

LESSON

# 11

## PRE-HOSPITAL TREATMENT

Lecture: 01 Periods, Practical: 02 Periods Total: 03 Periods

### LESSON OBJECTIVES

**Upon completing this lesson,  
you will be able to:**

1. Identify the possible mechanisms of injury in a structural collapse.
2. List the potential injuries that could be expected in a structural collapse.
3. Describe the conditions in a patient that might indicate the presence of crush syndrome or compartment syndrome.
4. Demonstrate the pre-hospital treatment for trapped victims.

1

## Mechanisms of Injury and Their Consequences

Notes

It is very important for the rescuers not to lose sight of the primary objective of a CSSR operation. Their first responsibility is to assess, stabilise and extricate victims with the least possible injury.

### 1.1 Crushing or compression

Potential injuries and consequences:

- Compartment \_\_\_\_\_  
\_\_\_\_\_
- Crush syndrome  
\_\_\_\_\_
- Wide variety of \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_ and \_\_\_\_\_ haemorrhaging  
\_\_\_\_\_

## Mechanisms of Injury and Their Consequences

## Notes

### 1.2 Falls

Potential injuries and consequences:

- Fractures of the \_\_\_\_\_, \_\_\_\_\_ and spinal column

\_\_\_\_\_

- Internal and \_\_\_\_\_ haemorrhaging

\_\_\_\_\_

### 1.3 Low temperatures

Potential injuries and consequences:

- \_\_\_\_\_ and associated complications

\_\_\_\_\_

### 1.4 Blunt Trauma

This can be caused by impact by furniture, loose objects or materials from the structure (at high velocity in explosions). Potential injuries and consequences include:

- \_\_\_\_\_ and \_\_\_\_\_ haemorrhaging

\_\_\_\_\_

\_\_\_\_\_

- \_\_\_\_\_

\_\_\_\_\_

- Various injuries

\_\_\_\_\_

- \_\_\_\_\_

\_\_\_\_\_

## Mechanisms of Injury and Their Consequences

(Cont.)

Notes

### 1.5 Contaminated air

It is common in collapsed structure situations to encounter large amounts of airborne dust, and in some situations hazardous and/or flammable vapours.

Potential injuries and consequences:

- Respiratory \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_ arrest  
\_\_\_\_\_
- Respiratory arrest  
\_\_\_\_\_
- \_\_\_\_\_ problems  
\_\_\_\_\_

### 1.6 Lack of water and food

- \_\_\_\_\_  
\_\_\_\_\_
- Starvation  
\_\_\_\_\_
- \_\_\_\_\_  
\_\_\_\_\_
- Renal \_\_\_\_\_  
\_\_\_\_\_

### 1.7 Prolonged isolation and desperation

- Traumatic stress  
\_\_\_\_\_

## 2 Crush Syndrome

### Notes

Complications resulting from blood toxicity that arise after an extremity or muscle mass has been compressed and circulation compromised for an extended period of time.

Crush syndrome can result when an extremity is caught under pressure between two objects. It is common in trapped victims of collapsed structures. Swelling may be a major problem with resulting loss of blood supply distally. Patients may suffer (tourniquet shock) when the object is removed and toxins that have been built up behind the blockage are released and travel to the heart with often \_\_\_\_\_ results.

According to studies on patients with crush syndrome, if they receive proper treatment in a timely manner, there is a \_\_\_\_\_ percent chance of remaining alive. Crush syndrome does not necessarily occur in every incident where a victim is trapped. As a general rule, the syndrome may be considered present on the basis of three criteria:

- Involvement of a \_\_\_\_\_
- Prolonged \_\_\_\_\_
- Compromised \_\_\_\_\_

**Crush  
Syndrome**  
(Cont.)

For instance, entrapment of a hand is unlikely to initiate the syndrome. Compression time may be as short as one hour but the average time is four to six hours or greater.

The major problem that faces the rescuer when dealing with suspected crush injury is dissuading helpful bystanders from attempting to remove the compressive force prior to treatment.

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**Signs and symptoms of crush syndrome**

- Anxiety \_\_\_\_\_
- Difficulty breathing \_\_\_\_\_
- Decreasing blood pressure \_\_\_\_\_
- Changes in body temperature \_\_\_\_\_
- Rapid pulse \_\_\_\_\_
- Cardiac deficiency \_\_\_\_\_
- Loss of consciousness \_\_\_\_\_
- Absent pulse and capillary refill in the distal limb  
\_\_\_\_\_
- Shock \_\_\_\_\_

**Notes**

An increase in pressure in the closed space of the muscle caused by tissue swelling that causes destruction of muscle fibres and nerves.

Compartment syndrome usually develops over a period of several hours and may not be present initially. It may be the result of crush syndrome, closed or open fractures, sustained compression, or after blood flow has been returned. As the duration and magnitude of interstitial pressure increases, necrosis of soft tissue eventually develops. While compartment syndrome can occur in most areas of the body, the more common sites are the forearm, calf and thigh.

There are two prerequisites for compartment syndrome to occur:

- An envelope within the tissue that limits the available space
- A cause of increased pressure within the envelope

## Signs and symptoms of compartment syndrome

- Swollen limb in an unconscious patient \_\_\_\_\_
- Severe pain, disproportionate to the injury \_\_\_\_\_
- Pain on passive stretching of the muscles in the compartment \_\_\_\_\_

3

**Compartment  
Syndrome**  
(Cont.)

- Diminished pulse \_\_\_\_\_
- Poor capillary refill \_\_\_\_\_
- Decreased sensation in the affected extremity  
\_\_\_\_\_
- Shock \_\_\_\_\_
- Dehydration \_\_\_\_\_
- Loss of motor function in the affected limb  
\_\_\_\_\_

4

**General  
Treatment  
for Trapped  
Patients**

- 4.1 Do not remove the source of pressure until treatment has begun.  
\_\_\_\_\_
- 4.2 \_\_\_\_\_  
\_\_\_\_\_
- 4.3 Protect the patient from possible hazards resulting from the rescue attempt.  
\_\_\_\_\_  
\_\_\_\_\_
- 4.4 \_\_\_\_\_  
\_\_\_\_\_
- 4.5 Immobilise the neck and spine.  
\_\_\_\_\_
- 4.6 \_\_\_\_\_  
\_\_\_\_\_

Notes



**General  
Treatment  
for Trapped  
Patients****(Cont.)**

- 4.7 Protect the patient from the environment.

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- 4.8 Monitor the patient's cardiac state.

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- 4.9 Allow qualified medical personnel to provide the

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- 4.10 Place the patient on the backboard or stretcher, immobilise him or her, and proceed with removal from the site, using correct procedure at every step.

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- 4.11 Remember the protocols for contact with victims that were covered in Lesson 6.

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The specific treatments for crush syndrome and compartment syndrome must be administered by qualified emergency medical personnel. Consult the reference material for this lesson.

**Notes**

## 5

### Immobilising a Patient on a Backboard

#### Notes

5.1 Stabilising the patient's head.

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5.2 Place the \_\_\_\_\_

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5.3 Rotate the patient onto the backboard.

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5.4 Inspect the \_\_\_\_\_

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5.5 Centre the patient on the backboard.

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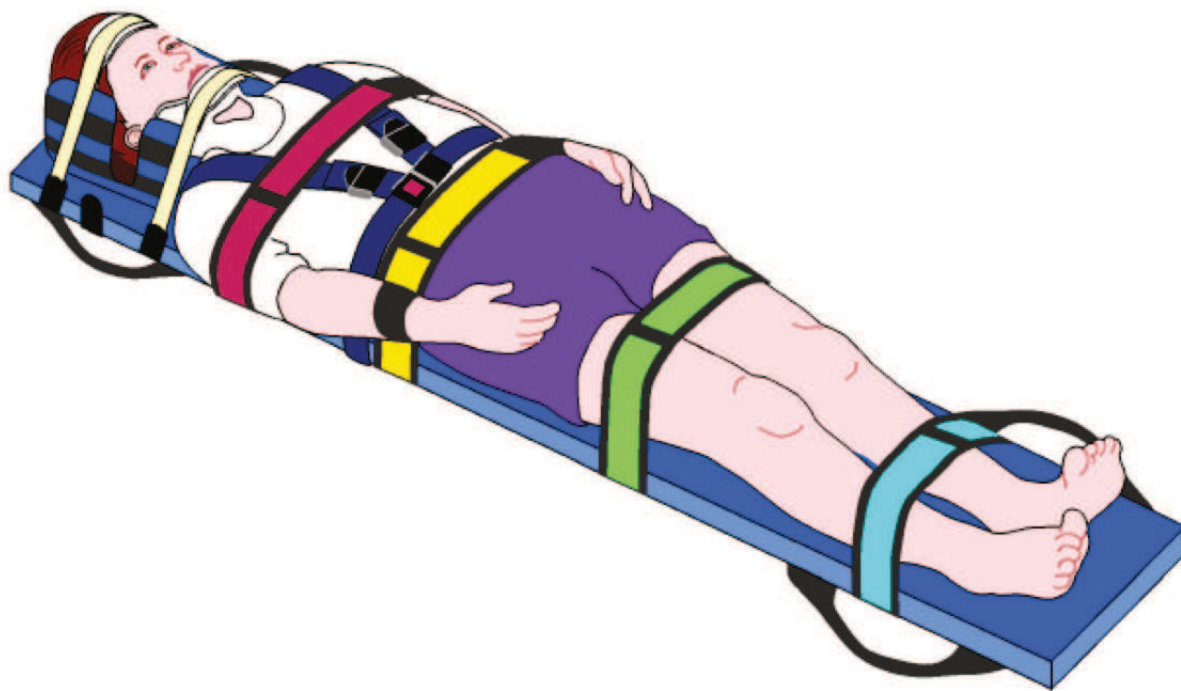
5.6 Immobilise the patient onto the backboard.

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5.7 Check pulse, motor function and sensation after  
immobilising the patient.

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✓ CORRECT  
IMMOBILISATION



✗ INCORRECT



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# PRACTICAL EVALUATION

## Lesson 11 Pre-hospital Treatment

Group #:

Activity*		Complete	Incomplete
1	Ensure scene safety		
2	<b>Use of proper PPE</b>		
3	Proper access method to reach the victim		
4	<b>Verbally state the initial management prior to removal of compressive force.</b>		
5	Application of C-collar and victim immobilization		
6	<b>Identify signs and symptoms of Crush and/or Compartment Syndrome</b>		
7	<b>State the other pre-hospital treatment required</b>		
8	Victim transport.		

*\*Activities in bold type require satisfactory performance for a passing grade on this evaluation.*

### Notes:

Pass:		Instructor:	
Fail:		Place:	Date:
Instructor's Signature:			



## POST-TEST | LESSON 11

### Pre-Hospital Treatment

1. Complete the table below.

Mechanism of Injury	Expected Injuries
Lack of water and food	
	Traumatic stress
	Respiratory problems Possible cardiac or respiratory arrest
Crushing and/or compression	
Falls	
	Hypothermia
Blunt trauma caused by impact from furniture, objects and structural materials	

2. List the conditions present in a victim that might indicate the possibility of crush syndrome or compartment syndrome.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. What immediate steps must you and your CSSR squad take upon find a victim with possible crush syndrome? Select all the correct answers by placing an "X" in the spaces provided.

- (   ) Remove the compressive force and initiate treatment
- (   ) Immobilise the victim neck and spine
- (   ) Administer oxygen
- (   ) Check ABC's (airway, breathing and circulation)
- (   ) Treat for shock
- (   ) Extricate the victim immediately and take him/her in for treatment by medical doctors at the nearest hospital



## CSSR LESSON 11 EVALUATION

Course Location: \_\_\_\_\_ Dates: \_\_\_\_\_

**Do not write your name on this form. Please complete a copy of this form at the end of every lesson.** Your evaluations are very valuable towards improving the course. Please use the ratings below.

	1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT
Please fill in the required information.	<b>Lesson Number :</b>		<b>Lesson Name :</b>		
	<b>Instructor's Name</b>				
Use a scale from 1 to 5 as described above to rate the various lesson components.	<b>Lesson Rating (rate 1 to 5)</b>				
	Content	Instructor		Method	
	Workbook	Interaction			
Mark your selection with an "X"	<b>Instruction Level</b> <input type="checkbox"/> Too basic		<input type="checkbox"/> Appropriate		<input type="checkbox"/> Too advanced
	<b>Duration</b> <input type="checkbox"/> Too short		<input type="checkbox"/> Appropriate		<input type="checkbox"/> Too long
	<b>Usefulness</b> Was this lesson useful to you?				
	<input type="checkbox"/> Yes <input type="checkbox"/> No				
Rate from 1 to 5	<b>Overall Lesson Rating</b> Taking all the above into consideration, I rate this lesson: _____				
If you need additional space, please use the back of the sheet.	<b>Comments and Observations</b>				

Thank you for your help. Your input is valuable.  
Please turn in this completed form to the instructor.

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## EXERCISE EVALUATION LESSON 11

Course Location: \_\_\_\_\_ Dates: \_\_\_\_\_

Do not write your name on this form. Please complete a copy of this form at the end of every lesson. Your evaluations are very valuable towards improving the course. Please use the ratings below.

1 VERY POOR	2 POOR	3 AVERAGE	4 GOOD	5 EXCELLENT
<b>Lesson 11 Pre-hospital Treatment</b>				
Use a scale from 1 to 5 as described above to rate the various lesson components.				
<b>Station 1</b>				
<b>Station Name:</b> Victim Extrication and Pre-hospital Treatment				
<b>Instructor:</b>				
<b>Station Rating (rate 1 to 5)</b>				
Instructor ____ Materials ____ Method ____ Location ____				
<b>Instruction Level</b>				
<input type="checkbox"/> Too basic <input type="checkbox"/> Appropriate <input type="checkbox"/> Too advanced				
<b>Duration</b>				
<input type="checkbox"/> Too short <input type="checkbox"/> Appropriate <input type="checkbox"/> Too long				
<b>Comments and Observations</b>				
Mark your selection with an "X"				
<b>Station 2</b>				
<b>Station Name:</b> Victim Extrication and Pre-hospital Treatment				
<b>Instructor:</b>				
<b>Station Rating (rate 1 to 5)</b>				
Instructor ____ Materials ____ Method ____ Location ____				
<b>Instruction Level</b>				
<input type="checkbox"/> Too basic <input type="checkbox"/> Appropriate <input type="checkbox"/> Too advanced				
<b>Duration</b>				
<input type="checkbox"/> Too short <input type="checkbox"/> Appropriate <input type="checkbox"/> Too long				
<b>Comments and Observations</b>				
Mark your selection with an "X"				

Thank you for your help. Your input is valuable.  
Please turn in this completed form to the instructor.

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