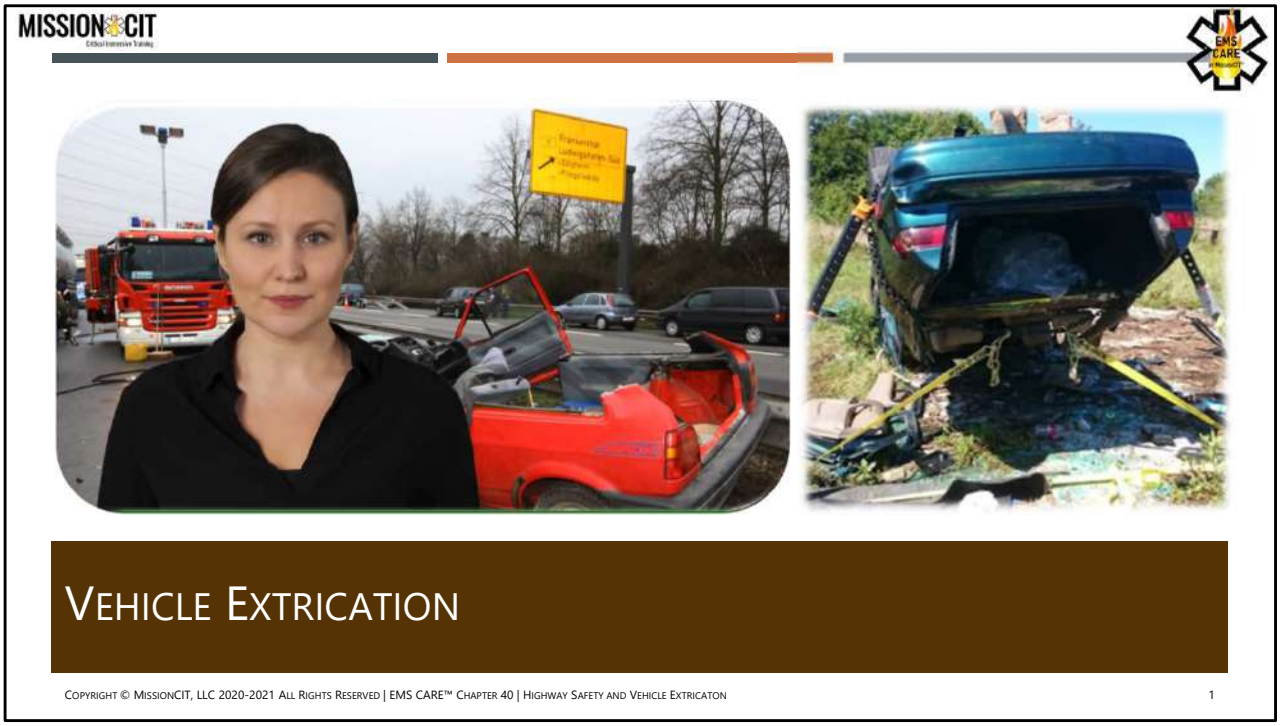


Welcome to the third lesson, here we will talk about the basics of vehicle extrication and the tools used in different situations.

But before we go in, it merits to note that EMTs are not extensively involved in rescue and extrication as it requires more advanced skills. Still, it helps to know the basic extrication concepts as they may come in handy in some situations.

Role of an EMT in Vehicle Extrication

- Manpower and vehicles
- Put emergency signs
- Park in a single file to minimize congestion
- Assess and provide medical care
- Triage and transport patients
- Provide additional assessment
- Offer emotional support






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As an EMT, your role is limited to providing the manpower and vehicles needed to accomplish the mission as you're not expected to handle complicated extractions. If you're the first to arrive, cordon off the area and put-up emergency signs to let the other drivers know that this is an emergency where work is happening. If the lanes or roads are getting blocked, clear them quickly to allow other vehicles to pass through.

On the other hand, if there's already an emergency

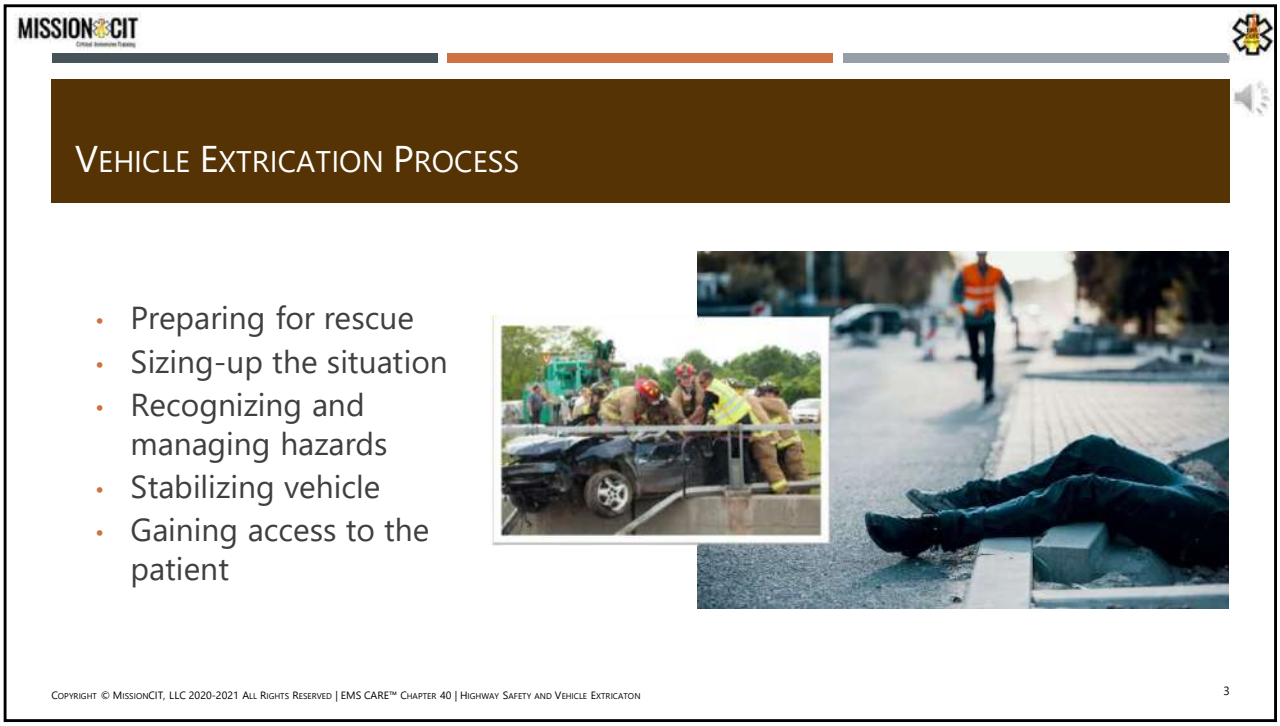
vehicle at the scene, park in a single file to minimize congestion.

If the extrication is happening at night, use warning lights and keep reflective cones around the area of the accident to warn other drivers not to come to the accident lane.

Some of your other roles and responsibilities are:

- Assess and provide medical care
- Triage and transport patients
- Provide additional assessment and emotional support when needed

If you’re a part of the rescue team, you’ll be involved in stabilizing the vehicle and extricating the patients, subject to your local laws and protocols.



Broadly speaking, there are five phases in vehicle extrication, and they are as follows:

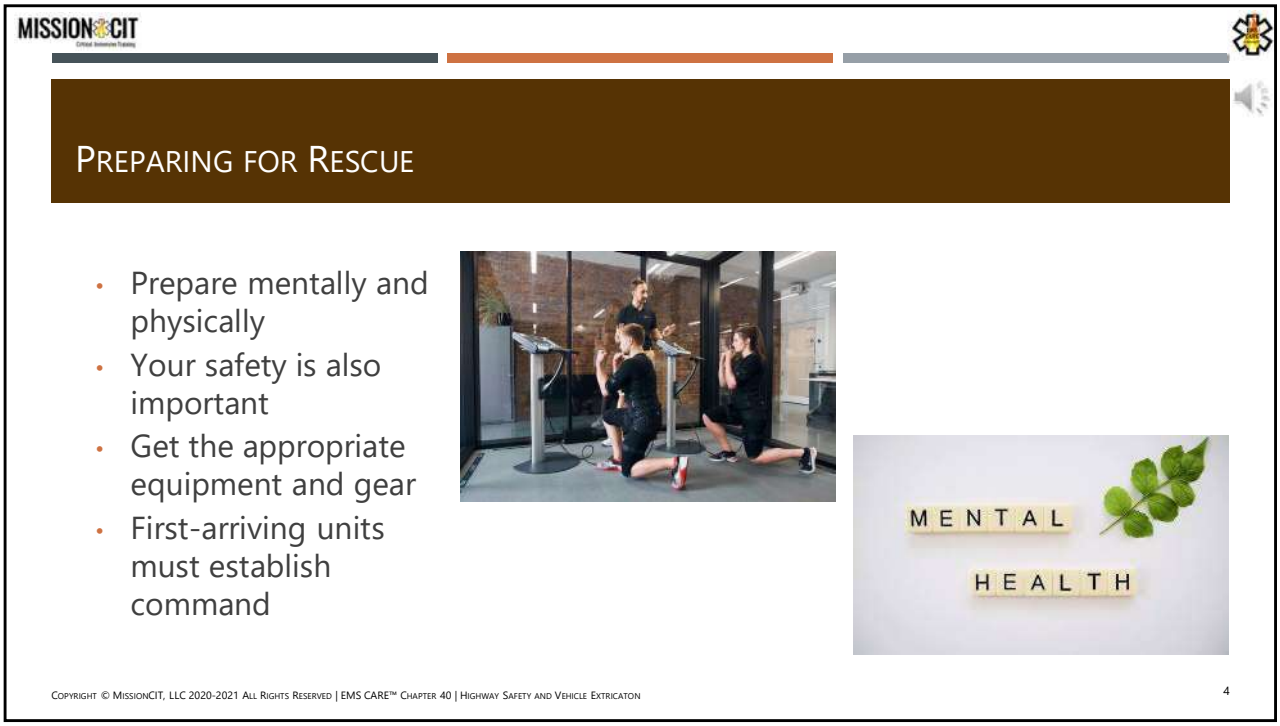
- Preparing for rescue
- Sizing-up the situation
- Recognizing and managing hazards
- Stabilizing vehicle before entering
- Gaining access to the patient

The first phase will require training and the right protective gear and tools to handle the extrication, while

the second phase is all about sizing-up the situation to evaluate the hazards and to understand the resources needed for the operation.

The third step is all about wearing protective gear that is suited for the situation, so you can avoid injuries to yourself. Some examples of protective gear are helmets, ANSI safety vests, and protective gear for eyes and hands, especially if there's fire.

Once you're all set, stabilize the vehicle, especially if it's lying in a precarious position, and finally, gain access to the patient.

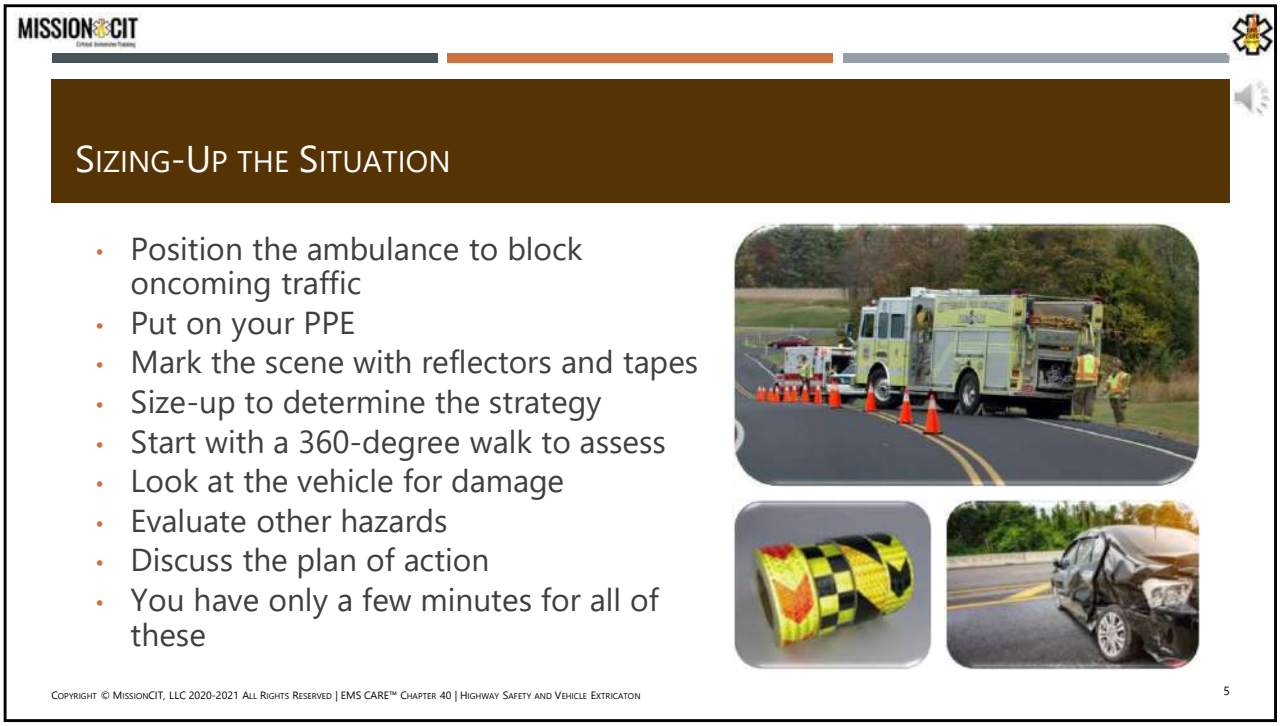


Extricating patients can be a physically and emotionally draining experience, so prepare yourself mentally and physically. Though the priority is to provide patient care, keep in mind that it's also your responsibility to keep yourself and your team safe. So, head to the operation with a balanced mindset since this will help you to think clearly.

An essential part of preparation is to get the equipment and gear that is appropriate for the hazard. Some of the things to have on hand are hard hats, safety goggles,

industrial hearing protectors, thermal masks, aluminized rescue blanket, vinyl-coated paper tarpaulin, wool blanket, and short and long spine boards.

Also, the first arriving units must establish the command, and communicate the exact location and nature of the accident to the dispatch center.



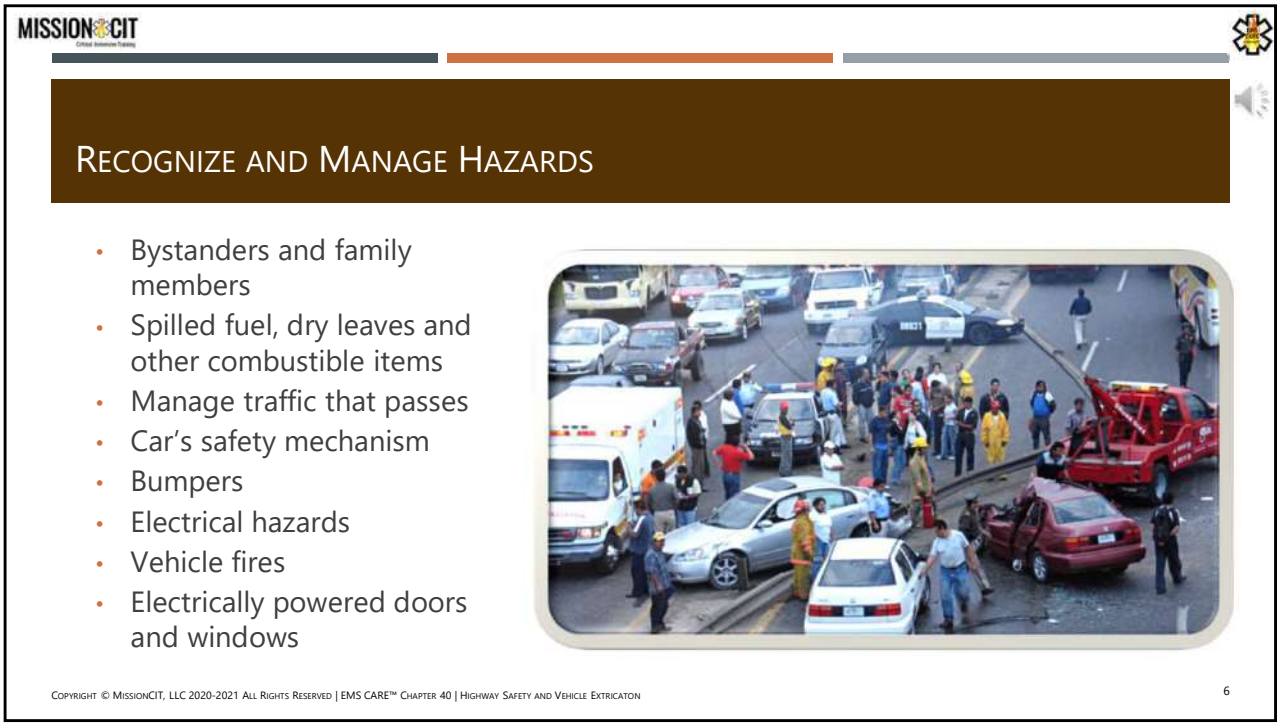
As soon as you arrive, size-up the scene to get an idea of the extent of the damage, and to plan on what needs to be done. Here are some ways to size up the scene and get ready for extrication:

- Position the ambulance such that it blocks the scene from oncoming traffic. Also, it's an indication for drivers to avoid this lane.
- Put on your PPE and look out for passing vehicles before exiting your vehicle.
- Mark the scene and place reflectors or tapes around the scene to prevent unauthorized people from

entering it.

- Size-up the scene to determine the appropriate strategy.
- Start with a 360-degree walk to identify the mechanism of injury, the number of trapped or ejected patients, the extent of damage, and other safety concerns like electrical hazards and oil spills.
- Look at the vehicle closely as the vehicle damage can give you clues about the nature of the accident, and the best ways to extricate passengers trapped in it. In particular, look for bent steering wheels, imprints in the dashboard, unrestrained patients, and shattered glass on the windshield.
- Document your findings and decide if you need additional help.
- Evaluate other hazards such as the presence of sleet and snow, possible violent behavior from the passengers or drivers, damaged battery, and anything else that can impede the rescue process.
- Finally, talk to your team about the possible plan of action and coordinate with law enforcement authorities if you have to.

Remember, you may have just a couple of minutes at the most for the entire sizing-up, particularly if the passengers are injured and bleeding.



Many hazards may be present on the scene and these could not only impede the rescue process but can also make it dangerous for you and the patient. Here are some things to watch out for:

- First off, bystanders and family members are likely to panic because this may be the first time they are encountering such a situation. Calm them down and request them to move to a safe place.
- The presence of spilled fuel, dry leaves, and other combustible items on the road or by the side can be potential causes of fire. So, make sure you move

them away from the vehicle or take necessary precautions when you notice them.

- An important part of extrication is to manage the traffic that passes through these roads. First off, use warning lights to control traffic and to let other drivers know your presence. If it is night, use both rear and forward-facing lights to inform vehicles on all sides. Also, use flares for traffic control when needed.
- Finally, the safety mechanism in the car can prove to be a hazard in such situations.
- airbags are a potential hazard as they are designed to inflate on impact. Sometimes, this can emit cornstarch, talcum powder, and even sodium hydroxide. In particular, watch out for airbags that remain undeployed during a crash.
- Likewise, if the bumpers were involved in the accident, their shock absorber system becomes loaded or compressed as they absorb the energy of the collision. Ideally, chain the shock absorber, and make sure you stand perpendicular to the bumper and not directly in front of it.
- Electrical hazards are another possibility, especially if the wires in the car are exposed. When you see such exposed wires, be ready for the possibility of high

voltage in the entire area as the conductors may be energized as well. Similarly, if you see any broken utility poles that have been involved in the collision, cordon the entire area, and exercise the highest levels of caution.

- Vehicle fires are also a possibility, so prepare for them. Use extinguishers sparingly until the passengers in the car are removed safely.
- Lastly, many cars have electrically powered doors and windows, so disconnect the negative cable from the battery to disable these electrical systems.

Stabilizing the Vehicle

- Bring the vehicle on its wheels
- Turn-off the engine
- Step-chock all three sides
- Make initial contact with the trapped passenger
- Stabilize the vehicle with ropes, cribbing, or stabilizer bars
- If it's on the roof, use 4 X 4 wood blocks
- Consider using struts







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Many times, the vehicle may not be on its wheels, so your first job would be to bring it back on its wheels to make it easy to extricate the patient. To do this, turn off the engine if it is still running. Also, step-chock all three sides. At the same time, ensure that one of the personnel makes initial contact with the passengers caught inside to let them know that they will be extricated.

If the vehicle is on its side, stabilize it with ropes, cribbing, or stabilizer bars. On the other hand, if the

vehicle is on its roof, use 4 X 4 wood blocks to build a crib box, so you can safely bring down the vehicle on its wheels.

You can even consider using struts on one side and cribbing on the other for better stability. Understand how all these works and decide which of these strategies to use for bringing the vehicle down safely.

Gaining Access

- Talk to the patient and explain what's happening
- Access the patient without breaking doors or windows
- Use appropriate tools if needed
- If needed, break the side or rear glass
- Remove the roof or door if needed



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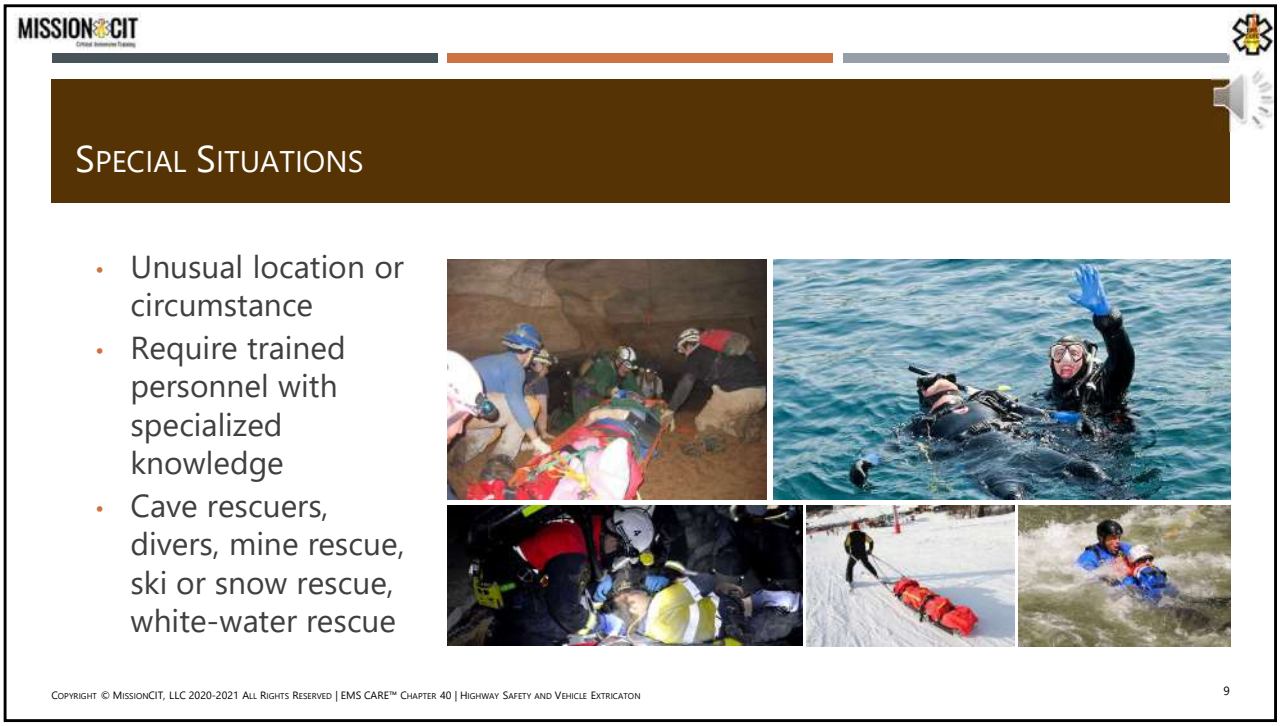
Now that you have the right equipment in place, removed the potential hazards, and stabilized the vehicle, it's time to gain access to the patient. Also, talk to the patient and explain what's happening as this can give them a lot of emotional strength that help is around.

First off, see if you can access the patient without having to break doors or windows. Try opening the doors or see if you or the patient can roll down the windows before considering a more complex access route. If none of

these work, use appropriate tools and equipment. If you have to break the glass, make sure you do it in the side or rear window as far away as possible from the patient.

You can even consider gaining access by completing removing the roof or door. Though this could be a bit complex, it creates a large exit and makes the vehicle interior more accessible. It could be a good choice when you have to rescue many passengers or need quick access to critical patients. It also helps improve air circulation inside the vehicle to boost the chances of survival.

Finally, extricate the patient.



Sometimes, a patient may be caught in an unusual location or circumstance that would require trained personnel to rescue them. Some examples of such rescue teams include cave rescuers, divers, cross-field and trail rescuers, teams that rescue people from confined spaces, mine rescues, ski or snow rescue, the collapse of buildings or structures that require personnel to rummage through the debris, and white-water rescue.

Such rescue situations need specialized knowledge, training, and equipment, so stay away if you don't have

that training. That said, inform fire dispatch of the situation, if they have not yet been alerted.

We now end this lesson, and in the next, Justin will talk about extricating patients from an electric vehicle.