST After a few questions we now have-SAMPLE OPQRRRRST So, after two short answers from the patient you have all but, Last oral intake and Relief.

When examining a patient, orally and physically, I like to come up with two or three ideas of what I think could be wrong.

Consider the above patient. My first thoughts based on the SAMPLE and OPQRST history I got is Acute Coronary Syndrome (ACS) or perhaps undiagnosed Angina. Based on his description of the pain feeling "like an elephant on my chest," I will rule out pneumonia, pulmonary embolism, aneurysm, and tension pneumothorax.

(We will discuss the use of SAMPLE and OPQRRRRST as it relates to the unconscious patient later on.)

Assessing the situation/identifying an emergency

So, what constitutes an emergency in your office?

All patients who have any of the following should be considered emergencies. (You can add to this list)

- Altered level of consciousness (LOC)
- Anaphylaxis
- Asthma
- Anticoagulant emergencies including Epistaxis

Cardiac events including but not limited to:

- Myocardial infarction
- Angina
- Arrhythmia

Altered level of Consciousness (ALOC)

Any patient who has an unexpected altered level of consciousness should be treated as an emergency. When discussing level of consciousness, we break it down to four levels. **AVPU** is a useful mnemonic.

- A** - Alert, they track you and respond easily and appropriately to questions. The patient should know who they are and where they are. We can also see if they know the date and time. What I don't like about those questions is that the majority of us have to check our watches or phones to see if they are right.
- V** - Verbal - So my patient appears unresponsive as I approach until I talk to them. At that point they talk to me. It is important to ascertain that they are answering appropriately and can obey simple commands. Sir\Mam can you open your eyes please. A patient that cannot obey simple commands is a worrisome patient.
- P** - Pain - The patient has not responded to verbal stimulation, so we can squeeze their shoulder or arm to see if they respond to painful stimuli. Remember we are not trying to injure them or leave bruises. I often run my thumbnail over their collarbone. (Try it for yourself; it will leave a lasting impression)
- U** - Unconscious - This patient does not respond to any stimulation as laid out above.

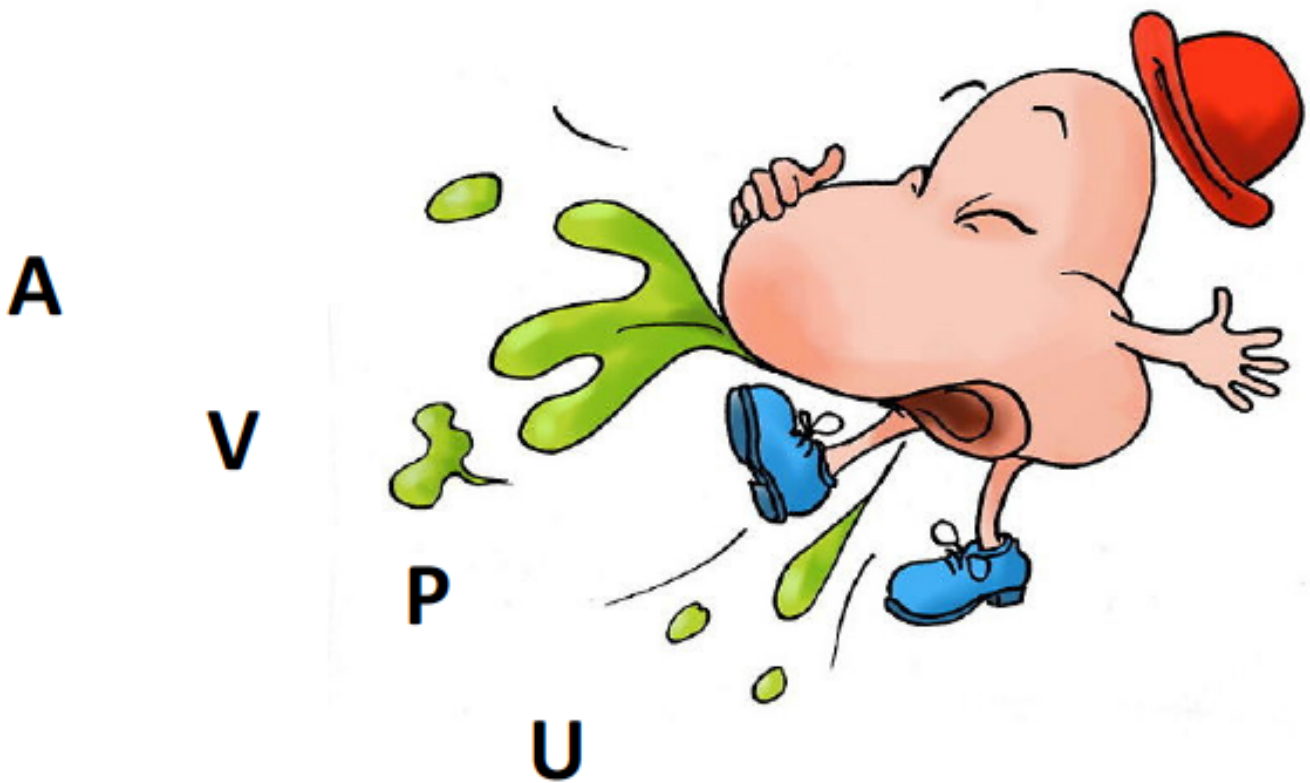
If my patient is alert and or responds appropriately to verbal questions and commands, then I proceed to SAMPLE and OPQRST.

A – Alert – They look at me when I talk.

V – Alert to verbal stimulation.

P – Pain – They respond to painful stimulation.

U – Unconscious – Medical emergency!



If my patient is unable to respond appropriately due to an altered LOC then I will still do SAMPLE and OPQRRRST. The difference is where I obtain the information. If he is a previous patient, then perhaps his chart will tell me something. If not then I can see if anyone came with him, or if there is a medical alert that may give me a clue. If there is an inability to obtain much information, then I will deal with what I see as I work through the case.

Some causes of altered LOC

A – Alcohol
E – Epilepsy with seizure activity
I – Infection
O – Overdose
U – Uremia (excess uremia in the blood as a result of kidney failure or inadequacy)
T – Trauma
I – Insulin (high or low BSL)
P – Poisoning
S - Stroke



Calling 911

Calling 911 can be a stressful adventure. There always seems to be a plethora of questions. The person charged with calling 911 is typically quite far removed from the emergency. They will feel like they are being badgered for answers. Remember the 911 operator is just trying to get as much information as possible. Most of them have set questions that they have to ask. The last thing you need during an emergency is to be pestered by a harassed employee who is trying their best to answer all the questions. They are kind of caught in the middle. If there is time to answer all their questions, then do so. However, consider our worst nightmare, we are doing CPR with two other staff members. Have the 911 callers tell the dispatcher you are doing CPR on a patient and give them the approximate age and patient gender. Then have them tell the dispatcher you are quite busy and will let them know if anything changes.

Believe it or not there is not a specific ambulance for males over a certain age or females under a certain age. Also, you cannot get into trouble for not answering all their questions. Yes, knowledge coming into a call is golden, but there are limits. The first responders will do a reassessment when they get there anyway.

Obviously first responders need to know if there are hazards, and the number of patients.

You can also put your phone on speaker and chat with them while you work.

At the end of the day make sure you have a plan, keep it simple so there is no confusion and communicate that plan to everyone.

You may ask yourself the question: “Will the patient be billed if we cancel the first responders?” The answer is simple. **THAT SHOULD NEVER BE A CONSIDERATION WHEN DECIDING TO CALL FIRST RESPONDERS.**

So, we have called an ambulance.

What now?

Establishing initial airway, breathing and circulation is just part of what we do. We then must monitor the patient’s condition while we wait for the ambulance.

Unconscious Patients

After doing our safety check which includes PPE or personal protection gear such as gloves, goggles and so on ... we do APVU or level of consciousness (LOC). We open the patient’s airway by placing one hand on their forehead and the fingers of the other hand on the angle of the jaw closest to us.



Closed Airway

Open Airway

SKILL STATION – Open patient airway using head-tilt-chin-lift.

Once the airway is open we put our ear close enough for the patient to lick it 😞. We then listen for breathing, feel for breathing and last but not least look for the rise and fall of their chest. We would like them to be breathing in a regular pattern anywhere from ten to twenty times a minute. Patients who have an irregular or gasping breathing pattern will require ventilation assistance with a respiratory device such as a pocket mask.

If the patient who is breathing well with their airway being held open develops snoring respirations, then it will be necessary to keep the patient's airway open manually. A patient who has a noisy airway when unconscious is unable to protect their own airway.

SKILL STATION – Insertion of oropharangeal airway (OPA) – bag valve mask (BVM) – king airway.

After we have established that our patient has a good airway and is breathing appropriately we then check for a carotid pulse.

In the event that there is no pulse we will start CPR and attach an AED if we have one. If 911 has not been called this would be overdue but prudent to have someone else do. If the patient has a pulse that feels reasonable (about one beat per second) then we should check for a radial pulse. The absence of a radial pulse on one side means we should check the radial pulse on the other arm. The presence of a carotid pulse without a radial pulse is suggestive of a patient who is hypotensive. A patient with a radial pulse typically has a blood pressure of at least 80 mm\Hg systolic.

When we have dealt with pulse checks it is a good time to do what we call a rapid body survey (RBS) to look for obvious bleeding and deformities.

Conscious Patients

Assessing the airway on a conscious patient is as simple as seeing they are talking. If they can talk then they have an open and clear airway. If they are not able to make any sounds or just squeaks and grunts they have an occluded airway and will be dealt with as if they are choking. This is treated by backslaps, abdominal thrusts and in the case of pregnant or obese patients' chest thrusts.

SKILL STATION – Conscious obstructed airway management

If they can talk they have an open airway. But how is their breathing? This is a very important question. The best way to assess this is to see how many words they can say without taking a breath.

So how well is my patient breathing? It is essential to have an open airway. How do we assess this?

Try this fun filled exercise. Take a deep breath and then start counting one, two, three, four and so on. On a good day you should easily count to ten before you must take a breath. We would describe that as a ten-word sentence. In other words, the patient is having no problem breathing. Now consider the patient who can only say one or two

words without taking a breath, or worse still, only talks in syllables. These patients are in acute respiratory distress. Another exercise you may wish to try is breathing in and out of a very narrow straw. This will help you appreciate patients who are having trouble breathing and what they will look and sound like. Patients who are having difficulty breathing may use a lot of accessory muscles. Simply put they will be heaving when they try to breath. Also body position is important!



Hey! I am having trouble breathing here.

Patients who are having trouble breathing will usually sit up or stand. They may lean forward with their hands on their knees and will typically have trouble talking to you. You will recall I underlined the word “may” before. A patient who is exhausted from trying to breathe may well look quite relaxed. Do not be fooled! These patients may be on the way to respiratory arrest due to the fatigue brought on by trying to breathe. Duration of the attack and severity of the attack are important factors when assessing a patient.

My favourite assessment tool is my stethoscope. Normal lung sounds are what you should hear when you put the stethoscope on your own chest and breathe normally.

Here is a brief description of lung sounds that should concern us.

Sound	Cause
Absent	Acute asthma or COPD attack
Absent on one side	Tension pneumothorax or hemothorax
Stridor	Narrowing airway of area being auscultated
Prolonged expiratory wheeze	Asthma
Equal wheezes in and out	COPD
Rales	Fluid in lungs
Localizing rales	Pneumonia

Once we have assessed the breathing, we want to assess circulation. This could include taking a radial pulse, a carotid pulse and even a femoral pulse. Circulation can also be checked locally. If for example the patient's right leg is swollen then we could check for either a pedal pulse and/or a posterior tibial pulse. We can also compare limbs to assess circulation in them. A warm pink and dry patient who is walking and talking and squawking probably has good circulation. Taking the patient's blood pressure is also a good way to further assess circulation. In emergency situations I like to do bilateral BPs on the patient as it helps me determine the overall state of their circulation.

If the truth be known, a conscious patient assessment for ABCs can pretty much be done before you even touch the patient just by listening and observing them as you approach.

Anaphylaxis

Anaphylaxis is a life-threatening condition that requires immediate treatment. While most patients recover it can be a lethal condition. Patients who have one reaction often have another within twelve hours. Reactions tend to be worse each time. If a reaction is affecting Airway, Breathing, and Circulation, it is considered urgent.

Critical findings

Airway - If the airway starts to close and you can hear stridor at the neck

- If the tongue starts to swell (These patients will typically be very anxious)

Breathing - The patient's airways may start to swell. While their upper airway may be intact the lower airways may become edematous, making it very hard for them to move air effectively. Listening to their chest is imperative. You may hear wheezing and or stridor. Worst case scenario is you may hear nothing.

Circulation - Vascular collapse leading to unconsciousness and death is obviously urgent and requires immediate intervention.

Treatment

Always support ABC's.

When treating anaphylaxis that is life threatening Epinephrine 1:1000 should be given I.M. The dosage is as follows: 0.01 mg/kg and/or maximum of 0.3 – 0.5 mg for adults. The use of antihistamines in acute anaphylaxis is controversial. However, experts do agree that if you are going to use antihistamines they should never be used before epinephrine. If using epinephrine, it is important to get on with it and not delay! Severe anaphylaxis patients can go from bad to worse in no time at all.

Consider if you need to call 911!

Asthma

If a patient having a severe asthma attack does not concern you, it should! Patients who have an asthma attack are typically used to living with the disease, and as such are good at handling it. So, if they are having difficulty and have sought out your help, then they are worried. That means you are worried as well. Listen to their chest. If they are moving any air at all there will be a prolonged expiratory phase. So, the breath in will be faster than the air coming out. This is of course because Asthma is an expiratory process. The goal of treatment is to cause the bronchioles to relax and let air out. Asthmatic patients can die in front of you. They can also with the right treatment go from near death to breathing well again. (Remember a severe asthma attack can in fact be treated as a severe anaphylactic emergency.)

Critical finding

Asthma patients can go from bad to worse right in front of you! Be aggressive in your thinking and in your treatments!

911 should be activated if you are at all worried.

Aero chamber



Treatment

Give the salbutamol PRN. Be aware that they may not be able to get any in their lungs using just a simple inhaler. For this reason, it is advisable if you have one to use an aero chamber. If you feel that this emergency is due to anaphylaxis, then follow the anaphylaxis protocol.

Consider if you need to call 911!

Anticoagulant emergencies including Epistaxis

History suggests that Attila the Hun died of a severe nosebleed on his wedding night!

Bleeding to death internally or externally is an easy possibility. External bleeds are easier to detect because there is blood everywhere. The treatment, when practical, is to position the patient, position the part above the heart, and finally put pressure on the part. We probably would do all three simultaneously. But please consider the external bleed you cannot see. An example of this might be a gastrointestinal bleed. Some patients may not be too willing to start a conversation with you by saying “*Hi doctor, my pants are full of blood*” Or you may not see the blood. Perhaps they have been vomiting at home and it is coffee coloured or bright red.

They sometimes think we should just know. Early recognition of this kind of history is obtained with a good history and a good exam.

Consider the patient that describes a tearing feeling in their chest or their abdomen. Is this possibly due to an aortic aneurysm?

What about the patient who gives you a history of being on Coumadin for treatment of their Atrial Fibrillation?

Critical findings

Internal bleeding is suspected when a patient has a history of vomiting blood, melina, occult stools, or a suspicious history. Consider the patient who has a history of recent abdominal trauma. This history is a critical piece of the puzzle in determining their condition. External bruising may well be the sign you need to help you make a determination of internal bleeding. Bruising over the RUQ may well point to liver damage. Bruising over the LUQ may point at a damaged spleen. Add a history of trauma, and bruising, and you have reason to be suspicious. In upper quadrant bleeds it is not unusual to get referred pain to the matching shoulder. That is right shoulder - liver and left shoulder - spleen. This pain is caused by irritation of the diaphragm.

Consider the patient who has flank pain from trauma. Upon questioning you ask him what colour his urine is. He tells you a little embarrassedly that it is red. This too may indicate internal bleeding.

Those are some of the less obvious findings. Now take the patient who is smart enough to be obvious.

Signs and symptoms. They will have a history that matches their appearance. They describe passing occult stools for the past three days. They look pale and diaphoretic. They have vertigo when they stand and have a very weak radial pulse. You also note that it is quite rapid and hard to count. This patient is presenting to you already in shock. Their history is suggestive of a lower GI bleed. But in fairness they should have had you at shock. They will need to be sent to a facility that can deal with this patient, unless of course you are so equipped.



Acute Coronary Syndrome\Myocardial Infarction

A large percentage of patients with Acute Coronary Syndrome will in fact be oblivious to their condition. They will suspect that something is amiss but will not suspect it is their heart. For this reason, it is necessary to have a suspicious mind and the ability to do an excellent and thorough history and a good exam. Consider the patient who has very vague symptoms such as an achy sore left shoulder. Upon checking range of motion, you find that moving the arm and shoulder has absolutely no impact on the ache. In going through your OPQRST and SAMPLE questions you find out that the last time they had something like this they ended up in CCU and required three stents. In cases like this the goal is not necessarily to make the diagnosis, but instead to decide what you can and cannot rule out. At this point I would have difficulty ruling out a heart attack.

Women and Insulin dependent diabetics are known to have various misleading symptoms when having a heart attack. Consider the sixty-seven-year-old female who had her husband call the ambulance for her. It was two-thirty in the morning and she was complaining of diarrhea and nausea. It was the worst she had ever felt which is why she had called us.

On exam we found a pale and diaphoretic woman. She denied having any pain or discomfort other than the nausea, and the irritation of diarrhea. Her history was as follows:

She had awoken with the symptoms, which had come on without any warning. She denied any pain or discomfort or shortness of breath. She appeared visually to be neurologically intact and was a good historian. She had an unremarkable medical history, and her medications were non-contributory.

Her pulse was eighty and regular, her blood pressure was within normal limits. A twelve lead ECG however showed that she had in fact suffered an inferior wall myocardial infarction. Within the next ten minutes she subsequently went into ventricular fibrillation nine times and was successfully shocked out of it on the ninth attempt.

Consider this next female patient. She was in her early eighties. She complained of being “a little winded” and had a sore left shoulder. She had pulled her fridge out from the wall to clean under it. When she pushed it back in she jarred her shoulder.

On examination I found her to be alert and oriented and a good historian. Her medical history was unremarkable. She was mildly SOB and could talk in five to seven word sentences. Upon auscultation however, she was wet in her bases. Upon examining her shoulder there was no increase in discomfort when I had her move it. A twelve lead ECG indicated an anterior wall Infarction.

Historically it was thought that chest pain, diaphoresis, arm and neck pain were the symptoms of myocardial infarctions. This is mostly true when dealing with men, but not women and Insulin dependent diabetics. Imagine the surprise at autopsy when women and diabetics were found to have died of myocardial infarction despite not having what we have always considered cardiac symptoms. The moral of the story is that with these patients we must be more suspicious. Remember, we may not make a diagnosis, but it is important to know what we can and cannot rule out.

If we have a patient who we suspect is having a myocardial infarction, then we should arrange for them to get to a hospital as quickly as possible. The goal here is to remember that *“Time is Muscle.”* If a clot causes the incident, then we must make all efforts to dissolve the clot as soon as possible and this is best done in a facility equipped to do so.

Critical findings

Myocardial infarctions are less about critical findings and more about **critical thinking!** The stereotypical patient with a myocardial infarction that we think about as grasping their chest, apprehensive, anxious, grey, diaphoretic and so on. Those are the easy ones. It is the above cases I give you (true cases) which should cause you to think. Obviously not every patient with GI symptoms is having a heart attack. However, a good exam and history will be necessary to rule it out.

Angina

There are many forms of Angina pectoris. For this program we will discuss stable angina and unstable angina.

We will discuss unstable angina first. Unstable angina means it is unpredictable. The patient who has angina every time they walk a block is predictable. The patient who takes two shots of nitro spray and always gets relief from it is predictable. That is, the symptoms and relief he gets is easy to predict.

Now consider the patient who no longer gets relief from his two shots of nitro spray or has symptoms without predictable cause. This patient may be experiencing Unstable angina and should in those cases initially be treated as though he was having a myocardial infarction.

Now stable angina is an interesting creature. It is, as previously described quite easy to know when you will have an attack. Some people are more than happy to get their daily outing even if it means they will need a bit of nitro spray, or perhaps must rest along the way. These patients are usually very comfortable managing their disease. The reason I think it is an interesting creature is more from a patient perspective than angina itself. If a patient who is used to living with and managing angina is suddenly concerned enough to bring it to your attention, then I would encourage you to be concerned as well.

When a patient tells you for example that they have been managing their stable angina quite well thanks, a thorough history is indicated. The goal of the history is always to determine if their angina is still stable and has not in fact become unstable.

Patients who have a new onset of chest pain or chest discomfort should never be treated as an angina patient. Until it can be ruled out they should be treated as having a myocardial infarction.

Angina is not always a precursor to a myocardial infarction!

Treatment

Give the patient 160-320 mgs of baby aspirin. If all you have is 325 mg coated tablets you can give the patient one tablet. (Make sure they chew it!)

Give Oxygen by nasal cannula at 4-6 LPM. Oxygen should be given to patients who have an oxygen saturation less than 94% or are exhibiting signs of shortness of breath.

Call 911 and arrange for prompt medical attention!

Always have it in the back of your mind that this patient could arrest and you may have to initiate CPR and use an AED if you have one.

Patients suspected of having a myocardial infarction may also benefit from a shot of nitro spray or a nitroglycerine tablet SL. A patient must have stable vitals before giving nitroglycerine as it will cause a drop in blood pressure.

Patient who take Avanafil, Sildenafil, or Vardenafil within 24 hours or Tadalafil with 48 hours should not be given nitroglycerine due to increased chance of cardiogenic shock as a result of reduced preload.

The survival rate of out of hospital cardiac arrests with CPR only prior to the arrival of EMS is 7-10%. Add an AED to the formula and the survival rates are as high as 70-80%.

If a patient's heart is fibrillating in cardiac arrest the chance of successful conversion to a normal rhythm decreases 10% per minute without electrical intervention, i.e., a defibrillator or an AED!

Arrhythmia

Most arrhythmias can only be picked up by using a heart monitor. However, there is a lot you can do to diagnose and treat a patient without the use of a heart monitor. For example, we can determine if the heart rate is too fast **or too slow or is regular, irregular or irregularly irregular.** A rate that is too slow typically cannot be monitored

from the wrist (radial pulse) as the slow heart rate lowers the blood pressure too much. However, the rate can be detected at the carotid pulse.

So, you have two patients. One is an athlete and has a pulse at their wrist of 40 BPM. They are warm pink and dry and alert to time, place, and date.

You also have a patient who has a pulse of 40 BPM and is pale and diaphoretic. You cannot detect a radial pulse, but they do have a carotid pulse.

Do you need a heart monitor to tell you which patient is in immediate peril? I hope not!

Now take the patient who is fifty-eight years old. They complain of their heart skipping lots of beats for the last day, and they are very anxious. You ascertain that they do in fact have a radial pulse. The rhythm is irregularly irregular. The rate is 110 BPM. They report to you that this is a first-time occurrence. An irregularly, irregular heart rate is not how the heart was designed to beat. In the perfect world everyone's heart would beat regularly. In some cases, the heart will slow down and speed up marginally when the patient breathes. This is a normal response. My concern with this patient who has the irregularly irregular pulse is that they might be in Atrial Fibrillation. Regardless of not having a heart monitor we should be concerned that a heart, which is unhappy and beating erratically, may produce a blood clot and the patient may have a stroke. An unhappy heart may also just give up the ghost!

Last but not least is the patient who has a pulse that is all but impossible to count because it is quite fast. Set a stopwatch for one minute and see how fast you can count. I will bet the best you can do is about 180 BPM. So, if it is too fast to count it is probably faster than 180 BPM.

Treatment

Possible first time atrial fibrillation-patients should be referred to the local emergency department for treatment. I would suggest talking with your local emergency department to see if they are equipped to deal with it.

Symptomatic bradycardia – This patient should be treated for shock, given oxygen if O2Sat is less than 94%. They can be laid down with their feet elevated about twelve inches. (In the case of obese patients this may make it harder to breathe and you will have to lower their feet.) Transport to emergency should be organized.

Symptomatic tachycardia – So my patient says their heart is beating out of their chest. They look very unhappy. You can have a patient perform a vasovagal maneuver. (My favourite is to have them blow the plunger out of a syringe or blow up a balloon while lying on their back with legs placed at a ninety degree angle. They should attempt the procedure for twenty seconds.) You must be sure that the tachyarrhythmia is in fact, caused by a runaway heart as opposed to an internal bleed. In that case the tachyarrhythmia would be a compensatory response.

Always put your thinking cap on. If you think the arrhythmia is caused by a myocardial infarction, then consider your myocardial infarction protocols.



The crazy and frustrating thing about arrhythmia is often or not we do not catch the cause of it.

Folks who complain of a history of a skipping or pounding heart NYD that may or may not be accompanied by vertigo often or not are found to have tachycardia arrhythmias.

SKILL STATION – Properly instruct a patient in performing a vasovagal

maneuver.

CVA\Stroke

Cerebral Vascular Accidents, or strokes as we like to call them have a variety of causes. The two most common are a clot or a bleed. Related to these is the so called a Trans Ischemic Attack or TIA. Regardless of the cause or presentation it is essential to recognize the symptoms and treat quickly.

Stroke Awareness - Act FAST

Face

Does one side of the face droop?
Ask the person to smile.

Arms

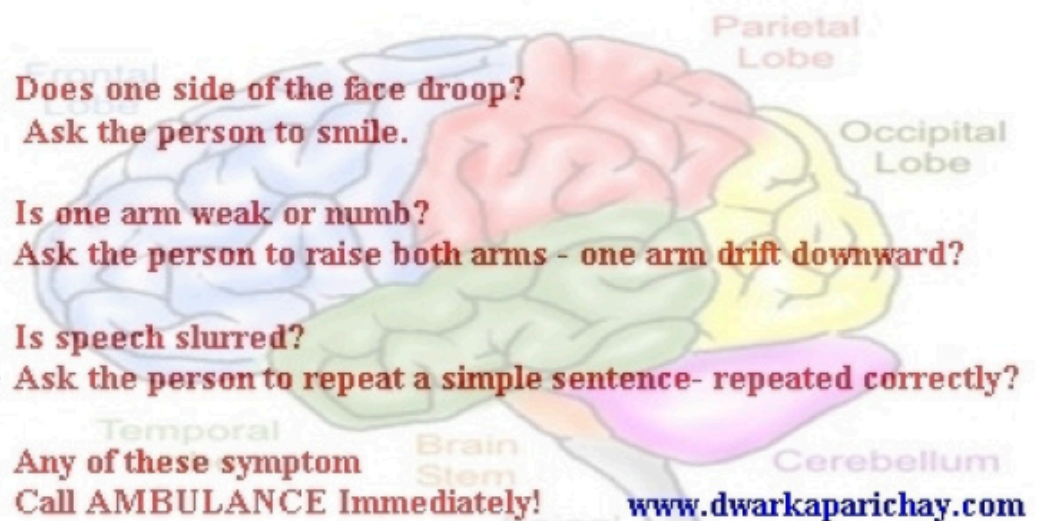
Is one arm weak or numb?
Ask the person to raise both arms - one arm drift downward?

Speech

Is speech slurred?
Ask the person to repeat a simple sentence- repeated correctly?

Time

Any of these symptom
Call AMBULANCE Immediately!



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This is the easiest and fastest way to evaluate a patient for a stroke. If they are unconscious they are already a medical emergency, so we do not have to do worry about a stroke. If they are conscious then one should consider doing the above evaluation.

Critical findings

Any altered response or mechanical deficits whether transient or constant should be evaluated as a stroke in a centre capable of dealing with the patient. Early intervention can be the difference between lifelong disabilities or a complete recovery.

Remember these patients may be conscious of the deficit and be very scared that the deficit or deficits are permanent. They will be very anxious and will require emotional support. Also if they have lost feeling on one side be very careful when you move them not to cause further injury to the paralyzed limbs, as they have no way to tell you what you are doing is hurting them.

Treatment
 Support ABC's
 Prevent further injury to patient
 Oxygen if $PSAO_2 < 94\%$

Hypertension\Hypotension

Hypotension

When treating hypotension, one must consider the causes and treat the underlying cause when possible. However, one does not necessarily need to figure the cause out immediately.

Consider the following real patient. Our ambulance was requested at a residence where an elderly gentleman had been found unconscious on the kitchen floor. He was fully clothed when we found him but unresponsive. APVU. He was breathing appropriately but had no radial pulses. He did however have a good carotid pulse. The rate was about 100 BPM. He was pale and slightly diaphoretic. A rapid body survey (RBS) showed no abnormalities. We put him on oxygen and elevated his feet. At this point we were thinking do the basics now and further investigation after. We took off his shirt and were very surprised to find that he was wearing twenty plus nitroglycerin patches.

The important step here was to recognize the nature of the emergency and start treatment immediately. Too often we spend far too much time doing other things instead of initiating treatment.

There are so many causes of hypotension that could be related to anything from internal bleeding to cardiac issues and all points in between that we need to recognize and treat the symptoms first. Then if possible treat the cause. In the case of the above patient we subsequently removed the nitro patches.

(Note: if you are handling used nitro patches glove up or endure the headache. Your

call )

Treatment

Evaluate ABC's.

Elevate the patient's feet about a foot.

Oxygen if oxygen saturation <94%

Consider fluid replacement if volume is an issue. 250-500 ml of normal saline (0.09%) I.V. Evaluate patient for fluid overload.

If not already done call 911.

Hypertension

Hypotension is so much easier to spot in a patient because of their physical presentation. Often or not they will look pale and perhaps diaphoretic for us. They will complain of light-headedness and so on. But you can look at a patient sitting in your exam room or waiting room and there is no easy way to tell that they are hypertensive.

Of course, there is always the blood pressure cuff approach. But you will probably not routinely run through your waiting room doing blood pressures on everyone.



What is considered hypertensive emergency?

A blood pressure that has a systolic pressure greater than 180 mm\Hg combined with a diastolic greater than 120 mm\Hg is considered a hypertensive emergency.

A patient history that produces a history of any of the following would be cause for concern:

Blurred vision or headache

Nausea or vomiting

Shortness of breath or chest pain

Dizziness or weakness

Problems with thinking or behavior changes, such as sleepiness, forgetfulness, or confusion

Treatment

Keep the patient calm.

Arrange for urgent care to evaluate and treat this patient.

Hypocalcemia

Severe hypocalcemia is a true medical emergency. It can very easily result in death. Interestingly enough over half of patients admitted to ICU suffer from hypocalcemia. Treatment of this condition has greatly increased survival in the ICU.

Some clinical signs of hypocalcemia include but are not limited to:

numbness and/or tingling of the hands, feet or lips,

muscle cramps,

muscle spasms,

seizures,

facial twitching,

muscle weakness,

lightheadedness,

slow heartbeat

Treatment

Mild hypocalcemia should be treated with oral supplements.

Severe hypocalcemia requiring IV therapy should be treated in a hospital setting or an area capable of monitoring calcium levels on an ongoing basis.

Complications from IVs and Injections

IM injections are typically given in the shoulder the front of the thigh or the butt. Picking a site is dependent on how much fluid you are trying to give. While there can be localized reaction immediately there have been studies that would suggest IM shots given years ago can come back to bother the patient at a future date.

IVs

After the IV is inserted into the patient there are several things that could go wrong.

The first and perhaps the scariest is when poor technique is used and the Teflon catheter itself is sheared off. This occurs when a needle that has been withdrawn inside of the catheter is reinserted into the vein. If the catheter has bent for some reason the reinsertion of the needle can cut it off. This is because the beveled sides of the needle are as sharp as a scalpel. If you believe that this has happened put the tourniquet back on the arm and get the patient to immediate care that can detect where the end is and remove it. How do you know that there is a chance this has happened? Sadly, if the IV is running well and you have no reason to withdraw the catheter you may not know until it is too late. However, if the IV is not running and you have to remove the catheter, always examine it to make sure that it is intact.

Other issues are more uncomfortable but not dangerous are if the IV goes interstitial. The best way to check if a red and swollen site to see if it is still running is to either draw back on the site to see if you get blood back or if there is an IV line attached simply lower the IV bag below the injection site and see if blood runs back into the tube.

My favourite IV mistake is one that most honest people will admit to doing. You get a great flashback, you hook up the IV but it won't run. CHECK FOR THE TOURNIQUET TO

SEE IT HAS BEEN RELEASED 😊

Treatment

IV sites should be reassessed often to make sure they have not gone interstitial. Check for swelling, redness and tenderness at the site.

Check to see there is fluid running in the drop compartment of the IV tubing. .

Hypoglycemia (Insulin shock)

There is a guide rule when dealing with blood sugar measurements that 4 to 8 is great when checking with a blood glucose monitor. The reality is that some people can tolerate lower blood sugars better than others. The good news is that for patients who are diabetic and have been for some time, they are very aware of the sugar levels long before they use a glucometer.

Signs of hypoglycemia include:

- Irritability

- Sweating

- Shakes, tremors and jittery

- Dizziness

- Loss of concentration

- Loss of consciousness

- Hunger

- Slurred speech

If a known diabetic starts showing any of the symptoms listed above, then you start considering hypoglycemia. The tricky part is that you do not have to be diabetic to become hypoglycemic. We all typically like to think that the patient took some insulin, did not eat properly or was overactive and as such is hypoglycemic.

We once got a call for a patient suffering a stroke. His medical history was unremarkable. He was approximately seventy-five and was acting strangely. On exam he was alert to our presence but confused with his answers. To make matters more interesting he had slurred speech. He also looked jittery.

A way back in this course I suggested that we should look at a patient, and then based on what we found or heard come up with a few possible diagnoses slowly and methodically ruling out things. According to the FAST stroke protocol he more than qualified as a stroke patient because he had slurred speech. His skin however was pale, and he was diaphoretic. While this does not rule out a stroke it can also be an

indication of other things. Blood pressure and pulse were within normal limits. However, his BGL (blood glucose level) was 1.2. I rechecked it and got the same level. My SAMPLE and OPQRST revealed he had not eaten for several days, as he was not feeling well. So at the end of the day he was suffering from Hypoglycemia.

Treatment - Conscious

Assess LOC

If conscious and able to follow commands give the patient a fast sugar orally. Follow this up in about 15 minutes with a protein as this will take the body longer to utilize.

Recheck blood sugar and make a transport decision: ambulance, home or hospital with family.

Treatment - Unconscious

Check ABC's

Call 911

Give glucose in cheek if possible. Make sure the patient is on their side and place it in the cheek closest to the floor. (When possible it is best to place a patient on their left side. (Always use an IV gauge that is at least 18 gauge in case the patient require a heavier concentration of glucose such as D50W down the road).

There is no hard and fast rule that hypoglycemic patients must go to the hospital. Treat each case uniquely. Life long diabetics are usually very comfortable at managing their own recovery and may not wish to go to the hospital. When I was waking up known diabetics, if they could perform and interpret a chemstrip for me I was fine to leave them where they were. I always made sure that they would be having a protein shortly, so we did not end up back there again.

Opioid Overdoses

Opiates make people feel better. They are useful in treating terminally ill patients who are in a lot of pain, they are beneficial in the treatment of patients who suffer from a myocardial infarction, and their action may cause relief to a patient who has congestive heart failure. However, there are people who use them for recreational entertainment. One of the main problems with opiates is that they cause respiratory depression and, in many cases, severe hypotension. Of course, all of this can lead to deaths. As you are well aware there is an epidemic of these deaths in British Columbia right now. That means that as medical practitioners you may well be called upon to treat such a patient.

Now the bad news is that many patients take more than opiates for their recreational amusement. But first let us deal with a pure opiate overdose whether it is intentional or accidental. A patient who presents, as unconscious with respirations less than 8 breaths per minute and pinpoint pupils should be treated as an opiate overdose. It should be noted that patients mix their drugs. If they are unconscious and hypoventilating you lose nothing by giving them Naloxone (Narcan).

Treatment

Always support respirations with a bag-valve-mask device PRN. (BVM should be connected to 100% oxygen at 10 LPM.

Administer 0.4 to 2.0 mg of Naloxone (Narcan). This can be given I.M, I.V., or SC.

Give supplemental oxygen either 4-6 LPM by cannula or 10 LPM by mask. (PSaO₂ < 94%)

SKILL STATION – Demonstrate airway management on a hypo-ventilating patient.

Demonstrate oxygen administration by cannula and mask.

Demonstrate drawing p and administering Naloxone in an emergency.

Seizures

A wise person once said, “Never ask a patient who is having a seizure, what’s shaking”.

There are several types of seizures as you are no doubt aware. We will concern ourselves with Tonic-Clonic seizures for this course. This is what most people think of when you say the patient had a seizure. In the past we have heard them called grand-mal seizure or convulsions or even fits.

For this course we will call them a seizure that presents as a period of unconsciousness during the seizure that is accompanied by generalized convulsive actions of the body, followed by a period of unconsciousness and confusion as they regain consciousness. Seizures lasting less than five minutes are not considered as emergent as a seizure that lasts longer. This is a moot point in that a patient can suffer serious injuries when they are seizing in the first five minutes as well. Our goal is, as always, to protect the patient’s airway to the best of our ability and prevent injury caused by them coming into contact with immovable objects during their seizure. When a patient comes to or regains consciousness and is alert to their surroundings it is extremely important that we protect their dignity. Imagine if during the seizure you wet yourself. You wake up in the waiting room and everyone is staring at your pants that are soaking wet, or just the fact that you had a seizure and now are being stared at by everyone. (Naturally they are texting and Instagramming as quickly as they can.)

Critical findings

Seizures may be caused by pre-existing seizure disorder such as Epilepsy. Three seizures in ten minutes are called Status Epilepticus. In the office setting I would not wait to see three seizures before considering calling 911.

Seizures can also be caused by other medical conditions, not the least of which are cardiac arrhythmias, hypoxia, and hypoglycemia. Always rule out other causes of seizures in order to provide the best treatment.

Treatment

Maintain ABC's.

Prevent the patients from further injuring themselves.

Determine cause and treat cause. (Hypoxia – ventilate or give oxygen at 10 LPM by mask)

If hypoglycemic give oral glucose gel in their cheek. (Chemstrip less than 4.0)

Call 911 if not already done.

Vasovagal Reactions

Remember when we were trying to get the patient's heart to slow down. I suggested that they blow on the end of a syringe or blow up a balloon. That was because I was trying to slow the heart down by getting them to Vasovagal themselves. I was trying to stimulate their tenth cranial nerve also known as the vagus nerve.

Sometimes as luck would have it a patient who is hemodynamically stable will have something stimulate their vagus nerve spontaneously.

Signs and Symptoms

Pale Skin

Lightheadedness

Tunnel vision - your field of vision narrows so that you see only what's in front of you

Nausea

Feeling warm

A cold, clammy sweat

During a vasovagal syncope episode, bystanders may notice:

Jerky, abnormal movements

A slow, weak pulse

Dilated pupils

Recovery after a vasovagal episode generally begins in less than a minute. However, if you stand up too soon after fainting — within about 15 to 30 minutes — you're at risk of fainting again.

Your heart rate slows, and the blood vessels in your legs widen (dilate.) This allows blood to pool in your legs, which lowers your blood pressure. Combined, the drop-in blood pressure and slowed heart rate quickly reduce blood flow to your brain, and you faint.

Sometimes there is no classical vasovagal syncope trigger, but common triggers include:

- Standing for long periods of time
- Heat exposure
- Seeing blood
- Having blood drawn
- Fear of bodily injury
- Straining, such as for a bowel movement

Treatment

Have the patient lie down and elevate their feet.

If you do not have the time to lie them down try to prevent further injury as they fall.

Assess ABC's.

Call 911. You can always cancel them if the patient improves.

If PSaO₂ is less 94% give oxygen to bring up to that level. (One should note that very seldom is a vassal vagal reaction an hypoxic event so you will seldom if ever give these patients O₂.)

The greatest danger from a vasovagal reaction is the patients will faint and hurt themselves when they fall. Be prepared to treat these injuries.

Oxygen Therapy

The role in the use of oxygen for treating patients has come under question in the last several years. While we were quick and liberal with using it to treat patients suspected of being hypoxic, no one gave much thought to the causes of hypoxia. For example, it was not unusual to see a patient with a fractured ankle put on oxygen. Somehow somewhere we related hypoxia and pain as being associated. Perhaps this was because if a patient had chest pain we gave them globs of oxygen and the pain went away. Studies have shown that we were probably killing them too.

So in order to use oxygen for treatment we must be able to attach the patient condition with hypoxia. Everyone agrees at this moment that when we are treating a patient in cardiac arrest that we should give high flow oxygen via a BVM. (Bag valve mask device)

Other than that condition, the current thinking is that if we are going to give oxygen, we must have the ability to use an oxygen saturation device. (oxygen saturation monitor) On a patient not affected by COPD we would like to see a minimum oxygen saturation of 94%. If they are of a COPD origin the thoughts are to get the oxygen saturation levels no higher than 92%.

“Is there any harm in giving too much oxygen you may ask?” Unfortunately, the answer for that is a resounding Yes! I say unfortunately, because life was so simple when we did not know the concerns regarding over oxygenation. Studies have shown that people who have hyperoxemia in fact do quite poorly. We of course knew for years and years that giving premature babies lots of oxygen caused blindness. We now know that giving too much will cause a poorer outcome for our patients.

So for the purpose of this course we are suggesting that you use nasal cannulas at no more than 6 LPM. The reason for not using a mask is that if we titrate the oxygen too low while using a mask we may in fact be getting no oxygen at all as a mask requires in the range of 8LPM to 10 lpm to be effective. Also experience has taught me that patients who are deathly ill do not like having a mask over their face.

Oxygen Saturation (PSaO₂)



This handy inexpensive device will measure oxygen concentrations at the capillary level. While doing the test the device will show a pulse as well. It is imperative that the pulse shown on the device be equal to a palpated pulse. At least approximately. That is you get a pulse of 86 and the device says 84, we are good with that. Now if the device says 86 and you are palpating a pulse of 50 then the reading will be inaccurate.

If a patient has something like nail polish or fake nails on, it will be necessary to turn the monitor 90 degrees. You should then get an accurate reading.

When dealing with little patients some of the better models come with nose and ear clips.

We would like patients to have a saturation of 94%. If it is higher with room air, then that is fine. However, we will not increase the saturation beyond 94% by adding oxygen.

When giving oxygen to COPD patients do not give oxygen if their saturation is above 92%. When giving these patients oxygen, give no more than 2 LPM via nasal cannula.
Some COPD patients will carry an instruction card with them.

Remember oxygen is a drug and as such its use should be monitored by way of oxygen saturation levels.

If you are resuscitating a patient, oxygen should be used by attaching it to the reservoir of the BVM at no less than 10 LPM to a maximum of 15 LPM. If the reservoir remains inflated at 10 LPM that will suffice. Using higher levels after that is accomplished may well deplete your oxygen faster and you could run out before the first responders get there.

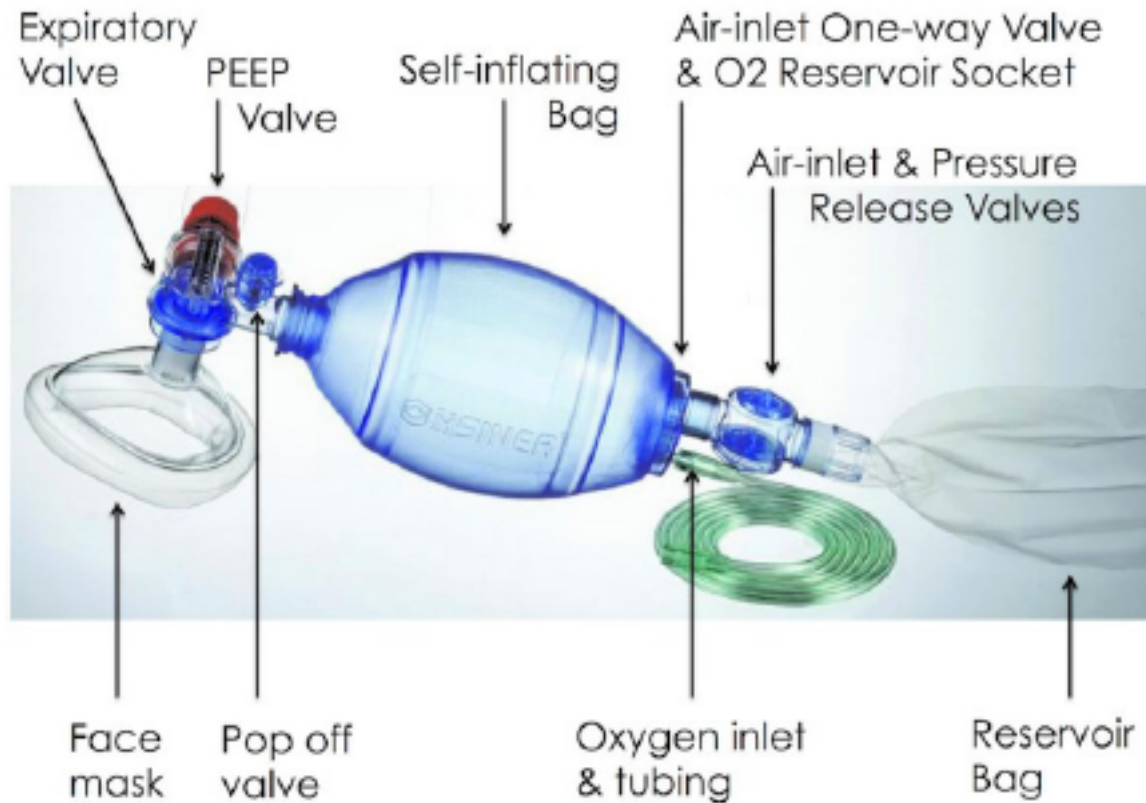
Pocket Mask

This device is required in your kit.



The beauty of this device is that you can now avoid direct lip-to-lip contact with the patient. They come with a one-way valve that prevents vomit from coming through the mask and into your mouth. One must remember that if we are using this device on a patient in our office they have probably eaten in the last six hours. If we over ventilate and put air into the stomach, then there is a very good chance that they will vomit. The chance of vomiting will increase if we are doing CPR.

Bag Valve Mask (BVM)



The bag valve mask or BVM as it is called requires familiarization to use. The first time you use it should be in practice and not the real thing. It must be hooked up to oxygen at a minimum of 10 LPM as previously discussed. Over ventilation with this device will cause gastric distention quickly followed by vomiting and aspiration. You must be familiar with its use. Proper training in its use is quick and simple as long as you remember a few basic steps.

SKILL STATION - Demonstrate one and two operator BVM use.

Glucometer



This handy device will allow you to do a blood glucose level (BGL) in a timely fashion. The downside of this device is that if not checked frequently the sticks that come with it will expire. It must also be checked for battery life as well. Many of the glucometers available are now rechargeable off a wall plug or USB on your computer. The average cost of a test is about one dollar.

The good news is that when you purchase test strips for it for the first time most pharmacies will give you the glucometer.

If your glucometer is dead and all signs are pointing to a hypoglycemic emergency, then treat the patient and not the device. A nonfunctioning glucometer should never hold back treatment.

AED\Defibrillator



This is an optional piece of equipment. It is listed as an AED\defibrillator. A defibrillator is a device that requires you to be able to recognize ventricular fibrillation and ventricular tachycardia. Some of these devices do come with an AED (automatic external defibrillator) built into them. If arrhythmia recognition is not part of your practice I would stay away from a defibrillator and just use an AED. The beauty of this device is that they are easy to use and make all the decisions for you. The better ones will give you feedback on the rate and depth of compressions. For safety the only non-automatic function is the actual delivery of the shock. This is a manual function, though the device does tell you when to do it. There are many brands available, this is just one of them.

AED training is now part of every CPR course worth taking. AEDs are now being placed by various organizations in more and more public places. The early use of an AED can increase out of hospital survival rates to as high as 80%. Out of hospital arrests managed without AEDs until first responders arrive is about 7%.

First Aid Kit

The first aid kit can come in many different varieties. The paramedic in me likes everything readily available if there in fact is an emergency.

This requires a little more work for people because they must ensure it is always current. I highly suggest having an airway kit and a first aid kt. They should be kept together.



First aid kits come in all shapes and sizes. You must get what works for you. My favourite is a cross between a soft pack and a hard-sided kit. I like to be able to see what I need right away. I also like other folks to see what they are looking for right away if I have someone else looking for supplies. I also suggest putting a checklist in the kit that is to be signed, dated and initialed when checked. Some organizations will zap strap a kit shut so no one can use the supplies and not replace them. The secured kit should guarantee that everything is there that is supposed to be there. Your kit or kits should be kept close to you AED if you have one.

Personal Protective Equipment (PPE)

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



One should be familiar with the different types of PPE available to them and use what is required. Gloves are the most common item used, followed by masks and eye

shields. I strongly suggest using a pocket mask as shown earlier if you are indeed doing artificial ventilation for a patient.

Core Skillsets

All students must demonstrate the following skills:

- Good CPR

- Treatment for partial and complete airway obstruction

- Head tilt chin lift method of opening airway

- Use of an AED

- Drawing up and giving a medication in a timely fashion (practice drugs)

- Use of a pocket mask

Optional Skillsets

- Use of a bag valve mask device

- Insertion of an oropharyngeal airway

- Insertion of a King airway

Scenarios

Students will be expected to successfully lead the following scenarios.

- Cardiac arrest

 - Assess other's CPR

 - Timely application of AED

 - Airway management

- Severe asthma attack

 - Use of ventolin

 - Use of epinephrine if indicated

- Seizing patient

 - Protect the patient from further injury to the best of your ability.

 - Ensure the patient's dignity when they wake up.

Anaphylactic patient having trouble breathing

Assess for stridor

Timely administration of Epinephrine 1:1000 SC.

Repeat epinephrine if necessary

Note: Assessment of all patients is important. In this case assessing for stridor is paramount because some patients may panic due to prior treatments or fears of what they have been told could happen. If the patient has good air entry, then reassure them. It may be beneficial to give them 50 mg of diphenhydramine. However, if you hear any stridor or wheezing do not hesitate to give the epinephrine first as it acts very quickly.

Patient suffering from chest pain or angina

160-162 mg ASA (chewed)

Nitro spray or tablets. (You must check the blood pressure before and after).

Consider an IV of either D5W or Normal Saline TKVO .

Note: Patients who are given Nitro may suffer a drop in their BP due to the actions of the nitrate. Patients who have used EF drugs within 34 hours should be given Nitro with caution. If you are going to do an IV it should be considered as emergent and as such should be placed antecubital or higher. It should when possible, be at least an 18 gauge needle. Last but not least you need to observe how much fluid you give the patient to avoid fluid overload. A saline lock IV is often preferable to an active line.

Time is Muscle! Rapid treatment at an appropriate centre is of prime importance.

CVA

Using the FAST mnemonic you will assess a patient for the possibility of a CVA.
Comfort and reassurance are very important, as the patients are scared.
Protecting any paralyzed parts from further injury.

Hypoglycemia

Based on the information provided by the instructor regarding LOC and BGL you will treat the patient with oral sugars as appropriate. LOC will greatly affect how oral treatments are administered.

Students must be prepared to deal with any combination of the above scenarios. Scenarios during the class may differ slightly than those presented above, but the concepts will be covered.

P.S.

As human beings we would like think we are always correct when we make a diagnosis. Please do not burden yourself with that. Your burden is to get the treatment right! You may send the patient to the hospital because you thought they had an ectopic pregnancy, which would be the correct treatment. If it turns out they had appendicitis does it really matter? If you sent them to the hospital, you did the right thing.

NOTES:

[illegible]

[illegible]

[illegible]

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