Management of Medical Emergencies in Dental Practice
Doctor Kannan Balaraman
Consultant Maxillofacial Surgeon
Ganga Hospital, Coimbatore
Lecture 2
Basic Life Support Part 2

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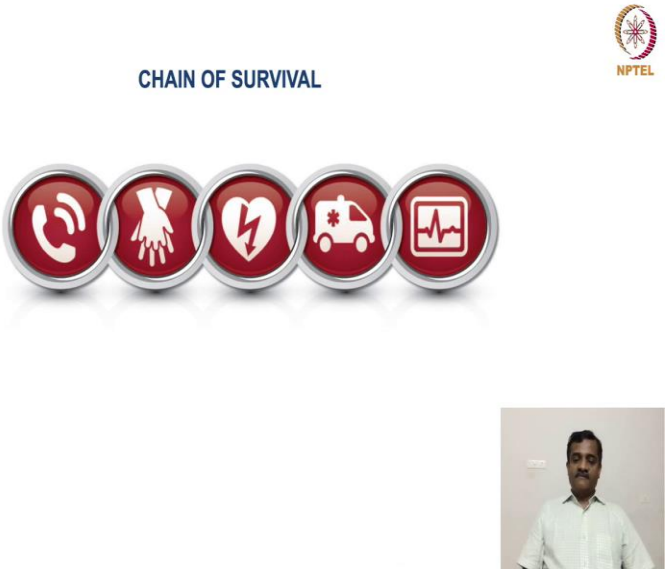

When we look at the essential steps of BLS, we call it as the chain of survival. Now this picture if you see, you see interlinked chain like the Olympic rings. And each one is related to the other. You cannot skip one chain and expect an optimal result. The idea of this chain of survival is to emphasize that these are simple steps which have to be done sequentially so that the chance of successfully resuscitating the patient is possible or feasible. So it is pragmatic to follow these steps.

If you look at the slide, you see the first one is a telephone receiver. So indicating calling for help either locally within your environment or surrounding or calling for an ambulance. After you call for help, as you wait for the response from the emergency medical team, you initiate CPR, that is the compression and rescue breaths. As you are doing rescue breaths, if the help which you call for is approaching you, you can share the responsibility of CPR with them.

If you have access to an AED machine, an automated external defibrillator, now is the time to start it, and start initiating the shock process. This is part of BLS. You keep doing it till the patient shows signs of life or till you get access to the advanced cardiac support team or an ambulance which is going to shift the victim to the hospital or a coronary care unit. This is the same within a hospital, outside the hospital or in a separate setup like a dental clinic or even an outside in a public space.

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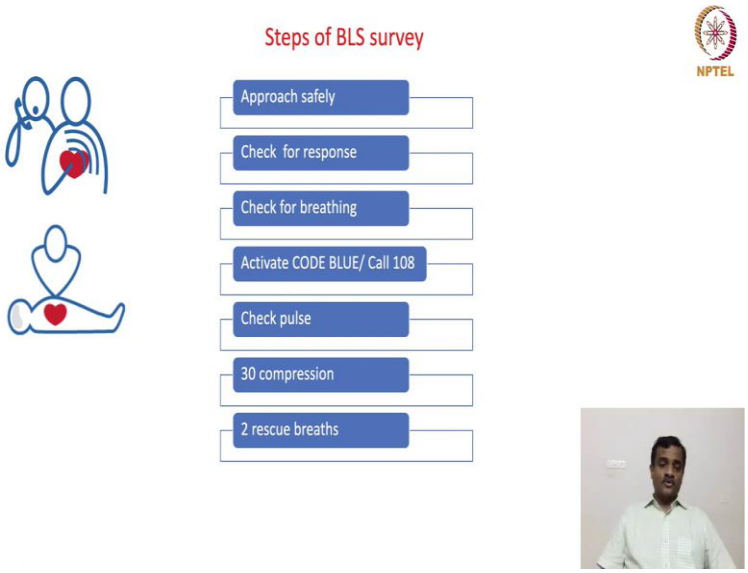

The sequence of steps what you do when you see a victim who is collapsing in front of you is similar, be it in a clinic, be it in a mall be it in a house or be it on the road. The first and foremost is safety of approach, safety for yourself and safety for the guy or the victim who has fallen, or the lady who has fallen. So ensure there is safety for you to initiate the entire process.

Once you approach the victim being a male or female, you check for response. You see if they are responding, you try and find out if there is a reason for them collapsing. If they respond, you can act on the response to do subsequently. You might need to call for help or you might call an ambulance or you might need to transfer them to a hospital.

If they do not respond at all and if they remain unconscious, then you have to, we need to check for breathing. Is the victim breathing or not? And this process is done for 10

seconds. If there is breathing, then we put them in a recovery position. Still, we need to initiate the emergency system because we do not know why they are unconscious and how long are they going to remain unconscious. Is the breathing going to continue and improve or is it going to suffer.

So as we are waiting, at least we know that there is no loss of life as of now yet, and we still have a chance. But if there is no breathing, then it is a problem and we need to initiate the CPR. So as soon as you identify there is no breathing, we need to activate the ambulance services or emergency medical services.

So if you are out of a hospital setting, we call 108. If you are within a hospital setting, which has access to emergency medical response teams or the advanced cardiac life support teams then you can activate the CODE BLUE in the hospital. This is universal in all hospitals. In our country, the ambulance services is 108.

As the ambulance is on the way or as the emergency medical teams are on the way, we check for pulse which we, in the corrupted, do not spend more than 10 seconds for it, and then immediately move on to CPR per se, compression and rescue breaths. Remember, now the sequence has changed to C-A-B, circulation first, so start focusing on compression straight away, addressing the circulatory issues.

So, 30 compressions at the speed of 100 to 120 per minute. After 30. stop and give 2 rescue breaths. Then go back to 30 compression. So this is the basic cycle of BLS.

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Let us go through them step by step. If you look at safety of approach, this picture though is dramatic, it is imperative to make sure that when you reach a scene wherein a victim has collapsed, it is safe for everyone, safe for the victim and safe for us and safe for further help which is going to arrive.

Like in a carriage which has collapsed, there is no point in doing CPR for somebody inside the carriage. It is mandatory to shift them outside, put them on a stable place and then do the CPR. If there is an electric gadget there, ensure that it is switched off and it is safe. There is a victim on the road, it is imperative to move them to the side of the road so that it is safe for us, safe for the victim and possible for the help to arrive and initiate the entire process.

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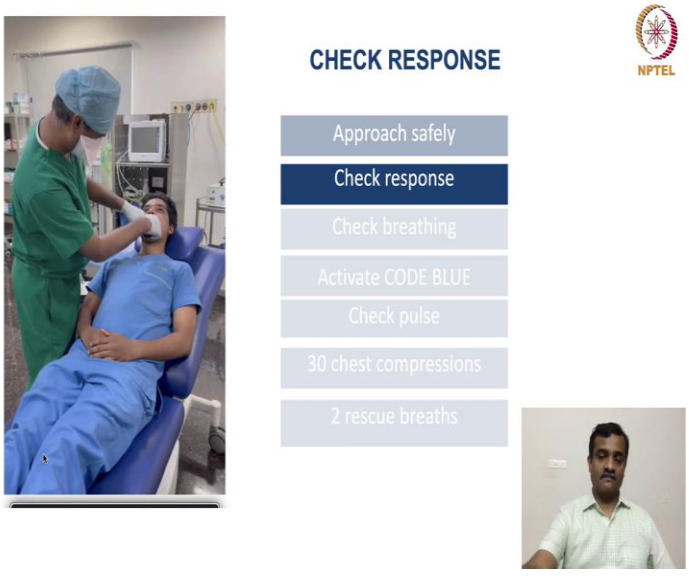

Once you have ensured safety, then look for response. Let us take the scenario of a dental clinic which were there. Check for response, we do not do anything drastic, hit them or sprinkle water, which is, as it is shown in a movie or in a funny way. The most important thing or the safest thing to check for response is to shake the shoulders and shout close to the victim.

So as we see, where there is a patient being attended to in clinic and he collapse. So as we see, it is imperative to see, shake the shoulder and shout rather than hitting them on the

cheeks or elsewhere. That is simple, safe, not a problem. The same can be done for a trauma patient as well, because shoulder shaking or tapping on the shoulder is not going to make any further damage to them.

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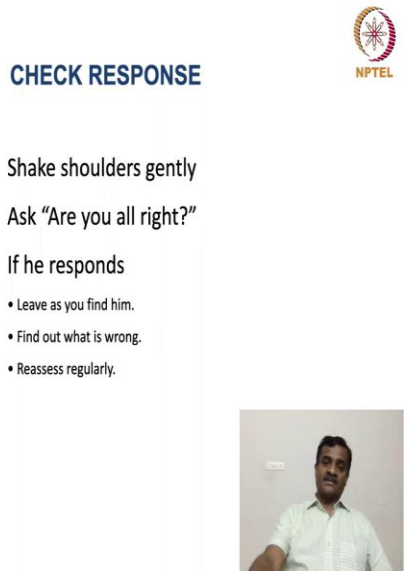

Once you shake the shoulders, you might elicit a response you can ask or shout to them is it okay. If he or she responds, then it is fine. Find out what is wrong and initiate the sequence.

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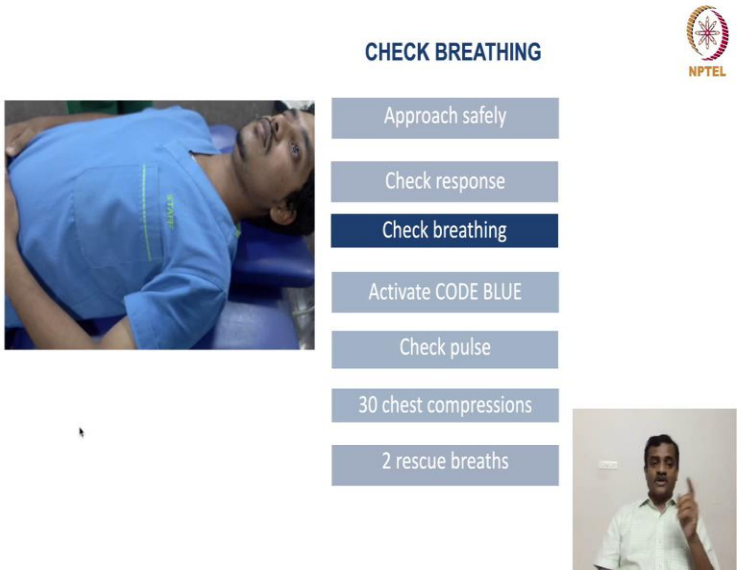

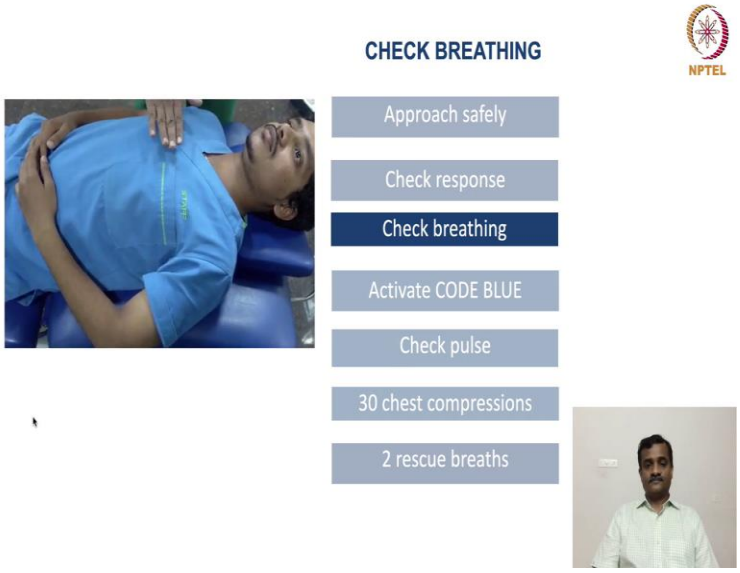

If they do not respond, then you, we need to look for breathing. For breathing, as some anyone breathes, the chest moves up and down. So we look at the chest to see if the chest is moving. We can also go close to the victim's nose and mouth to hear the breathing. So our eyesight are towards the chest of the victim to see if they are, if it is moving up or down.

How long we do it? We do it for a period of 10 seconds, not more than 10 seconds. Do not underdo it also. Remember, a patient who is collapsed might have low respiratory rate. So it is imperative to check at least for 10 seconds. Normal breathing is 12 to 16 per minute. So that takes it to 3 to 5 seconds per breath cycle. So even if you are relaxing, you might do only 2 breaths in 10 seconds.

So remember, there is a victim who has collapsed, so wait for the 10 seconds entirely, before you try to make a decision. Operator: Check for breathing. Breathing, take 10 seconds to check for breathing. Eyes towards the chest. You see this. You can get your head to listen to the breathing. But more importantly, eyes to the chest. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. So breathing is there, okay.

We could see the chest move up and down. For some it is abdominal thoracic, for some the chest moves. So you can see the movement, rhythmic movement of breathing up and down and waiting for 10 seconds. One way of ensuring you know that 10 seconds is there

is count out loud to yourself or loud. So the advantage is you know that you are waiting for the 10 seconds full.

Remember, when you are panicking, 10 seconds is a long time. You might make a decision within 2 seconds, within 5 seconds and make a bad judgment call. So if there is breathing, then we know that there is still life and then there is still time to initiate treatment.

If there is no breathing then it is a disaster. So then, before we check pulse, we try and initiate the next, activate, try and activate, which within the hospital setting, which has got access to advanced cardiac life support team, we will initiate CODE BLUE. If it is in a clinic setting which is standalone or in a public place, we need to call for an ambulance.

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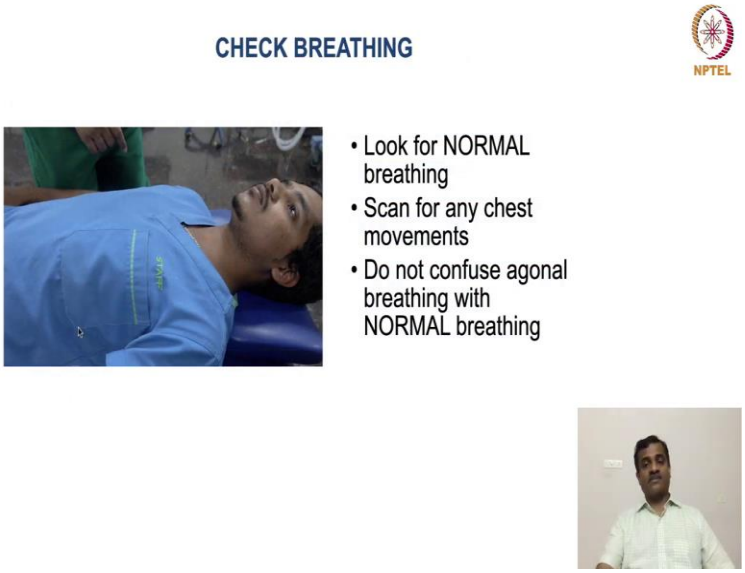

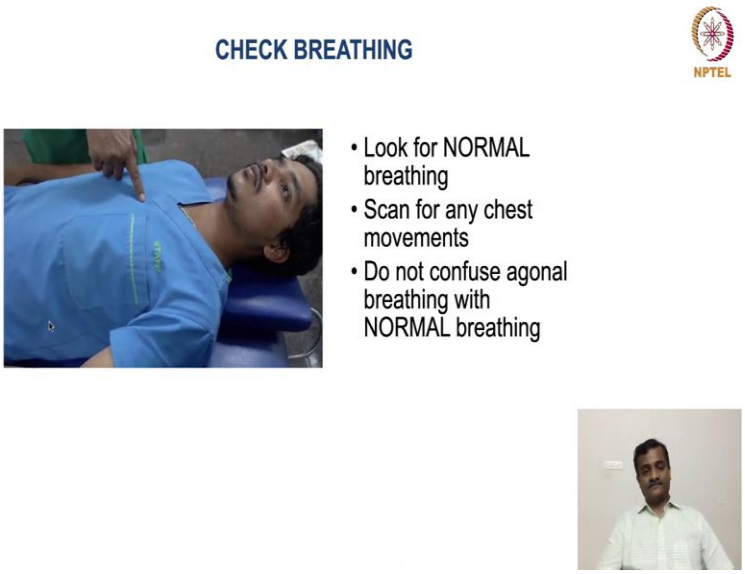

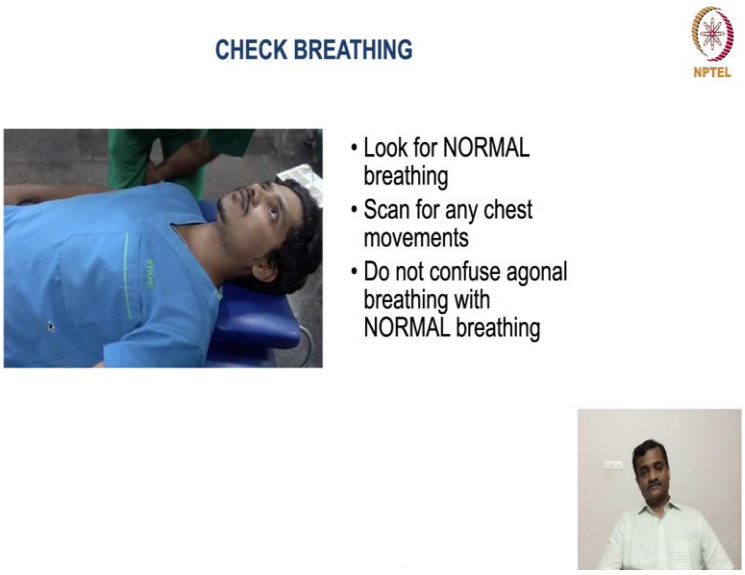

As we are checking for breathing, there are a couple of things which we need to be there. Normal breathing is there. Scan for chest movements. There are certain instances where there is jaw breathing when you will find the victim. As if he is gasping and taking in air. That is an imminent sign of cardiac arrest or that is a sign that the arrest has actually started.

Operator: Check for breathing at the chest, eyes straight to the victim's chest. See if the chest goes up and down. Your ears close to the victim and your cheek close to his mouth. Check for 10 seconds. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. There is no breathing. Call for help.

So in this instance we see that the chest is not moving at all compared to the previous time. When there is no chest movement, then we initiate the emergency medical response system.

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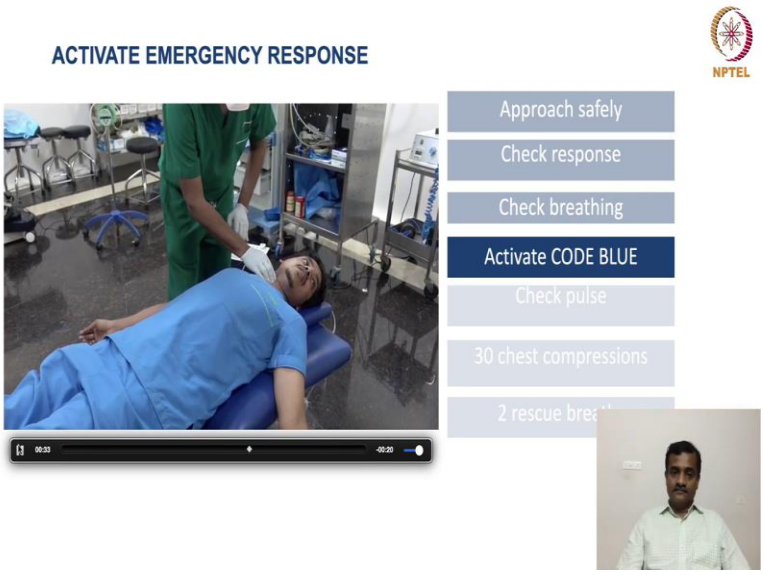

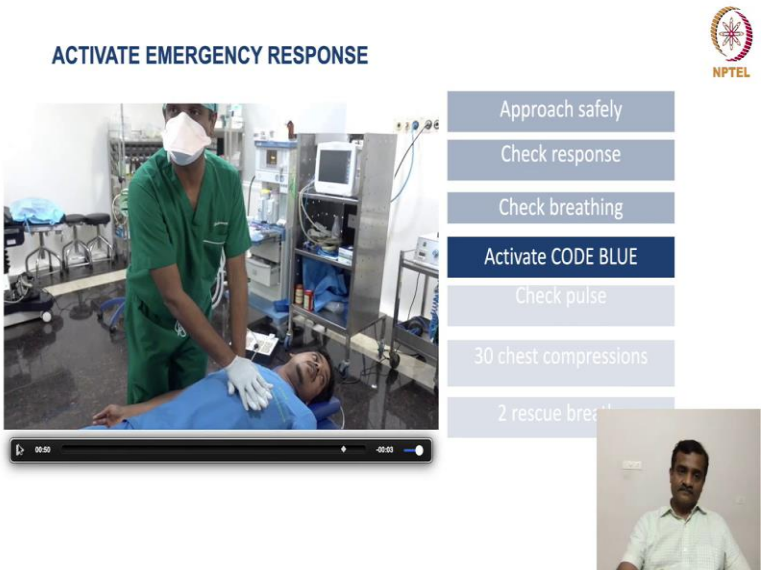

So within the hospital setting, we have something called CODE BLUE. Out of the hospital setting, it is 108, ambulance services. There is an interesting snippet there. Why 108? We know in our country 100, 101 has meaning with police and fire. Where the other numbers are freeze rate, they jump to 108.

If you look at 108, it is a number which has religious connotation as well. Almost all religions, the number of prayers or rosary beads are 108. People try and pray or recite something 108 times. So 108 is a number which is close to people's heart. Remember, this is an emergency, and we tend to take comfort and whatever gives us a source of strength, be it prayer in any form.

So that is why the makers of the Unified Ambulance System made 108 the uniform call number, which is great and it is easier for people to remember as well. Operator: Sir, what happened, sir? Is anybody there? Please come. Emergency! Sir. Flat on the chair, let me look at his chest.

Doctor: So you could see that there was identification of a problem, a treatment was being done and that patient collapsed.

So they were shaken, shout, the victim did not respond because immediately you know that somebody is there, you are calling someone to help you. If there is additional help, it is easier. So as you know that patient in a reclined chair is difficult, you can start looking at addressing the victim on the patient, whereas the additional help will help you with all the other paraphernalia.

So as the chair is being lowered, you can see that the chest breathing is being assessed. The eyes of the Operator is looking straight at the chest of the victim.

Operator: He is not breathing. 10 seconds, no breathing. Call an ambulance.

Doctor: So in a clinic setting you will have access to CODE BLUE. So it has to be an ambulance. So the advantage of having call for a help is, now you know he has helped you make him flat as you are concentrating on the chest movements. Otherwise, you would be making in fact, you would make the chair flat, you would be making, trying to position them, and then you have to run around for an ambulance.

So that is why we say the sequential rings. So here, as the Operator takes command of the situation and calls for an ambulance and then you know that things are set in motion. There is additional help.

Operator: Check his pulse.

Doctor: So as he has gone to call the ambulance, as the help who arrived has gone to call the ambulance, then next is, being a healthcare provider, if you are comfortable, if you are confident we can go in and check the pulse of the victim. So how we check the pulse is, look at the midline trachea, slide your hand thrice in between these sternomastoid,

three fingers, and press on the Adam’s apple, you know, the prominent part of the chest, sorry, neck which moves when you swallow.

So when he is lying, down feel that and slide three fingers onto the side and lock it underneath the muscle there, that is the sternomastoid muscle, and compress. You will feel the pulsations there. Just check if there is any pulsation felt.

Operator: Have you called the ambulance? Make sure you give the correct address for the ambulance. Let us start CPR.

Doctor: So for 10 seconds again, not more than 10 seconds, as the ambulance is being checked, the Operator decides to initiate the next thing in motion. So there is no breathing, no response, no breathing and no pulse, an ambulance has been called for, and as we are waiting, then we need to start CPR.

Remember, we need to compress the chest so that the blood in the heart is squeezed in the other organs, perfusion is maintained. Even an effective CPR by hand, you, the BP is got only to 60-40 or 70-50, which is hypo, in most of the cases.

Operator: No breathing, no response. Let us start CPR.

Doctor: So if there is a possibility to remove the patient's clothing, well and good. Here, there is a pullover through the neck, it will be difficult to pull them over through the neck. If it is possible and safe on the chair, it can be done on the chair, otherwise the patient has to be shifted on the floor. But removing the pullover meaning rolling them to one side, you are wasting unnecessary time.

So depending on the cloth, you can continue. Remove the cloth or try and see, you can do it over the cloth. But remember, as long as doing it over the cloth is not causing more damage to the victim, and to as long as you are sure about where the midline and the sides are, where you need to compress. You can identify those sides, even with the clothes on, then it is not an issue.

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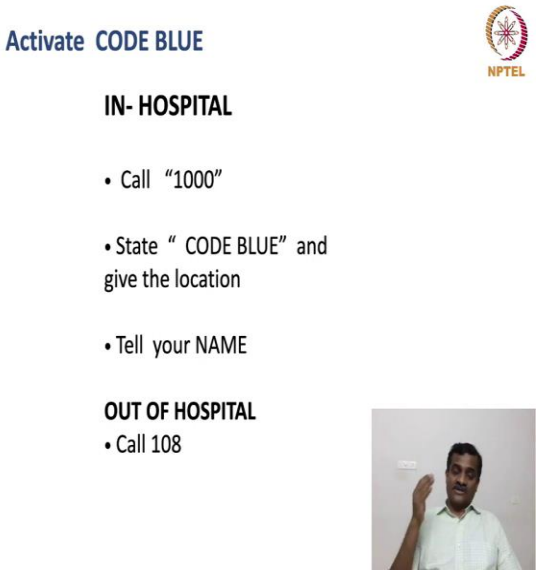

So we saw this in the hospital, for some hospital the numbers might be different. In certain hospitals, it is 1000, for ease of remembrance, that is. So in case of a hospital we will say which ward, which area, whereas in an ambulance, I hope you remember in the previous slide, the Operator said please tell the correct address and the contact number as well because when the ambulance comes in our country, they need to know where to come, how to come.

As soon as you call the ambulance, they know that it is an emergency. In panic, in an emergency situation people tend to say there is an emergency, please come here urgently and hang up the phone. If that is done, it is going to be difficult for them to trace you again or call you again. But now with the caller number identification, they will call us again, but instead of doing, that it is easier if you could tell them the address and your contact number as well, so they can contact you again easily.

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Doctor: So check for pulse. We will see the…

Operator: Three fingers onto the side, into the valley and feel for the pulsations. 10 seconds. Pulsations felt, breath felt, patient unconscious, evaluate the cause.

Doctor: So, so far we were discussing no response, no breathing, no pulse, we have, we can initiate CPR. If there is no response, you can see breathing, you can feel the pulse you still might need an ambulance or evaluate the cause or you can shift into a hospital setting yourself. But that will need additional medical help also. But only thing is, if there is breathing and if there is pulse, you do not need to initiate CPR.

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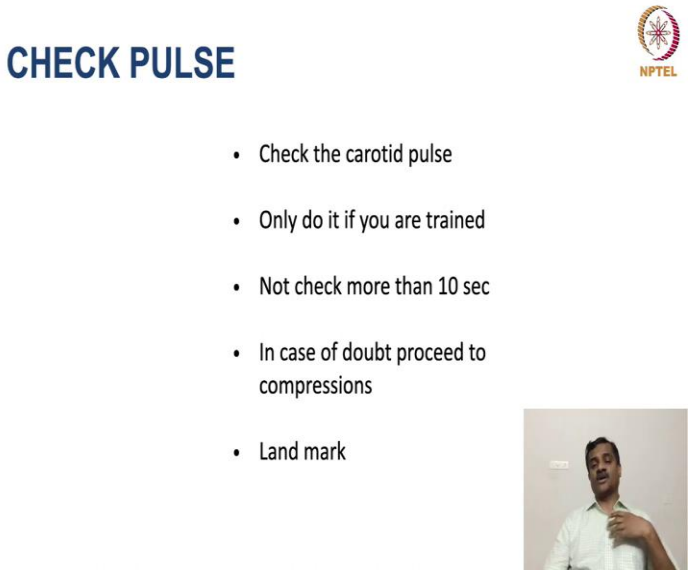

So the pulse which you are seeing in the neck, as we discussed, along the side of the Adam's apple is the corroded pulse. If you are not sure how to check it, then ignore it. As healthcare providers, it is better to get trying to it, but if you do not know how to do it, if you are not sure, then do not, no problem. There is more harm in assuming there is a pulse and thinking he is alive, when a patient is actually not alive.

Whereas if there is pulse, and you still initiate CPR, you will do lesser damage relatively. So do not waste more than 10 seconds. One of the reasons why it is advised if it is, if you are not sure is, we tend to have people, when they are panicking, they feel their own bounding pulsation in the fingertip as the victim's pulsation and make a mistake, an assumption that that is pulsation, and treat the patient as alive, when in effect there might not be any pulsation.

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Operator: Let us put him down. Get some more help. Come, let us hold him. Put him on a flat chair. Be careful be careful.

Doctor: So as you see, when the actual process of CPR is going to be done it is going to be risky doing on a chair where he might roll down and fall down. It is going to cause more damage. So it is better to put the victim on a stable platform. Only then when you compress the thoracic cage, chest, the thoracic cage gets compressed between the floor and the fingers of the rescuer, then it can squeeze the heart. If it is on a chair if he tips over and falls, it is going to cause more damage, you are going to waste time.

Operator 1: Let us put him down, get some more help. Let us hold him, put him on a flat place. Be careful, be careful. Is the ambulance on the way?

Operator 2: Yes sir, I have called them.

Operator 1: Let us begin CPR.

Doctor: Continuously checking and communicating with our other assistants is imperative. They can check if the ambulance on the way, is the communication done. If they have missed something also, it is easier to identify and cover.

So we begin CPR. You can see that the operator knelt by the side of the patient, which is important. Proper positioning of the operator is mandatory if you want to do effective CPR.

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So you could see, you can see the operator kneels by the side of the victim and positions himself just above the chest of the victim. Do not squat, do not put your, do not stand or, it is all uncomfortable positions, you will hurt your back and moreover the quality of CPR is going to be compromised. So when you are going to start compressions, we say push hard, push fast.

So the best way to push hard push fast is put them on the floor and kneel by their side, position yourself on top of the victim's chest and interlock your hands and then start compressing. You see the shoulder, elbow and wrist are in a common straight line. The hands can be interlocked, that is fine. The heel of the hand, what we call the heel of the hand is placed in the center of the chest. The center of the chest is the sternum bone, breast bone, it is placed there.

Do not keep it on the side of the chest, either side, no, that is not good, it will fracture the ribs and it will not be effective CPR. The center of the chest, the breastbone, sternum is quite strong. All the ribs are attached to it. If you press the sternum, automatically the entire cage will collapse. And you can give good compression with the fingers on the, with the hands on the ribcage.

You have identified the midline, placing the heel of the hand on the sternum. The fingers can be on either side. It does not matter. Whichever is on that side, either on the left or right of the patient, it does not matter.

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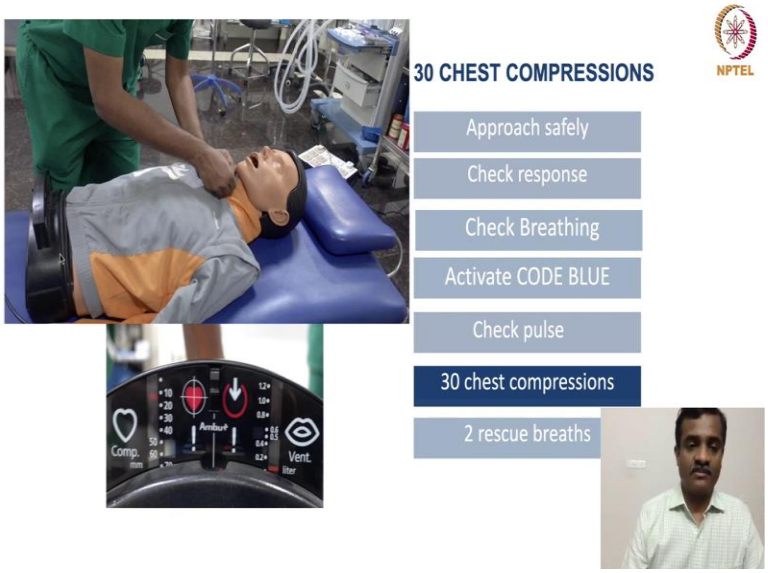

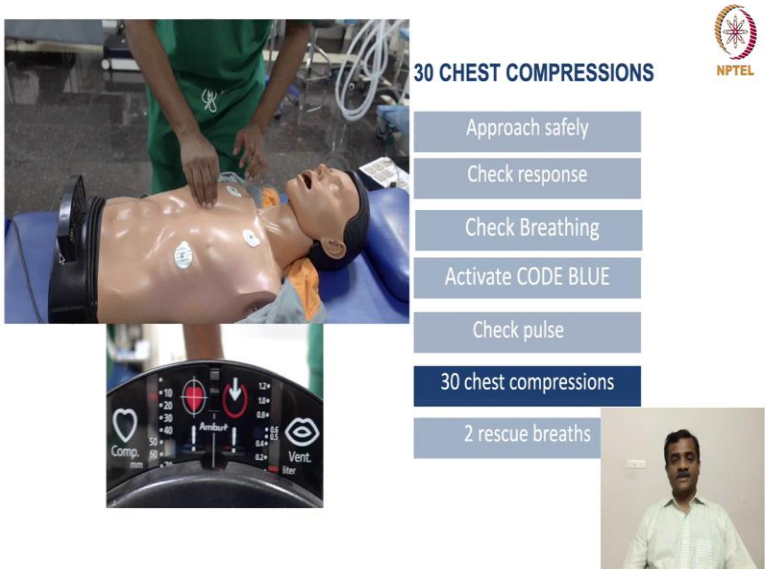

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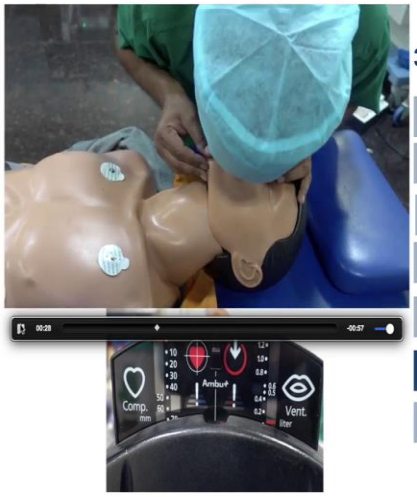

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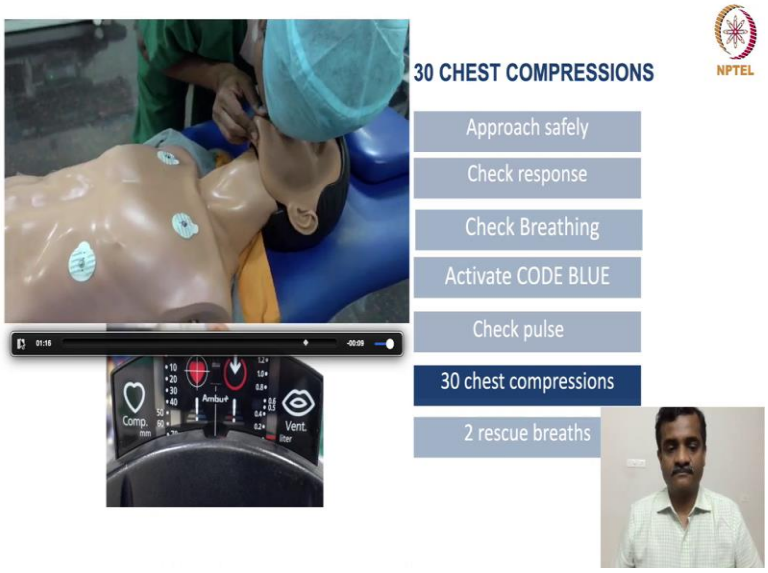

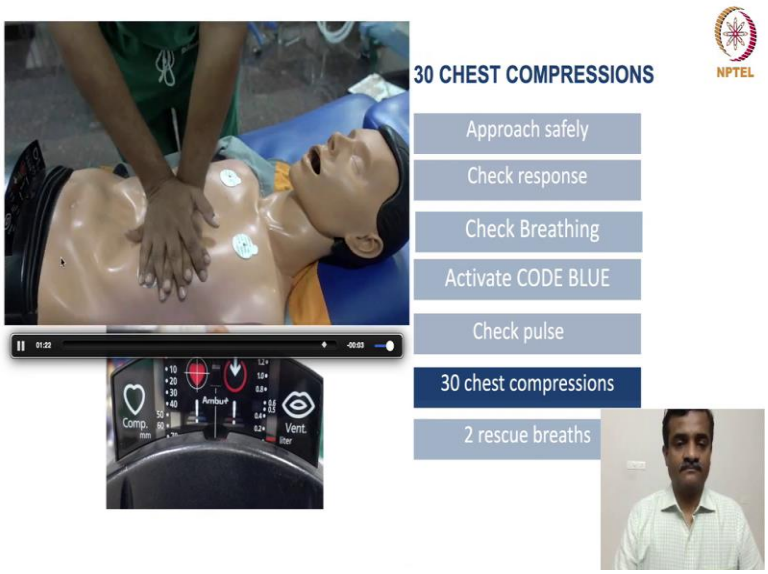

Doctor: This is just doing the entire process. Removing clothing.

Operator: Let us remove the clothing. Sternum, midpoint of the chest. Hands one above the other. Start. 1, 2, 3, 4, 5, 6, 7…

Doctor: The top is that a demonstration on a mannequin where it is happening. When you compress you could see how much the compression goes on the ventilation, and here you can see what is the speed of compression. So here, speed of compression here is the depth and then how much it will do. This ventilation is when we are breathing.

Operator: Let us remove the clothing. Sternum, midpoint of the chest. Hands one above the other. Start. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1, 2, 3, 4, 5, 6, 7, 8, 9, 30. Let us give breaths.

Doctor: So when we see that the compression is given, the speed of compression is such that you do 100 to 120 per minute. We are not going to do 120 at a time, we are just going to give 30, stop and then concentrate on breathing. So for rescue breaths it is going to be mouth-to-mouth breathing. When you are giving mouth-to-mouth breathing, it is going to be head tilt, chin lift. We will look at it again.

Operator: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1, 2, 3, 4, 5, 6, 7, 8, 9, 30. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 1, 2, 3, 4, 5, 6, 7, 8, 9, 30. 1, 2, 3.

Doctor: So if you, see the compression continues. Compression versus rescue breaths, compression versus rescue breaths. 30 is to 2. For an adult, it does not matter how many people are there, it is 30 is to 2. For a kid under 8, if there are two trained rescuers, it is 15 compressions is to 2 rescue breaths. There is only one person or you are the only guy, then it is again 30 is to 2.

So the quality of compression is imperative. If the quality of compression is poor then, heart is going to be squeezed less, the amount of blood going out is less. So the quality of resuscitation is going to be less, and you do not have enough time, and it will be futile.

So, center of the chest, do not put the hand on the side of the chest because the ribs, crack the ribs, but not effective CPR. The center of the ribs, depth of 5 to 6 centimeters, rate of compression is at the rate of 100 to 120 per minute, but after 30 compressions numbers, you give 2 rescue breaths. So you continue. 30 is to 2.

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CHEST COMPRESSIONS

- Place the heel of one hand in the centre of the chest
- Place other hand on top
- Interlock fingers
- Compress the chest
  - Rate 100 min^{-1}
  - Depth 5 cm
  - Equal compression : relaxation
- When possible change CPR operator every 2 min

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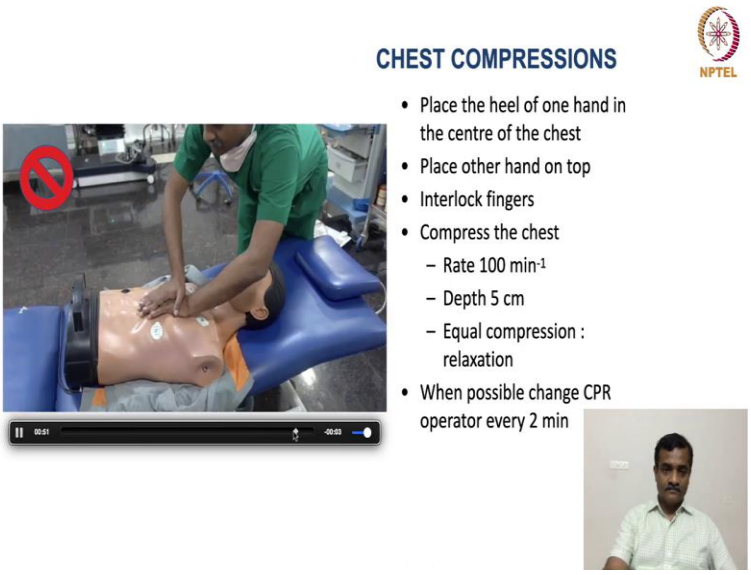

Well, we saw in the previous slide, how the correct position, shoulder, elbow, wrist in the same straight line, fingers interlocked on each other, heel of the hand on the sternum, in the center, it is fine. The fingers can be either side, it does not matter, it is, the pressure is on from the heel.

But there is a tendency in emergency to do things negatively, or in a wrong format where the elbows are bent and fingers are interlocking in other directions. The problem with that is the effectiveness of compression is not great, one, and two, you tend to get tired soon. Remember, we need to keep giving it till the patient recovers.

So do not do what is shown in the picture. That is no-no. That is why you get a cross sign. That is a wrong way of doing. You see the strain on the operator. They are not able to get, as, if the elbows are bent, the pressure comes, the strain comes from the wrist, it is not good. Do not hold the chest on the other side as you can try and compress. No. Because the ribs will crack.

So if possible, we will show that, so you are not going to get the compression depth in this, as much as we used to do before. So all these are not good. Right, from the top end of the patient, from the bottom end of the patient, the hands against each other, no. The best one is by the side of the victim, and shoulder, elbow, wrist in the same straight line.

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High quality CPR

- Depth atleast 5cm
- Rate atleast 100/min
- Ratio 30:2
- Compression and adequate relaxation
- Switch after 2 min or 5 cycles of CPR
- Avoid excessive ventilation
- Minimize interruptions

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Operator: That is the sternum, midpoint of the chest. Place the heel of the hand on the midpoint of the chest, interlock fingers, or keep them straight, does not matter, whichever side is okay. And shoulder, elbow, wrist in a straight line, start compression.

Doctor: So one tends to get tired if you keep doing it, so we tend to change operators every two minutes or five cycles of CPR. Within a two minute period, we, if the quality or the style of CPR is accurate and good, then we should aim to finish at least five cycles of 30 is to 2, compression plus the respiration. So avoid interruptions, keep it continuous till help arrives. Within a hospital, if you get an AED machine, then it is great.

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Doctor: So again, do not stand and do. It is not feasible.

Operator: Ready, sir.

Doctor: So do not do it alternate legs. Best is to kneel on the side, do not lean forward, do not lean backward it is not good for your back, it is a problem.

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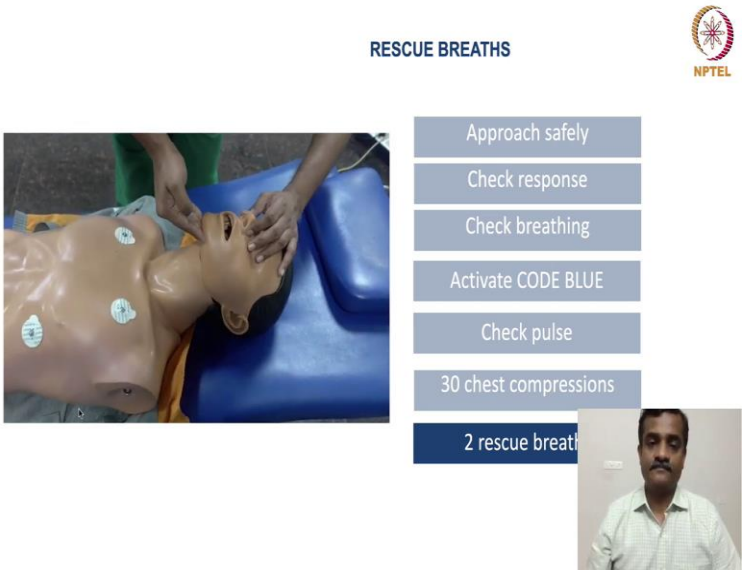

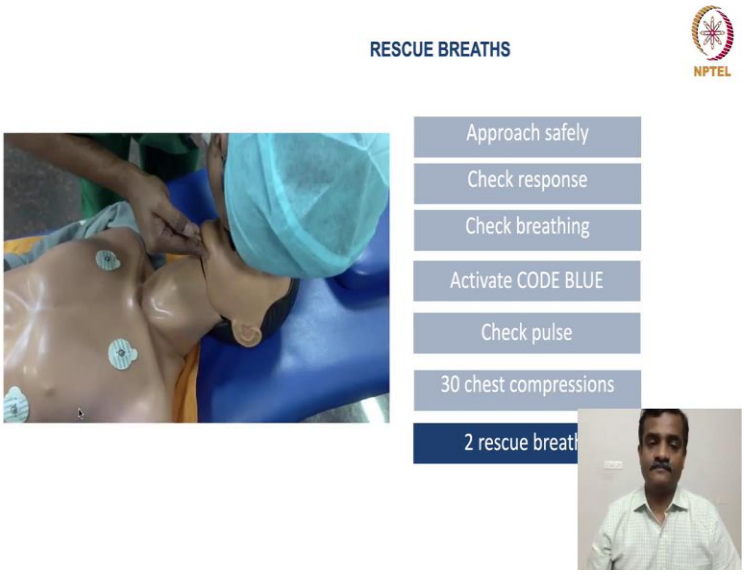

Doctor: Then we look at the rescue breaths. This is mouth-to-mouth breathing. So the idea is to effectively ventilate the patient. Our expired air, the rescuer's expired air is going into the victim's mouth. So he inspires. So our expired air has enough oxygen to go in. Remember, there might be a lot of vomiting in the victim's mouth. It is imperative to suction them out before you blow the air in.

There was a problem of doubts with communicable diseases transmitting from the victim to the rescuer. As of now, we can safely say there is no known report of communicable

disease like HIV or Hepatitis B spreading from the victim to the, to a rescuer. But still some people might be reluctant. The best is to use a mask. That is why, as all healthcare facilities should have a mask. You can avoid this totally. You seat the mask on the victim's mouth and blow into the mask.

Some people, that is why, tried a mouth to nose respiration. Some people put a kerchief, but no, mouth-to-mouth is the most effective one. And you give two rescue breaths within 10 seconds and move on to compression. So when you are doing, we need to open up the airway. The best way to open up the airway is to tilt the forehead and lift the chin.

Operator: Head tilt, chin lift, pinch the nose and breathe.

Doctor: So we saw effectively how the head was tilted, on the forehead, not on the scalp, on the forehead. As you tilt the head and lift the nose, the tongue is dragged out of the posterior pharyngeal airway, and there is space. So now if you blow into the victim's mouth, the air can go into the lungs and expand the lungs. So when you are blowing the hand which is holding the forehead is actually pinching the nose.

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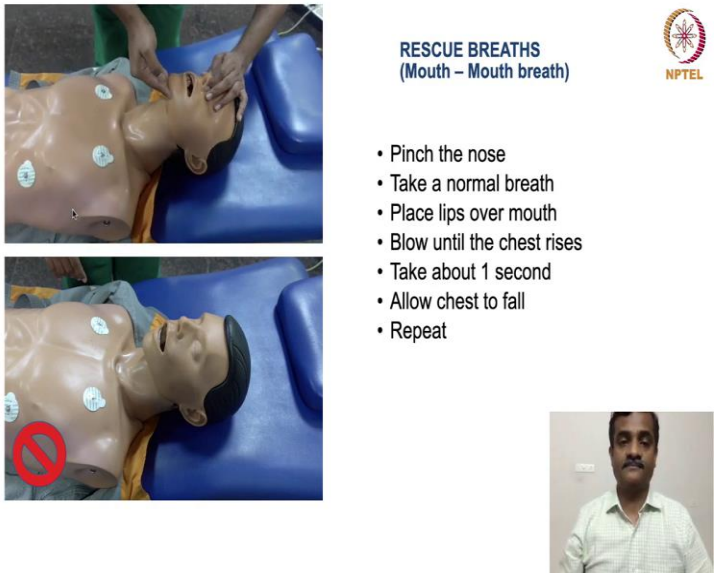

RESCUE BREATHS
(Mouth – Mouth breath)

- Pinch the nose
- Take a normal breath
- Place lips over mouth
- Blow until the chest rises
- Take about 1 second
- Allow chest to fall
- Repeat

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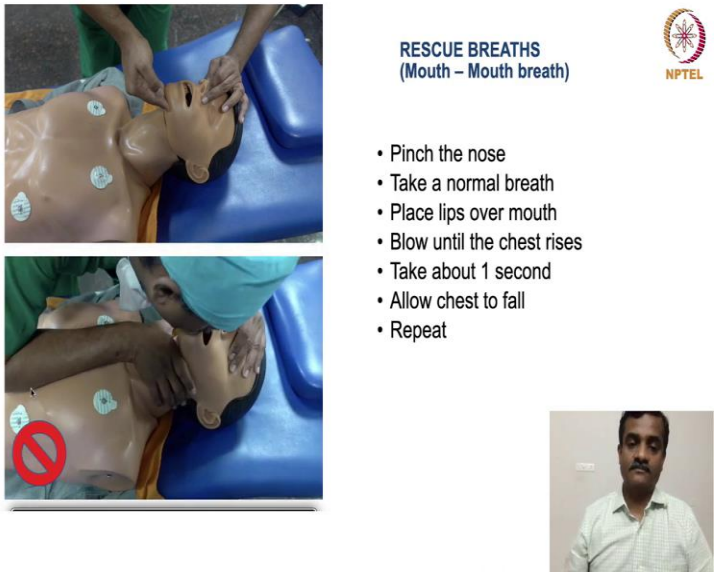

Operator: Head tilt, chin lift, pinch the nose and breathe.

Doctor: I was reiterating the right way of, let us look at another way which is not so good. The challenge here is, in panic people tend to go and hold the neck. We are actually compressing the neck and making it difficult. And pushing on the eyes of the victim is also a problem.

And without pinching the nose, mouth-to-mouth, creating an effective seal is important. So the second, bottom one is how not to do or what not to do. Blowing from a distance

away off right is not effective at all. So the top picture is what we should aim to do. So if we have seen the compressions, we have seen the rescue breaths, 30 is to 2 and we give.

So as we blow into the victim's mouth we do not need to take excessive breaths. No. Our normal expiration is fine. When you can see the chest rises and fall down, just give a second, do the second breath, once the chest falls down, immediately start taking on compression. If there are two rescuers, one can give the breath, one can give the compression. As 30 compressions are over, the one at the head and starts giving the rescue breaths.

As he is finishing the second rescue breath, the one near the chest can start compression. If you have access to a mask, you can place the mask and blow into the mask. If you have access to an oxygen circuit with oxygen, you can give continuous supply of mass, do not interrupt for rescue breaths, you can start continuously doing compressions also at the rate of 100 to 120 per minute. But we tend to tire out so it is better to swap the operators every two minutes.

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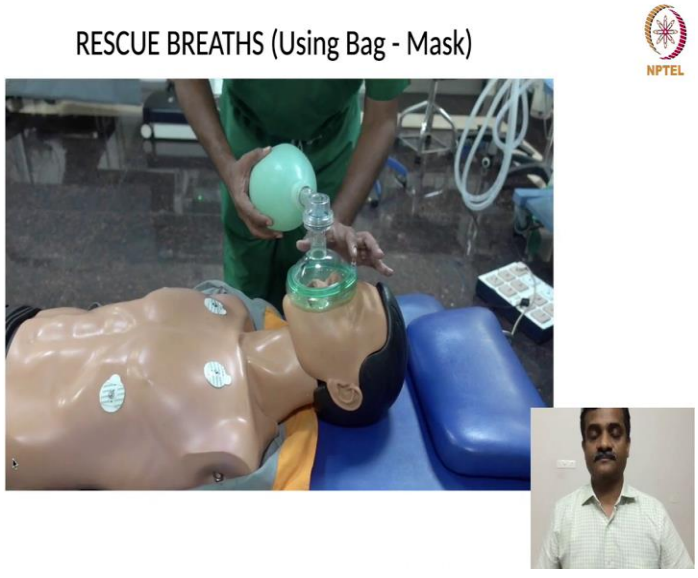

Doctor: If you have a bag and mask, rescue breaths with bag and mask is better.

Operator: If you have a mask, easy.

Doctor: So using the mask is easy technique. The mask has to seat comfortably, tightly around the mouth and the nose of the victim. So, and you use your fingers to get a seal. One is to pull the chin against, one is on the forehead. So in the form of e and a c.

Operator: If you have a mask, easy.

Doctor: An Ambu bag gives better atmospheric air than us, or you can blow directly into the mask. If you do not have Ambu bag, keep the mask and blow into the mask.

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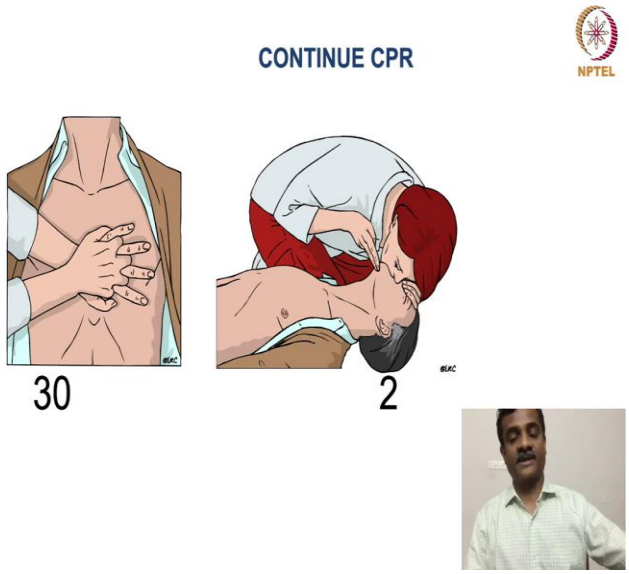

So 30 is to 2, we keep continuing the cycle till we, nowadays, in the last 10 years or a little bit longer also, the, AHS incorporated AED devices, the external, Automated External Defibrillators into the BLS part. So how does it work, we will know.

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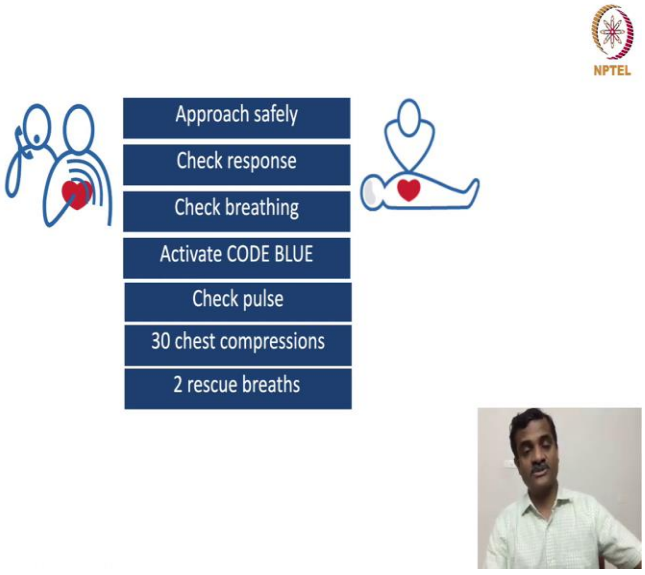

We will just see in a bit but this is just reiterating the same things which we saw. First the safety of approach, check for response, if there is no response, call the help check breathing, if there is no breathing, activate the emergency medical system, it is CODE

BLUE in a hospital, it is 108 ambulance outside. As the help is coming, check for pulse if you are comfortable. If not, ignore it. Then initiate CPR asap till that help arrives and takes over.

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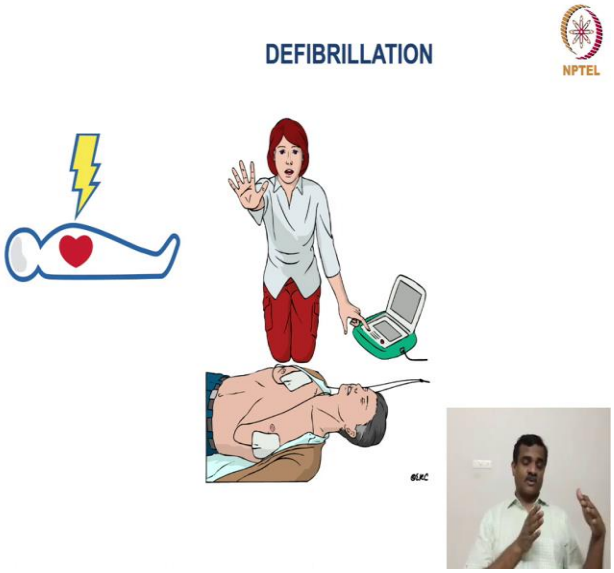

Now look at a scene. This is basically BLS is what about. Over the last 10 to 15 years what has been identified is certain types of heart attacks respond well to shocks, the other types do not respond to shock. So how do we know which types? That we know based on our ECG patterns. These types like ventricular attacking, cardioventricular fibrillation will respond to shocks, what is called defibrillation.

So if you defibrillate, use a short term, there is a good chance they will return to sinus rhythm. By sinus rhythm what we mean is normal electrical activity of the heart. And then you can take them and evaluate the condition. So in those conditions, if you leave it late till defibrillation, after a while it will become irreversible and it will become flat line and then later, giving shock at a much later time does not help at all.

So identification requires ability to identify an ECG. However with technology, we have been able to incorporate the machine which will identify the ECG and advise to the operator whether shock is advised or not. However, remember, the machine does not give shock on its own. The machine has to be operated by the operator. It will give you

instructions as to what to do, how to do, and even when it is saying to advise shock, it will say shock advised, press the button, it is not going to shock by itself. Until and unless we press the button, shock will not be given.

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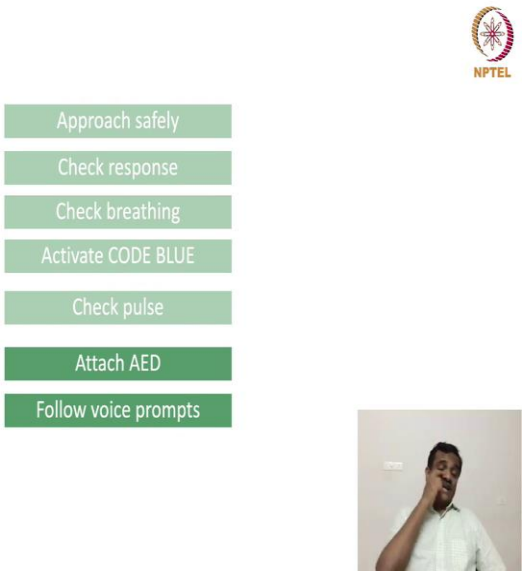

So if we have access to an AED, as we discussed earlier, even 5-star hotels or public places might have AED. So if there is access to AED and the person brings the AED, you come and attach the AED. AED is nothing but like, but a small box which is there. And once you open the board, switch it on it will also start giving out voice prompts as to what to do. So it will give you clear directions as to what to do and we just have to follow them.

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So the AED will open up. Sometimes there is a toggle button, the button with the circle and the line in the middle, what we call toggle button, on-off button, or some will switch on by themselves. So as soon as you open them and switch it on, the automatic voice prompts will start coming.

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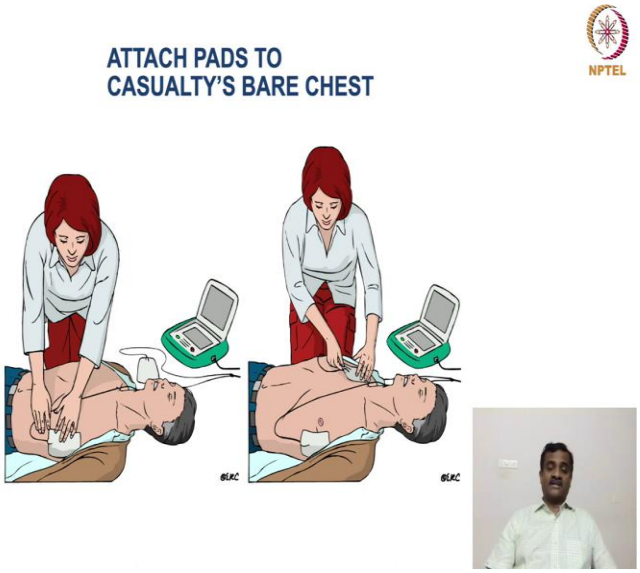

So it will say remove the patient's clothing and then it will say attach the ECG pads to the victim's chest. So we need to remove the shirt because we need to attach the ECG pads to

them. Conventional ECG, we might have 6 leads or 12 leads, whereas this has got only 12, 2 leads, and there is a pictorial representation as to where to attach them. One is on the left side, near the apex of the heart, the other one is diagonally opposite, near the shoulder on the right side.

There might be a pictorial guidance as to where to attach them on the ECG leads themselves. There are only 2 leads in an AED device. As soon as you attach them, you do not stop, the CPR is being continued by somebody, the compression. As soon as you attach the leads, the machine will prompt you saying assessing the heart rhythm.

So at that time, it will say stop compression, we do not disturb the patient, we move away because the machine is assessing if there is any electrical activity of the heart of the victim. When we are compressing it can get misconstrued and it might not get an accurate reading. So as the machine is assessing the cardiac rhythm or assessing the heart status for ECG pattern, stop the CPR and do not be touching the patient.

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So, analyzing rhythm. Do not touch the victim. This will be a voice prompt as well. As soon as it analyzes the rhythm, it will say shock advice, or, then we have to shock, or it might say shock not advised, continue CPR.

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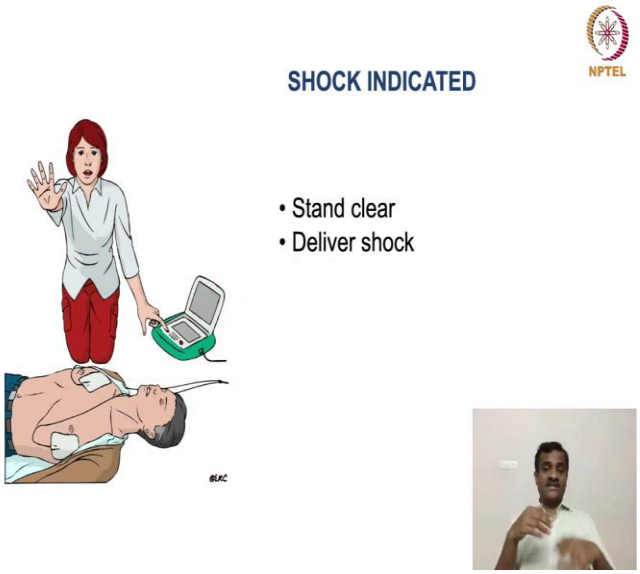

So if it say shock indicated or shock advised, the machine will not shock by itself. It will say press the shock button. And the shock button might flash. So we just have to press it and the shock will be delivered to the victim. As we are delivering the shock, one most important thing is we need to warn anybody else close to the victim to move away. Moreover, we should not be touching the victim as well because otherwise we are going to get the shock as well.

So as the machine says shock indicated, press the flashing shock button, as the picture shows. Say going to shock, all clear, I am clear, meaning I am, of the victim, you clear, all clear, and then press, I am going to press the shock button, and you press. As soon as the shock button is pressed, we are not going to wait to see if the victim is coming back. We need to start CPR immediately, after the shock button is pressed and shocked delivered.

So CPR is again 30 compressions is to 2 rescue breaths. For how long? 2 minutes. After 2 minutes, you stop and see if the ECG will be assessed by the machine again. The machine will say, rhythm normal or shock advised or shock not advised. If it says shock advised, we are going to repeat the process. It says shock not advised, we will continue CPR and maybe need to give medication. The medication will be based on the ACLS guidelines.

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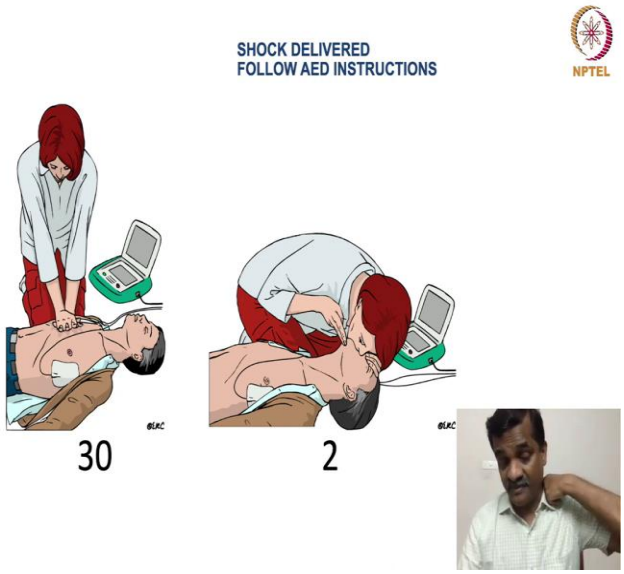

Hopefully, but if there is no ACLS people around, we will just continue 30 compressions is to 2 rescue breaths for 2 minutes, get the ECG reading again and then continue this, depending on what the machine is doing.

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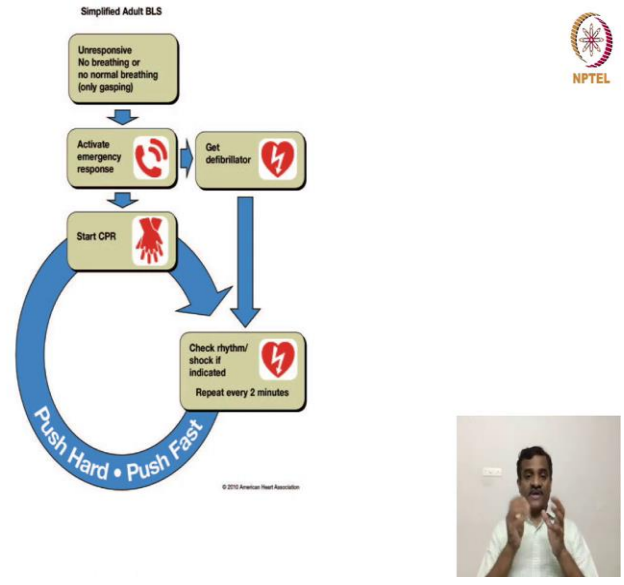

So this is the cycle just to simplify the log chart of this. An unresponsive victim who is not breathing or only gasping like that, activate the emergency medical system and start CPR. As soon as you start the CPR, see if somebody can get you an AED machine.

Check if shock is indicated, advised shock. So when you are compressing, now the victim is push hard, push fast. Good quality CPR is push hard, push fast, meaning as much as you compress the chest then the heart is squeezed and blood flows all over.

Remember, when the heart is stopped, the other organs are functioning, and if we manage to revive the heart he will not have any other problem as long as we keep them oxygenated till the heart becomes better.

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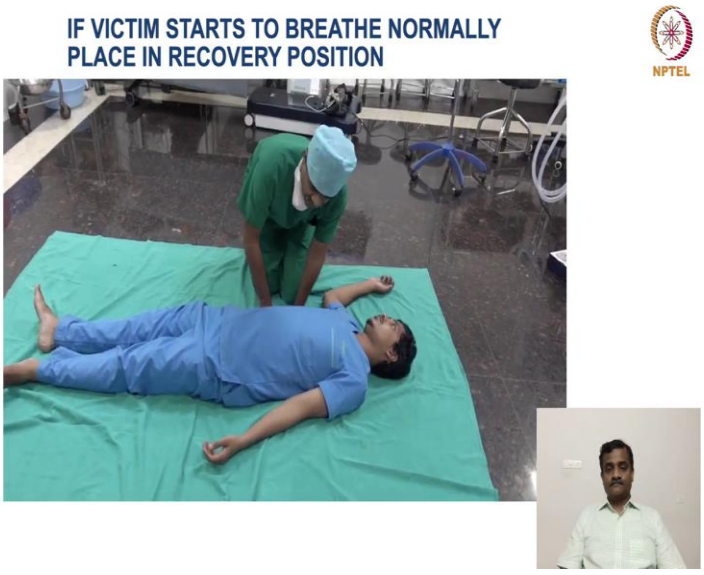

IF VICTIM STARTS TO BREATHE NORMALLY PLACE IN RECOVERY POSITION

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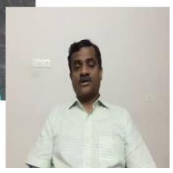

IF VICTIM STARTS TO BREATHE NORMALLY PLACE IN RECOVERY POSITION

Doctor: Let us look at the scenario where the victim has starting to breathe normally, or is breathing normally from the beginning. Then we keep them, and also you can get a feeble pulse, we keep them and what is called a recovery position. Recovery position is nothing but the position which patients are kept after an anesthesia.

Recovery position basically means putting the patient on to one side or what we, olden days we used to call lateral position. And as an individual, when the victim was on the floor how are you going to put them in recovery position, we also have to ensure that they do not roll back to supine position like this.

The problem with the supine position is there is tongue fall back, the secretions in the mouth might be aspirated in an unconscious patient. If you put them on a lateral position, recovery position, the tongue fall back is minimized the saliva or whatever secretion is in the mouth will drool out and not choke the victim.

Operator: When the patient is breathing but no response, still call for medical help. And as you are waiting, turn the patient to recovery position.

Doctor: So this, what we are doing, to recovery position is, so you see the legs are locked there so it does not roll back in. One hand to support the chin, other hand away, and it is drooling. So you can leave him in like that. See the face looking down so that everything

flows out, nothing chokes him. And the tongue also will have a downward thrust, opening up the airway at the back and him able to breathe.

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So just to go by step by step, step 1. First pulling the hand away, 90 degree away. The second one is getting the opposite hand on to keeping it on their chin and flexing it. Next is the opposite leg, you are flexing it and rolling the patient towards you. And putting him on the lateral position. That way he is self retaining.

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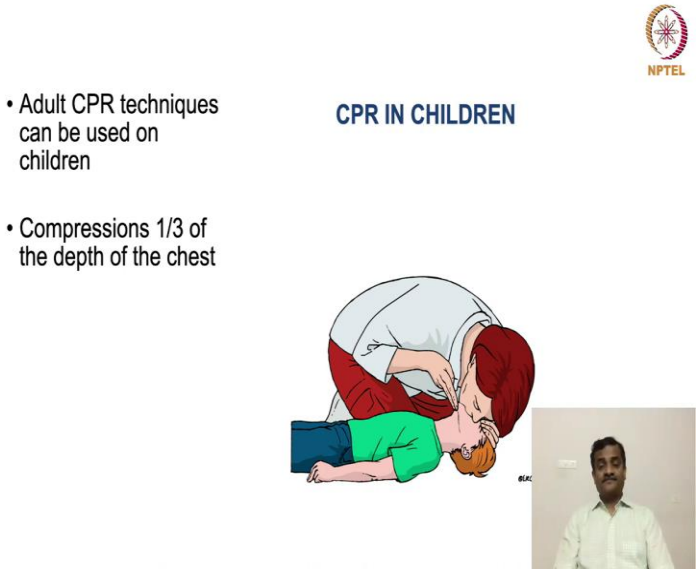

So if you look at children, the CPR as we saw, children, a slightly variant. Remember, the chest is not well developed, the size of the kids are small and children are not minature adults. The physiology is slightly different. So, and the way the problem comes is mostly respiratory issue, and not cardiac. So, but still, you do what is comfortable for you, what you are familiar with.

If you are not comfortable with PALS, Pediatric Life Support, you do not have to worry, you just follow the adult pattern. Only thing is if possible, if you can, if there are two people available, you are going to use 15 to 2 ratio, 15 compression is to 2 rescue breaths, rather than 30 is to 20.

So other technique, but however, if you are confused, do not worry, you just use the adult technique. So in a kid, we cannot look at 5 centimeters, because the entire chest wall thickness is less. You are not looking at 5 to 6 centimeters depth of compression, you look at say one third of the depth of the chest, is the compression going to be done.

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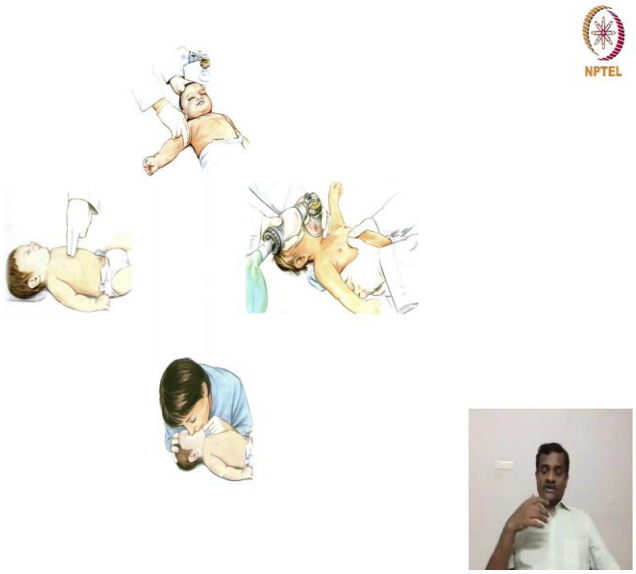

So if it is a newborn within one year, you will not even, you just need two fingers in the middle of the chest to compress, and then you can see that mouth-to-mouth breathing is also tricky, you do not have space to tilt the head. You might just lift the chin and give them. If it is, it is either two fingers as in this picture, or you might need to embrace the kid and use your thumb to compress the, compress the chest wall for compressions depending on the size of the kid.

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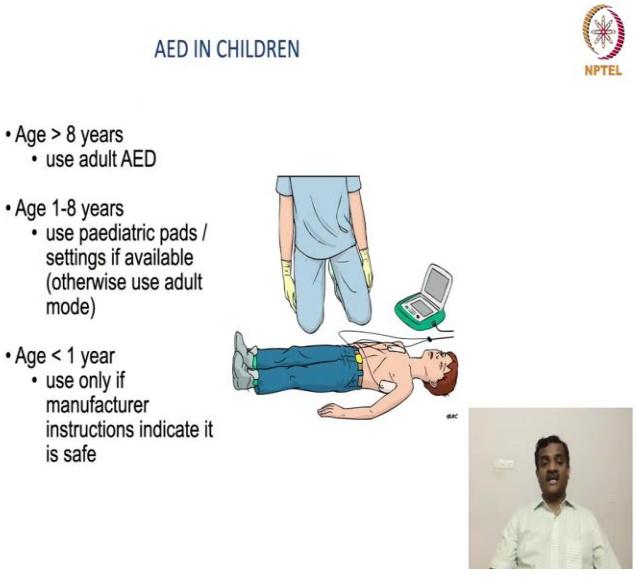

If you are looking at the AED, if it is, the kid is greater than 8 years old, we can use adult AED pads. If they are lesser than 8 years old, better to use a pediatric pad because the pad is bigger in size, and a smaller size pad will help. If for a kid lesser than 1 year old, look at instructions and these are special pads.

You do not want shocking the child too much and causing more problem. So anybody above 8 years, if you do not have access to appropriate size, you can use an adult AED device as well.

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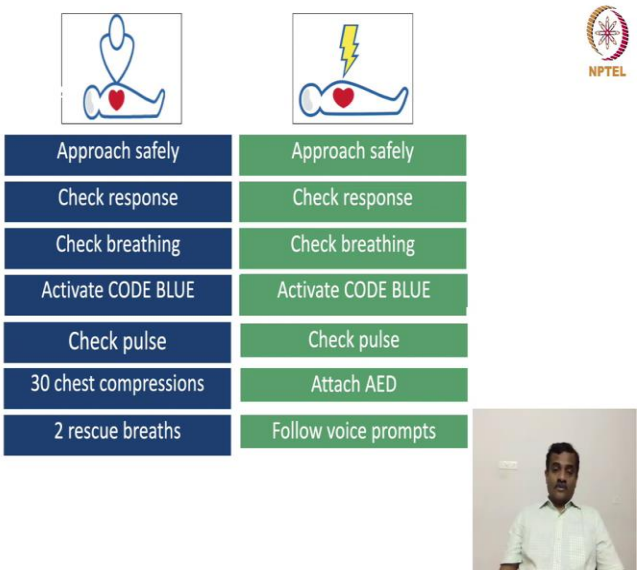

So there are two sets of BLS here, only differences is, is AED incorporated in it, or AED is not incorporated in it. So we are looking at the approach safely is the same in both, checking for responses again there, checking for breathing, activating CODE BLUE or emergency medical system, and checking pulse is the same.

So as you start CPR, if you have, you continue, if you do not have the machine you continue CPR till ambulance arrives, till help arrives or patient shows signs of life, meaning he is breathing and he is pushing you away. Whereas, if you have access to AED, you start compression and the AED comes, you are not disturbing the patient when it is analyzing rhythm, other times you are going to do CPR, compression is to rescue breaths.

Once the AED analyzes the rhythms, it will tell you, prompt you as to what to do. If it says continue CPR, continue CPR. If it is says shock advised, it will flash the button, press the flashing button, and when you are about to press the shock button, get everybody to move away from the patient, say clear, pressing the shock button, when shock is delivered, do not wait, continue CPR immediately for 2 minutes, and then reassess the rhythm. It will say analyzing rhythm again, and then follow voice prompts.

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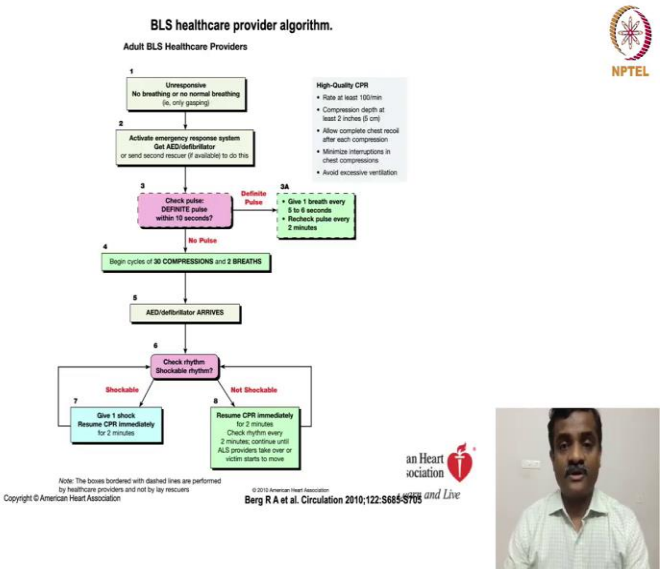

So it is the same prompt again, to summarize. An unresponsive, no breathing, no normal breathing, again a breathing gasping patient, you are, as you approach him to give basic life support, we are going to activate the emergency system.

If there is, when you are looking for breathing and pulse, do not spend more than 10 minutes for each, 10 seconds, I am sorry, for each, and then when there is no response, hopefully with help on the way, start CPR. If you have access to AED, use AED and check the rhythm and then continue.

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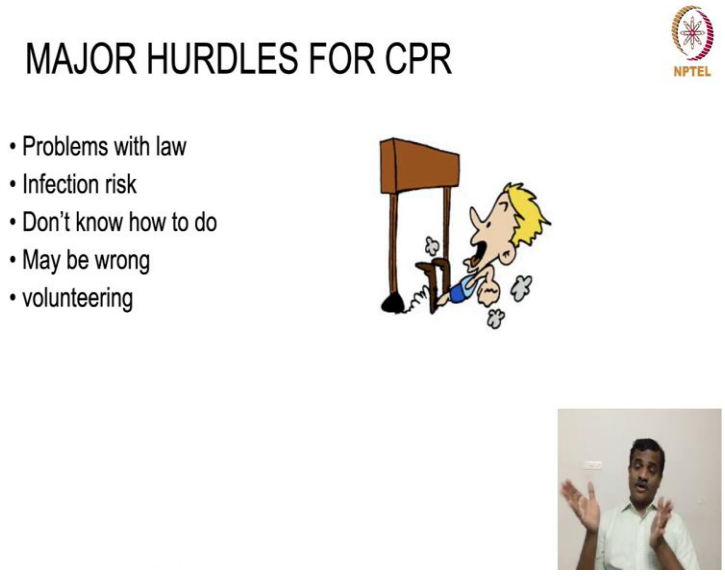

There was an issue in common practice, in the common road, in a hospital setting it is fine, in a clinic sitting or outside, will there be any issues with the law because when somebody collapses in a clinic, it is traumatic, and then you are compressing and somebody thinks that, if the patient, gasping patient and then after your compression if the gasping stops, and he stops breathing, they think that you have killed the patient or is there a problem.

Though there is no law saying it will directly protect you from CPR because it is very difficult to differentiate for them, but rest assured that nobody gets penalized for CPR. The judges are quite clear that when somebody collapses, cardiac arrest nobody knows, and they will support you for CPR, whatever the patient's attender says.

However, if you have not initiated CPR and if you are just going to wait for an ambulance to come without even doing CPR, then you will be held accountable and you may be penalized for that because in that case if you are undertaking a procedure, if it is going to crash, legally they think it is mandatory you know the emergency basic life support measures, first aid measures because it is now moving on to even the public space, and we want even public to do it.

So then there is no reason why as a healthcare provider we should not do it. It is mandatory we know and we initiate the correct process. Is there a risk for infection? We saw that as of now no reports have come in literature about communicable diseases going this way and that way. The commoners problem with the people not doing CPR is we do not know how to do and that is the aim of these lectures.

But remember, lecture alone is not sufficient. Let us work on a mannequin. Maybe we will look at this project or later how you can do it on a mannequin. We will have an assessment test. Like, you have at the end of this exercise to see how you do it. And then your uncertainty, if it is wrong. The best way is to keep practicing, and remember, every two years it is best to get it re-certified. Let us volunteer and be there.

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Danish Footballer Christian Eriksen suffered a cardiac arrest during Denmark's Euro 2020 match against Finland

The timely efforts of the standby medical team helped in saving Eriksen's life
Chest compressions and rescue breaths followed by one shock with AED saved his life

This is just to bring your attention, the importance of immediate CPR. If you are football fans, and I think this is, three, four times it is happened, off late in the west, it is happened. If you are a football fan, in the recent Euro 2020, it is happening in 2021, right, due to COVID pandemic, so due to Euro, one of the players from Denmark Christian Eriksen just collapsed on the ground as he was going to get a throw-in from outside.

His colleague, Simon Care, I think, was there, He immediately put him lateral, swept his tongue. He felt the Eriksen was swallowing his tongue. So he swept his tongue, cleared

out his airway, and then got the medical team and started doing CPR. In fact Simon Care has been awarded a special award for a timely response in identifying the tongue fall back for Christian Eriksen.

And that helped the medical team initiate CPR and save him also. In fact Eriksen has come back to playing football again. So high quality CPR can save lives, and high quality basic life support incorporating AED with good compression and AED, 60% chance if the CPR is initiated within the first minute also, witness terms, so that is what we say.

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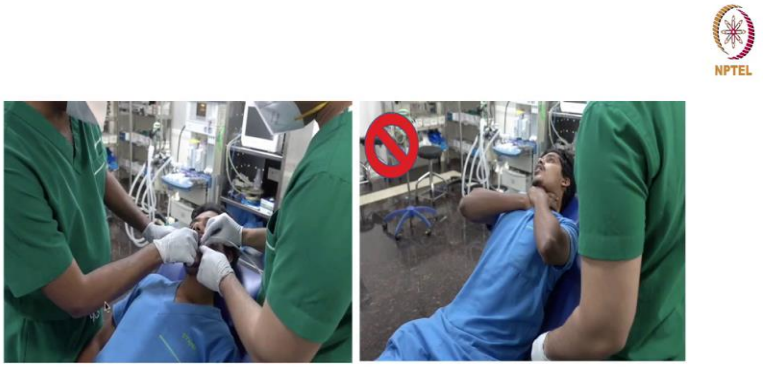

Doctor: We are looking at another scenario wherein, we are looking at another scenario wherein if we can do, if there is a choking scene, how we can go about looking at a victim who is suddenly choking. You see the universal sign of choking with them holding their neck. So your hand going to your neck, it's a sign of chocking.

Operator: What happened? Lean forward, lean forward, lean forward, cough, cough. Okay, let us try Heimlich. Start. Relax, relax. You are okay? Take a deep breath. Okay. Very good. You are able to breathe okay? Okay.

Doctor: So when somebody is choking, the sign of gasp is hands to the neck, and then they struggling to breathe, the best thing is make them lean forward, make them cough, remember for cough, they have to take an air and the airway is blocked. The best thing is to make them lean forward and tap or tap between the shoulder blades, in the back, like you saw in the video.

Keep tapping, five thrusts and then see if they can get it out or cough. If hey are still not done, then Heimlich is the solution. They are in a chair, making them stand up is difficult, you can go behind them and then do, is the commonest thing, but in a chair you can directly do. In a chair, going behind and doing it is difficult.

And remember, the thrust has to be with the elbows right to the, below the sternum. Do not try and pull the elbows up, chest cage up, it will not help. If you are not able to

retrieve the foreign body, and the respiration stops, then we are going to initiate CPR, the BLS sequence, which we saw just like that before.

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Thank you

Thank you very much. I hope it was quite lucid and clear-cut. Please attend to the tests at the end, and then we look forward to interacting with you again later. Thank you.