WorkSafeBC

Advanced First Aid

Participant Guide

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Course Overview

Course Overview

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Introduction to the course

The WorkSafeBC Advanced First Aid course is for advanced first aid training and certification. It requires 70 hours of instruction as per the *First Aid Program Standards*. Upon successful completion of the course, students earn an advanced first aid certificate.

About the course

The course includes 21 modules that are broken down into lessons. The lessons are spread over 70 hours (10 days), excluding breaks. Each day includes seven hours of instruction. Additional time must be added to each day to accommodate any breaks.

Module 1

Introduction

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1.1: Welcome to the course

You can help save lives

As an advanced first aid attendant, you provide an essential and important service in the workplace. You alleviate suffering. Sometimes your skills may help save lives. Also, by providing effective injury care, you can help shorten the time it takes workers to heal, allowing them to resume normal activities sooner.

To be effective in your role, you need training in a wide range of worker care, from minor injuries to serious traumas involving airway, breathing, and circulatory emergencies. That's what this course is all about.

But before we go any further, let's take a look at the effect a well-trained first aid attendant can have on the people in their workplace.

Class-based discussion

The instructor will consider the following scenarios and be prepared to discuss and answer the associated questions:

1. As the trailer was being loaded, a logging truck driver walked around the trailer to remove loose tree limbs. It was dark and was in a poorly lit area. They were pulling off a limb, when a 5.18 m (17 ft.) fir dislodged from the load and struck them in the chest. When the first aid attendant arrived, the worker was unconscious, not breathing, and did not have a pulse. The first aid attendant gave the worker CPR. The worker began to breathe, and their pulse returned.

   What might have happened if the first aid attendant did not give the worker CPR?

   How long would it take for this worker to die if CPR was not performed?

2. A worker was cutting lumber on a radial saw when they caught their index finger in the blade. The tip of their finger was cut off. When the first aid attendant arrived, the worker was lying supine and bright-red blood was spurting out of the wound. The first aid attendant got help from a nearby worker. Together they stopped the bleeding by applying direct pressure. They cleaned and dressed the amputated fingertip. They put the amputated fingertip in a bag with ice and labelled the bag. At the hospital, the doctors were able to reattach the fingertip. The worker has retained full use of their finger.

   How did the actions of the first aid attendant affect the life of the worker after their injury?

   What might have happened if a first aid attendant wasn't there?

3. A middle-aged worker had been unloading boxes from a truck when they began to feel nauseous and asked for a first aid attendant. The worker was short of breath, had a weak pulse, and was experiencing chest pain. The first aid attendant recognized the signs and symptoms of a heart attack, called an ambulance, and gave the worker two 80 mg chewable tablets of ASA. After medical care, the worker made a full recovery.

What might have happened if the first aid attendant had not recognized the signs of a possible heart attack?

1.2: How the course works

Skills practice

During this course, you will work through a series of activities. These activities do more than let you practise the skill. They help you see how well you performed the skill and what you can do to improve.

For each skill, we take you through a series of activities:

Instructor demo: The instructor demonstrates the skill at the speed it would normally take to complete the task.

Class-guided practice: The instructor performs a breakdown demonstration while the class performs the skill with coaching guidance from the instructor.

Peer assessment: Working in pairs or small groups, students take turns performing the skill and giving each other feedback based on a checklist.

Self-assessment: Each student assesses their performance and targets areas they need to improve.

Deliberate practice: Working in pairs or small groups, students continue to practice the skill. The instructor is available to answer questions.

Theory

A lot of the theory you need will be covered in the required reading from the textbook, *Advanced First Aid: A Reference and Training Manual* (2024 edition). You will also gain knowledge from brief lectures and homework assignments.

Assessments

Our goal is to help you develop effective skills and an understanding of essential concepts. To do that, we will give you opportunities to practice and learn through unmarked quizzes with feedback. We will also give you marked tests of knowledge and skill so you can demonstrate your learning.

The learning environment

In this learning environment, you are free to ask questions and learn from mistakes. You can monitor your progress at every stage. Before the final assessment, you will have several opportunities to work on areas that need improvement. When you return to your job, you will

have the tools to continue practising, monitoring your performance, and improving your skills.

1.3: Your commitment to learning

Course schedule

There will be 70 hours of class time covered over 10 days. There are 21 modules divided into lessons. The instructor will set and identify the start and end times each day. There will be breaks and lunch periods identified that will allow you ample rest periods.

Student involvement

All things start with safety. The instructor must identify washrooms, breaks, and more importantly emergency procedures. If they haven't, simply ask for that information to assist in you and your peer safety.

This is a hands-on course. For most of the course, you will be actively practising skills. To be successful, you need to be committed to your learning. This involves being on time, participating fully in class activities, completing required reading beforehand, and doing one to three hours of homework each night.

Being a first aid attendant is a potentially lifesaving role. It takes effort to acquire the necessary knowledge and skills.

Keys to success

To be successful in this course, you need to:

- Complete the required reading for each day in advance.
- Participate fully in class-guided practices and other activities.
- Give one another useful feedback during peer assessments.
- Honestly evaluate your competence during self-assessments and make a genuine commitment to further developing your skills.
- Use deliberate practice and formative assessments to develop your skills and address areas of weakness.
- Complete a homework assignment every night.

Safety and personal protection

This course is physically demanding. You will have to kneel for long periods of time, move and lift other students who are pretending to be workers, and perform various manual tasks. Knee pads and closed toe footwear are recommended.

If you have physical concerns that could limit your participation in an activity, talk to your instructor. We will try to make accommodations.

As a first aid attendant, you should wear waterproof gloves whenever there is a possibility of

direct contact with blood and other bodily fluids. The use of gloves includes the in-class management of workers and mannequins during the training course.

We are going to practise that now.

Skills practice

Goal
Safely remove gloves.

Steps	
	With both of your hands gloved: a. Grasp the outside of one glove near the top of the wrist. b. As you peel off the glove, turn it inside out and pull it away from yourself. c. Hold the removed glove in your gloved hand.
	With your ungloved hand: a. Grasp the second glove near the top of the wrist. b. As you peel off the glove, turn it inside out and pull it away from yourself. Leave the first glove inside the second glove.
	Immediately dispose of both gloves in a waterproof garbage bag.
	Wash your hands thoroughly with soap and water.

1.4: Certification

Certification requirements

To qualify for an initial WorkSafeBC advanced certificate, you must successfully complete this WorkSafeBC advanced training course. You must also achieve a grade of at least 70 percent on the final written test and each part of the summative skills assessment.

The course must be taught and evaluated by a person authorized by WorkSafeBC. If you fail to complete any part of the course, you will have to complete the components you missed before you can be tested. This must be done without undue delay and at the discretion of the approved training agency.

Remediation

If you fail any part of the written test or summative skill assessments, you may be allowed a second attempt, subject to approval from the training agency. If you do not pass on your second attempt, you will have to repeat the entire course before becoming eligible for another assessment.

On the second attempt, you must retake the failed portions of the assessment in their entirety. Passing grades that were obtained on other parts of the assessment during your first attempt will be carried forward to the second assessment.

Your second attempt can be no sooner than 24 hours after the first failed assessment. If you don't make a second attempt within 60 days of the first examination, you will have to repeat the entire course before being assessed again.

1.5: Course agenda

All lesson timings are approximate — the instructor may have to adjust the lesson timings to suit the agency and/or the needs of the students.

Day 1	8:30–9:30 a.m.	1. Introduction
	9:30–10:00 a.m.	2. Scene assessment
	10:15–11:55 a.m.	3. Primary survey and transport decision
	One hour	Lunch and breaks
	12:25–1:45 p.m.	4. Secondary survey
	1:45–3:10 p.m.	5. Worker positioning
	3:25–4:30 p.m.	Deliberate practice
		Homework: Role of the first aid attendant (This is the first

		of two assignments on this subject.)
Day 2	8:30–11:40 a.m.	6. Packaging
	11:40 a.m.–12:05 p.m.	7. Basic skills
	One hour	Lunch and breaks
	12:35–2:45 p.m.	7. Basic skills (continued)
	3:00–3:30 p.m.	Deliberate practice
	3:30–4:05 p.m.	Formative assessment (CPR/AED)
	4:05–4:30 p.m.	Quiz 1
		Homework: Role of the first aid attendant (This is the second of two assignments on this subject.)
Day 3	8:30–8:45 a.m.	8. Being a workplace first aid attendant
	8:45 a.m.–12:00 p.m.	9. Airway and breathing — unresponsive worker
	One hour	Lunch and breaks
	12:30–1:20 p.m.	9. Airway and breathing — unresponsive worker (continued)
	1:20–4:30 p.m.	10. Airway and breathing — conscious worker
		Homework: Shock
Day 4	8:30–10:30 a.m.	11. Cardiac emergencies
	10:30 a.m.–12:05 p.m.	12. Shock

	One hour	Lunch and breaks
	12:35–1:10 p.m.	Formative assessment: Airway management basic skills
	1:10–4:30 p.m.	Deliberate practice
		Homework: Obstetrical and nervous system
Day 5	8:30–8:55 a.m.	Quiz 2
	8:55–10:20 a.m.	Deliberate practice
	10:35 a.m.–12:15 p.m.	13. Bleeding
	One hour	Lunch and breaks
	12:45–3:15 p.m.	13. Bleeding (continued)
	3:30–4:30 p.m.	Summative assessment: CPR/AED, suctioning, back blows, and ab thrusts
		Homework: Medication, mental health, and first aid record
Day 6	8:30–10:30 a.m.	Deliberate practice
	10:30 a.m.–12:00 p.m.	14. Medical emergencies
	One hour	Lunch and breaks
	12:30–12:45 p.m.	14. Medical emergencies (continued)
	12:45–4:00 p.m.	15. Minor injuries
	4:00–4:30 p.m.	Deliberate practice
		Homework: First aid safety

Day 7	8:30–9:05 a.m.	Quiz 3
	9:05–9:30 a.m.	16. First aid safety
	9:30 a.m.–12:20 p.m.	17. Major injuries
	One hour	Lunch and breaks
	1:20–3:05 p.m.	Deliberate practice
	3:05–4:30 p.m.	18. Exposure to heat and cold injuries
		Homework: Effective communication
Day 8	8:30–9:10 a.m.	19. Effective communication
	9:10–11:35 a.m.	20. Head and nervous system
	11:35 a.m.–12:00 p.m.	21. Multiple workers
	12:00–1:00 p.m.	Lunch and breaks
	1:00–3:00 p.m.	Deliberate practice
	3:00–3:30 p.m.	Quiz 4
	3:30–4:30 p.m.	Practice and review
Day 9	8:30–8:40 a.m.	Formative assessment: Preamble
	8:40 a.m.–12:10 p.m.	Formative assessment: Trauma scenarios
	One hour	Lunch and breaks
	12:35–2:15 p.m.	Formative assessment: Medical scenarios

	2:30–4:30 p.m.	Written exam
Day 10	8:30–8:45 a.m.	Summative assessment: Preamble
	8:45 a.m.–12:45 p.m.	Summative assessment: Trauma scenarios
	One hour	Lunch and breaks
	1:15–3:30 p.m.	Summative assessment: Medical scenarios
	3:30–4:30 p.m.	Closing discussion and delivery of results

1.6: Required reading

To be successful in this course, you must do some reading on your own. Complete the reading listed below before you come to class each day.

	Module	Reference and Training Manual
Before Day 1	2. Scene assessment	Chapter 3, pages 17–22
	3. Primary survey and transport decision	Chapter 3, pages 22–33 Chapter 18, page 146 Chapter 50, pages 347–348
	4. Secondary survey	Chapter 3, pages 33–45
	5. Worker positioning	Chapter 17, pages 143–145 Chapter 18, pages 146–155 Chapter 48, page 333–337

	Module	Reference and Training Manual
Before Day 2	Homework: Role of first aid attendant (This is the first of two assignments on this subject.)	Chapter 1, pages 3–4
	6. Packaging	Chapter 18, pages 155–158 Chapter 48, pages 338–341 Chapter 50, pages 348–360
	7. Basic skills	Chapter 5, pages 52–63 Chapter 7, pages 80–87 Chapter 13, pages 114–116
	Homework: Role of first aid attendant (This is the second of two assignments on this subject.)	Chapter 3, pages 17–20
Before Day 3	8. Being a workplace first aid attendant	Review pages 3–4 in Chapter 1 and pages 17–20 in Chapter 3
	9. Airway and breathing — unresponsive	Chapter 5, page 59–63 Chapter 6, pages 64–79
	10. Airway and breathing — conscious	Chapter 6, pages 58–59
Before Day 4	Homework: Shock	Chapter 9, pages 96–101
	11. Cardiac emergencies	Chapter 8, pages 91–95 Chapter 11, pages 107–108 Chapter 12, pages 109–113

	Module	Reference and Training Manual
	12. Shock	Review pages 96–101 in Chapter 9
Before Day 5	Homework: Obstetrical and nervous system	Chapter 14, pages 119–122 Chapter 24, pages 185–189 Appendix A, pages 363–365
	13. Bleeding	Chapter 10, pages 102–106 Chapter 29, pages 221–223
Before Day 6	Homework: Medication and mental health	Chapter 26, page 199 Chapter 47, pages 326–329
	14. Medical emergencies	Chapter 42, pages 301–306 Chapter 45, pages 319–321 Chapter 46, page 325
	15. Minor injuries	Chapter 19, pages 161–163 Chapter 20, pages 164–172 Chapter 21, page 173 Chapter 22, pages 174–175 Chapter 25, pages 193–195 Chapter 26, pages 196–200 Chapter 29, pages 209–223 Chapter 31, pages 228–232 Chapter 33, pages 242–245 Chapter 38: pages 277–283

	Module	Reference and Training Manual
Before Day 7	Homework: First aid safety	Chapter 26, pages 196–200 Chapter 29, pages 209–223 Chapter 44, pages 311–315
	16. First aid safety	Chapter 26, pages 196–200 Chapter 29, pages 209–223 Chapter 44, pages 311–315
	17. Major injuries	Chapter 19, pages 161–163 Chapter 20, pages 164–172 Chapter 22, pages 174–175 Chapter 27, pages 201–205 Chapter 32, pages 235–241 Chapter 34, pages 246–249 Chapter 35, pages 250–256 Chapter 36, pages 257–265
	18. Exposure to heat and cold injuries	Chapter 37, pages 269–276
Before Day 8	19. Effective communication	Review pages 19–20 in Chapter 3
	20. Head and nervous system	Chapter 15, pages 123–125 Chapter 16, pages 126–137 Chapter 17, pages 138–145 Chapter 18, pages 146–158
	21. Multiple workers	Chapter 49: pages 342–346

Module 2

Scene Assessment

2. Scene assessment

2.1. The priority action approach
2.2. Risk management
2.3. Scene assessment

Lesson 2.1: The priority action approach

Learning outcomes

1. Describe the four stages of the priority action approach and the purpose of each.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Theory

Why it's important

The priority action approach helps ensure that you:

- Recognize a seriously injured worker quickly.
- Perform lifesaving first aid interventions quickly.
- Activate transportation and emergency management system resources.
- Get workers in need of medical care to the hospital without delay.

It's a step-by-step approach that helps you make a thorough yet rapid assessment and determine what needs to be done to care for the worker.

How thoroughly each step is conducted depends on the circumstances. For example, if the worker is not responsive, not breathing normally and does not have a carotid pulse, you will move through the primary survey rapidly and begin CPR/AED immediately.

The four stages

The priority action approach includes four stages:

1. Scene assessment
2. Primary survey with critical interventions
3. Transport decision
4. Secondary survey

This lesson provides an overview of the stages. Later lessons will cover each stage in detail.

Scene assessment

The scene assessment helps ensure that the site is safe for you and the worker. As you approach, do the following:

- Assess the scene for hazards.
- Determine the mechanism of injury.
- Count the number of workers.

Primary survey with critical interventions

The primary survey is a rapid worker assessment to determine if there are any immediately life-threatening injuries or conditions, and to provide critical interventions. In most cases, it shouldn't take more than two minutes. The level of consciousness must be initially assessed with verbal or pain stimuli by using AVPU (alert, verbal, pain, unresponsive).

A - Is the worker alert?

V - Does the worker respond to voice?

P - Does the worker respond to pain?

U - Is the worker unresponsive? Transport Decision

There are three options for transport:

- Rapid transport category (RTC): The worker is transported as quickly as possible for medical aid. The worker may be transported by ambulance, helicopter, or an employer's emergency transport vehicle (ETV).
- Medical aid: The worker requires medical aid but does not need to be transported as quickly. The worker may be transported by a company vehicle, taxi, ETV or ambulance.
- Return to work: After assessment and treatment, the worker can return to work.

Secondary survey

The secondary survey is similar to the primary survey, except it's more detailed and takes longer. A secondary survey is a thorough assessment of the worker. The purpose is to determine the full extent of the developing injury or illness, and to identify any other injuries or illnesses that may not have been discovered during the primary survey. A secondary survey should not take longer than 10 minutes.

For a worker in the RTC, the secondary survey is done while waiting for equipment and transportation or en route to the hospital if the first aid attendant must transport the worker. Otherwise, it is conducted at the scene.

Summary

1. What is the purpose of the scene assessment?
2. What is the purpose of the primary survey?
3. What is the purpose of the secondary survey?

Lesson 2.2: Risk management

Learning outcomes

1. Describe what a hazard is.
2. Explain the difference between a hazard and a risk.

3. Describe the basic principles of hazard identification, risk assessment, and risk control.
4. Describe the hazards and risks a first aid attendant may encounter.
5. Describe exposure control plans and why they are important.
6. Describe the personal protective equipment used by a first aid attendant.

Required reading

Canadian Centre for Occupational Health and Safety: Hazard and Risk — General (www.ccohs.ca/oshanswers/hsprograms/hazard_risk.html)

Theory

Definitions

A *hazard* is any source of potential damage, harm, or adverse health effects on something or someone.

A *risk* is the probability that a person will be harmed or experience adverse health effects when exposed to a hazard. It takes into consideration both the likelihood that something might happen and the severity of the possible harm. The risk can be immediate (acute), as with exposed electrical wires, or long-term (chronic), as with asbestos.

Risk management

Risk management includes three steps:

1. Identify the hazard.
2. Assess the risk.
3. Control the risk.

Identifying the hazard

The hazards you encounter may be:

- Environmental, such as extreme weather and climate
- Biological, such as blood, body fluids and infectious disease
- Physical, such as heights, fire, electricity and machinery
- Chemical, such as dust, fumes and gases
- Psychological, such as critical incident stress

Assessing the risk

Factors that influence the likelihood or degree of risk include:

- How much a person is exposed to the hazard (e.g., several times a day or once a year)
- How the person is exposed (e.g., inhaling or skin contact)
- The possible severity of the effect (ranging from minor effects such as skin irritation to major effects such as skin cancer or immediately fatal)

Controlling the risk

Risks are controlled according to the following hierarchy:

1. Elimination — Remove the hazard.
2. Substitution — Replace the source of the hazard with something less hazardous.
3. Engineering controls — Add equipment that isolates workers from the hazard.
4. Administrative controls — Follow safe work procedures such as exposure control plans, which tell workers what to do if they are exposed to an infectious material.
5. Personal protective equipment — Wear gloves, safety glasses, and/or other protective equipment.

If necessary, more than one type of control may be used, but the highest level of control possible is the best. Whenever possible, eliminate the hazard.

Personal protective equipment (PPE)

If there is any risk of exposure to blood or body fluids, you must wear PPE such as rubber gloves. Remember to change your gloves between workers to avoid cross contamination.

If there is a potential for spraying body fluids, you must wear safety glasses or face shields. Arterial bleeding, childbirth, and vomiting are examples.

If there is a potential for splatter from blood or body fluids, or there is a suspected respiratory infection, you must wear PPE. If wearing a respirator is required as part of your PPE, you will need to be fit tested before you start your duties and once a year after that.

You may also be required to wear other PPE, depending on the circumstances, such as high-visibility vests or respirators for silica dust.

Summary

1. Why is it important for you to be aware of hazards?
2. What are the five types of risk controls?
3. What personal protective equipment must you wear every time you are caring for a worker?

Lesson 2.3: Scene assessment

Learning outcomes

1. Assess the scene for hazards.
2. Discover what happened and how many people are ill or injured.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Theory

As you approach the worker:

1. Assess the hazards.

   Are there hazards to you, your helpers or the worker? Can the hazard be removed or controlled? Does the worker need to be moved? Are emergency personnel, specialized equipment or specially trained personnel required?

2. Determine the mechanism of the injury.

   What happened? When? How much force was applied? To which part of the body and in what direction?

3. Determine how many people are injured or ill.

   Are there more people who are injured or ill?

Pair and share

Instructions

Take turns being the injured person and the first aid attendant.

1. The injured person reads the scenario out loud.
2. The first aid attendant identifies the hazards, mechanism of injury, and number of people injured.
3. Using the answer key, the injured person tells the first aid attendant what happened.

Scenarios

1. Two workers were thrown off the forks of a forklift when the boom hit the ceiling.
2. An orchard worker hit the overhead power lines with an irrigation pipe.
3. A ranch hand got their arm caught in the gears of the mill.
4. A glazier was burned.
5. A carpenter fell from the first floor.

A firefighter could not evacuate an area fast enough when the wind changed direction and was overcome by smoke.

Answer key		
1.	Hazards	The area has been blocked off to prevent further traffic. The forklift has been stabilized. No other environmental, biological, physical, or chemical hazards.

Answer key		
	Mechanism of injury (what happened?)	Workers were riding on the forks approximately 3.5 m (11 ft.) in the air when the boom hit the ceiling. The forklift was travelling at 15 km/h. It happened three minutes ago.
	People injured	2
2.	Hazards	The irrigation pipe is now on the ground. There is no longer an electrical hazard. There are no other environmental, biological, physical, or chemical hazards.
	Mechanism of injury (What happened?)	An orchard worker was electrocuted. They were carrying a metal irrigation pipe and it touched an overhead power line. They're not moving. It happened three minutes ago.
	People injured	1
3.	Hazards	The mill has been shut down. There are no other environmental, biological, physical, or chemical hazards.
	Mechanism of injury (What happened?)	A ranch hand was adjusting the motor with the transmission engaged. The sleeve of their jacket got snagged in the chain drive and it pulled their arm into the gears. It just happened.
	People injured	1

Answer key		
4.	Hazards	Co-workers soaked the worker with water to put out the fire. Fire has been controlled. There are no other environmental, biological, physical, or chemical hazards.
	Mechanism of injury (what happened?)	They were cleaning the glass with chemicals and their arm caught fire. The worker has burns on their hand, arms, and face. They seem to be in a lot of pain. It happened two minutes ago.
	People injured	1
5	Hazards	The area has been blocked off to prevent further traffic. There are no other environmental, biological, physical, or chemical hazards.
	Mechanism of injury (what happened?)	A carpenter was working on an unguarded sundeck and fell 3.5 m (11 ft.). They hit their head when they landed. They're hurt. It happened one minute ago.
	People injured	1
6	Hazards	The wind is blowing away from the injured worker. The worker is away from the active fire. Other firefighters are not at risk. There are no other environmental, biological, physical, or chemical hazards.

Answer key		
	Mechanism of injury (what happened?)	The firefighter was laying out fire hose on a steep hill. Wind blew across the fire barrier that had been set up and the adjacent gully caught on fire, filling the slope where the firefighter was working with smoke. It happened five minutes ago.
	People injured	1

Summary

1. What is the goal of scene assessment?
2. What types of things should you consider when looking for hazards?
3. What questions should you ask to identify the mechanism of injury?

Module 3

Primary Survey and Transport Decision

3. Primary Survey and Transport Decision

3.1. Manually stabilizing head and neck
3.2. Primary survey
3.3. Modified NEXUS rule
3.4. Transport decision
3.5. Rapid transport criteria

Lesson 3.1: Manually stabilizing head and neck

Learning outcomes

1. Manually stabilize the head and neck if there is a possible spinal injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Skill practice

Goal
Realign the head of a worker with a possible spinal injury into the anatomical and neutral position to prevent further damage. This is also referred to as C-spine control.
Scenario
A traffic control person was struck by an oncoming vehicle travelling at about 50 km/h through a construction zone. When you arrive, they are lying supine on the ground. You conduct a scene assessment. Based on the mechanism of injury, you determine that spinal motion restriction is required.

Steps	
1.	Tell the worker that you're there to help them and to lie still while you kneel at the top of the worker's head.
2.	Tell the worker what you're going to do before you do it. Ask them to tell you if they experience any pain or resistance.
3.	Brace your elbows on the ground if possible. Firmly place your hands on either side of the worker's head, over their ears. Don't completely cover the worker's ears.

Steps	
4.	While communicating the procedure, gently realign the chin to midline, and move the head into the neutral position. Anatomical position = eyes forward + chin in midline Neutral position = gaze perpendicular to body axis
5.	If worker's trunk is twisted, ask someone to help you. Maintain the head and neck in the neutral position while the helper grasps the worker's waist and gently slides or pulls the trunk into the anatomical position. If there is no one available to help, you will not be able to complete this step. Continue to manually stabilize the head and neck until the worker is packaged for transport or the need for spinal motion restriction is ruled out.
6.	If possible, train a helper to manually stabilize the worker's head and neck before you continue the primary survey: "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."

Summary

1. What is the purpose of manually stabilizing the head and neck?
2. What should you do if the worker experiences pain while you are realigning the head and neck?

Lesson 3.2: Primary survey

Learning outcomes

1. Assess a worker's level of consciousness using the AVPU system.
2. Assess a worker's airway.
3. Assess a worker's breathing.
4. Assess a worker's circulation.

Required reading

*Advanced First Aid: A Reference and Training Manua*l
Chapter 3: Initial evaluation of the trauma patient

Theory

Purpose

The purpose of the primary survey is to quickly identify life-threatening conditions. It's a rapid examination of the worker to discover any immediate life threats.

How thoroughly each step is done depends on whether the attendant has identified any life threats. The primary survey should not take more than two minutes but may have to be interrupted to begin active resuscitation. The level of consciousness must be initially assessed using AVPU. This is done with a verbal or pain stimulus to assess the worker's responses. The pain stimulus is provided by pinching the worker's fingernail bed.

A - Alert. The worker is alert and aware of their surroundings.

V - Verbal. The worker only responds when spoken to.

P - Pain. The worker only responds when a pain stimulus is provided.

U - Unresponsive. The worker does not respond to verbal or pain stimuli.

Airway, breathing and circulation (ABC)

The primary survey is based on the ABCs:

- **A**irway assessment — Quickly identify whether the worker's airway is open and clear. Use spinal motion restriction if the mechanism of injury suggests spinal trauma.
- **B**reathing assessment — Quickly identify whether the worker is breathing, and if they are, how effectively.
- **C**irculation assessment — Quickly identify whether the worker has a pulse, signs of life-threatening shock, and any massive bleeding and/or deformities.

Critical interventions

Critical interventions are performed as soon as a life threat is discovered during any step of the ABCs. The primary survey and some interventions can often be conducted with the worker in the position found. But in some cases, the worker has to be repositioned. For example, an unresponsive worker who does not appear to be breathing normally will have to be placed supine for the assessment.

Modified primary survey

The attendant can modify the primary survey in some cases. For example, some workers who walk into the first aid room may be assessed visually as they approach. If the worker is alert, talking and breathing normally, and has normal skin colour, you can see that the airway is clear, breathing is effective, and the worker has a pulse.

Skill practice

Goal
Rapid assessment to: • Determine whether spinal motion restriction is required • Discover immediately life-threatening conditions • Identify critical interventions required
Scenario
A worker fell 2 m (6.5 ft.) from a stepladder. The worker was lying supine when you arrived, complaining about pain in their right knee.

Steps		
1.	Complete a scene assessment.	Based on the mechanism of injury, spinal motion restriction is required.
2.	Assess the worker's level of consciousness. Approach worker from front, identify yourself and ask what happened. • **A**lert: Worker is aware of surroundings. • **V**erbal: Worker responds when spoken to. • **P**ain: Worker doesn't respond to questions but does respond to painful stimulus. • **U**nresponsive: Worker doesn't respond to any stimuli.	Worker responds to verbal stimuli. Worker is alert and verbal.
3.	Manually stabilize head and neck if required. Chin to midline then neutral. If resistance is felt, stop.	Spinal motion restriction is required

Steps		
4.	Activate the workplace emergency response procedures. • If the worker is unable or unwilling to walk, ask someone to call an ambulance or have an emergency transport vehicle prepared. • If calling an ambulance, say there's a responsive adult who has fallen and has knee pain, and report back.	Worker can't walk.
5.	Assess the worker's airway. • Can the worker speak clearly? If not, look, listen and feel.	Worker speaks clearly and is complaining about pain in their knee. The airway is clear.
6.	Assess the worker's breathing. Look, listen and feel: • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing appears normal and effective. Worker can speak in full sentences. No cyanosis (blue lips and face) noted. Chest wall movement is equal on both sides.
7.	Assess the worker's circulation: • Pulse: Take radial pulse. Use fingers, not thumb. Both wrists if needed. • If no radial pulse found, check carotid for 5 to 10 seconds (30 seconds if hypothermic). • Signs of shock: Cool, pale, clammy skin. • Rapid body survey: Bleeding and fractures. Support the injured leg. Cover the worker with a blanket.	Radial pulse is normal. Skin is normal, warm, and dry. No signs of shock. No blood visible. No injury other than knee pain. (We will cover minor fractures in lesson 15.5.)
8.	Determine if critical interventions are required.	The worker appears to be stable.
9.	Transport decision. Is medical aid needed?	The worker can't walk and can't return to work.

Steps		
10.	Apply the modified NEXUS rule. To be covered in lesson 3.3.	
11.	Secondary survey To be covered in lesson 4.2.	

Summary

1. How do you assess the worker's airway?
2. How do you assess the worker's breathing?
3. How do you assess the worker's circulation?

Lesson 3.3: Modified NEXUS rule

Learning outcomes

1. Apply the modified NEXUS rule to decide whether ongoing spinal motion restriction is required.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Theory

Previously, first aid attendants applied C-spine control and immobilized an injured worker using a hard cervical collar and a long spine board, based solely on the mechanism of injury. In the case of a rapid transport category worker, once they were packaged, we did not rule out the need for full immobilization. Now, for all conscious workers with trauma, we can apply the modified NEXUS rule at the end of the primary survey to determine the need for ongoing spinal motion restriction.

NEXUS (National Emergency X-Radiography Utilization Study) criteria is used to rule out injury to the cervical spine. Previously, first aid attendants applied C-spine control and immobilized an injured worker using a hard cervical collar and a long spine board based solely on the mechanism of injury. In the case of a rapid transport category worker, once they were

packaged, we did not rule out the need for full immobilization. Now, for all conscious workers with trauma, we can apply the modified NEXUS rule at the end of the primary survey to determine the need for ongoing spinal motion restriction. The term *multi-system trauma* must be understood before applying the NEXUS rule. Consider the following:

> A 34-year-old who was working at a height of 7 m (23 ft.) when the scaffolding he was working on collapsed. The worker immediately lost consciousness upon impact with the ground. When they woke up, they were in a hospital bed hooked up to several different machines. They also had bandages and casts all over their body.
>
> A little while later, a doctor came into the hospital room and explained to the worker that they had suffered severe damage to several parts of their body, including fractures to multiple bones and deep cuts through several large muscles. The doctor also told the worker that they had stopped breathing at one point due to damage to their lungs. When explaining the worker's current medical condition, the doctor used the term multi-system trauma. The trauma required to damage multiple body systems is usually quite significant and often involves situations like car accidents, falls from great heights, powerful sports collisions, and deep penetrating wounds. Take the worker, for example. The blunt force trauma from their workplace accident caused fractures to their bones (skeletal system), deep cuts to their muscles (muscular system), and caused them to stop breathing (respiratory system). Needless to say, multi-system trauma is often a life-threatening condition that needs immediate medical attention.

Class-based scenario exercise

Instructions

Refer to the modified NEXUS flow chart in your textbook or to the handout or poster given to you by the instructor. For each scenario, identify whether the worker requires ongoing spinal motion restriction.

Scenarios

1. A worker wearing a seatbelt was in a front-end collision at approximately 40 km/h. The airbags deployed on impact. When you arrive, they're sitting on the roadside, fully alert with no signs of intoxication. They complain of pain in their left shoulder and the side of their left flank. No other injuries are noted. The worker does not have midline cervical pain. They answer questions appropriately. They say they don't have any numbness or tingling in their extremities, or any pre-existing neck or back conditions. The worker is 48 years old.
2. A worker fell 6 m (20 ft.) off a roof, landing head-first and striking their head against a concrete block on impact. When you arrive, they're supine. You talk to them and their eyes open (V on AVPU), but they appear confused. The worker has a hematoma on top of their head. All four of his limbs are moving spontaneously. The worker is hesitant to answer questions, but denies having any numbness or tingling, or pre-existing neck or back conditions. They seem unsure of their answers. The worker is 36 years old.

3. During a stunt on a movie set, a 21-year-old competitive motorcycle rider misjudged the position of an obstacle and was thrown over the handlebars. They were travelling at approximately 50 km/h. When you arrive, their helmet has been removed and they are supine. The worker is fully alert and complains of a headache and neck pain. Pain is present when you examine the cervical vertebrae by touch. The worker has no other injuries and denies any numbness or tingling, or pre-existing neck or back conditions.
4. When trying to access a light fixture, an electrician fell 4 m (12 ft.) off a ladder to a concrete floor. When you arrive, they're lying supine, surrounded by co-workers. They are fully alert, and say they felt a snap and a sudden sharp pain in their left leg when they hit the ground. They're obviously in extreme pain. The worker has tears in their eyes and keeps talking about how bad the pain in their leg is. Their left femur is deformed. No other injuries are noted. The worker doesn't answer your questions about numbness, tingling, and pre-existing spinal conditions. The worker is 23 years old.
5. A landscaper slipped and tumbled down a 15 m (50 ft.) steep embankment (not a free fall). When you arrive, they're lying supine. The worker is fully alert and there is no evidence of intoxication. When asked where it hurts, they joke that it "hurts all over" and then point to their right flank. They have road rash wherever their skin is exposed. They wince and describe point tenderness pain when you examine their right flank. They say it also hurts to move their left ankle, but they can move it when asked. No numbness or tingling is noted. They deny having any pre-existing spinal conditions. The worker is 26 years old and is otherwise healthy.
6. A tree faller got into an argument with a co-worker after hours. They were stabbed once in the right-anterior chest with a kitchen knife. Witnesses say the worker crumpled to the ground after the stabbing. The assailant has been restrained and is no longer a threat. When you arrive, the worker is seated with their hand over their right-anterior chest. They have mild shortness of breath but are fully alert and do not appear intoxicated. The worker speaks in full sentences and their skin colour is normal. There's a small entrance wound on their right-anterior chest and no exit wound. There is no significant bleeding. The worker denies having any numbness or tingling and says they have mild osteoporosis in their back. The worker is 44 years old.
7. A construction worker was standing on makeshift scaffolding when it collapsed. When you arrive, the scaffolding has been removed from the worker. The worker is lying supine, surrounded by co-workers. They are fully alert and complain of chest and abdominal pain. There is no evidence of intoxication. They have bruising and discolouration on their right-anterior chest, bruising on the upper-right quadrant, and a 10-cm (4-in.) laceration on their right thigh with moderate bleeding that is being controlled through direct pressure. The worker's skin is pale, cool and clammy, and they appear anxious. The worker denies having any numbness or tingling, or pre-existing spinal conditions. The worker is 22 years old.

Answers

Skill practice

Goal
Rapid assessment to: • Determine whether ongoing spinal motion restriction is required (apply modified NEXUS rule) • Discover immediately life-threatening conditions • Identify critical interventions required
Scenario
A worker fell 2 m (6.5 ft.) from a stepladder. The worker was lying supine when you arrived, complaining about pain in their right knee.

Steps		
1.	Complete a scene assessment.	Based on the mechanism of injury, spinal motion restriction is required.
2.	Assess the worker's level of consciousness. Approach worker from front, identify yourself, and ask what happened. • **A**lert: Worker is aware of surroundings. • **V**erbal: Worker responds when spoken to. • **P**ain: Worker doesn't respond to questions but responds to painful stimulus. • **U**nresponsive: Worker doesn't respond to any stimuli.	Worker is alert and verbal.
3.	Manually stabilize head and neck if required. Chin to midline then neutral. If resistance is felt, stop.	
4.	Activate the workplace emergency response procedures. • If worker is unable or unwilling to walk, ask someone to call an ambulance or have an emergency transport vehicle prepared. • If calling an ambulance, say there's a responsive adult who has fallen and has knee pain, and report back.	The worker can't walk.
5.	Assess the worker's airway. • Can worker speak clearly? If not, look, listen, and feel.	The worker speaks clearly. The airway is clear.
6.	Assess the worker's breathing. Look, listen and feel: • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing appears normal and effective. Worker can speak in full sentences. No cyanosis (blue lips and face) noted. Chest wall movement is equal on both sides.

Steps		
7.	Assess the worker's circulation. • Pulse: Take radial pulse. Use fingers, not thumb. Both wrists if needed. • If no radial pulse found, check carotid for up to 10 seconds (30 seconds if hypothermic). • Signs of shock: Cool, pale, clammy skin • Rapid body survey: Bleeding and fractures. Support the injured leg. Cover the worker with a blanket.	Radial pulse is normal. Skin is normal, warm, and dry. No signs of shock. No blood visible. No injury other than knee pain. (We will cover minor fractures in lesson 15.5.)
8.	Determine if critical interventions are required.	The worker appears to be stable.
9.	Transport decision. Is medical aid needed?	The worker can't walk and can't return to work.
10.	Decide whether to maintain spinal motion restriction: • Is worker reliable? • Worker's age, what happened, pre-existing back or spine problems? • Any distracting injuries?	Worker is alert. No signs of intoxication. Thirty-five year old worker. Reports falling off a ladder. The worker is otherwise healthy. No distracting injuries.
11.	Palpate the cervical spine region.	The worker does not complain of midline cervical tenderness.
12.	Ask about concerning physical findings: • Pain along midline spine? • Able to feel and move arms and legs without pain or unusual sensations? • Any numbness or tingling?	Worker has no pain along the spine, can move their arms and legs, and does not have any neurological deficits. A hard collar is not required.

Steps		
13.	Release C-spine control and put padding under worker's head for comfort.	
14.	Complete secondary survey. To be covered in lesson 4.2.	

Summary

1. What are the three main questions you should ask when applying the modified NEXUS rule?
2. What should you do if you're unsure whether spinal motion restriction is required?
3. How do you determine if a worker is reliable?
4. How do you determine whether a worker has any concerning physical findings?
5. How do you determine if there are any other concerning considerations?

Lesson 3.4: Transport decision

Learning outcomes

1. Describe the three options involved in the transport decision.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 50: Transportation

Theory

Overview

Whether the first aid attendant is called to the first aid room or to the scene of an incident, the transport decision is usually made in the first few minutes. Often this decision is confirmed after the primary survey and the severity of the injury or illness has been assessed. But the decision can be changed at any time.

Ask three questions:

- Should the worker be transported?
- If so, when should the worker be transported?
- How should the worker be transported?

Transportation options

There are three options:

- Rapid transport category: The worker is transported for medical aid as quickly as possible. The worker is unstable.
- Medical aid: The worker requires medical aid but does not need to be transported rapidly. The worker is stable and may or may not need to be transported by BC Emergency Health Services (BCEHS) and/or company emergency transport vehicle.
- Return to work: After assessment and treatment, the worker is able to return to work. The worker is stable and can resume normal or modified work activities.

Every worksite is required to have emergency response procedures. These are often referred to as the workplace ERP (or WERP). These procedures explain how workers who are not able to return to work should be transported. When deciding whether a worker should be transported by ambulance, helicopter, ETV or another means, refer to these written workplace emergency response procedures.

Rapid transport category

Use the rapid transport criteria in your textbook to determine whether a worker requires rapid transport.

If an ambulance is required, call the BCEHS. Give them as full a description of the event and the worker's condition as possible. If you discover new information that you think is important after your first call to BCEHS, call them again with an update.

You will practice applying the rapid transport criteria in the next lesson.

Medical aid

The decision about whether to refer a worker for medical aid is based on the severity of the illness or injury. A worker who needs medical aid, but is stable and able to walk, does not always need to be transported by ambulance or ETV. Ambulatory workers can often be transported for medical aid by a company vehicle or taxi.

Return to work

Minor injuries, such as cuts, scrapes, and musculoskeletal injuries (MSIs), can often be managed at the workplace. MSIs result from work activities that include risk factors such as repetitive activity, awkward or static posture, twisting, bending, pushing, or pulling.

The following signs and symptoms indicate that the worker with an MSI may be managed at the workplace:

- The onset of symptoms is gradual.
- The worker is able to walk and does not have any weakness, numbness, or tingling in the extremities.

- The worker can conduct a range of motion without experiencing a significant increase in pain.

Summary

1. How do you decide if a worker requires rapid transport?
2. How do you decide if a worker requires medical aid?

Lesson 3.5: Rapid transport criteria

Learning outcomes

1. Apply the rapid transport criteria.

Required reading

*Advanced First Aid: A Reference and Training Manua*l
Chapter 3: Initial evaluation of the trauma patient

Class-based scenario exercise

Instructions

Refer to the rapid transport criteria in your textbook or learning aids posted in the classroom. For each scenario, identify whether the worker's condition meets the rapid transport criteria.

Scenarios

1. A worker was struck in the face by a board from an edger and fell to the ground. The worker is supine, eyes are closed, skin is pale, and there is blood around his nose and mouth. The worker doesn't respond when you talk to them.
2. A worker who fell 2.5 m (8 ft.) off of a step ladder walks into the first aid room, holding his wrist. The worker says they may have broken their wrist. Face colour is normal. Hand is a normal colour and warm.
3. An orchard worker has been electrocuted. The worker is supine with eyes closed, and skin colour is cyanotic. Burns are visible on both hands.
4. A worker walks into the first aid room, holding their index finger. The worker says they hit their finger with a hammer. Skin colour is normal and the worker is not anxious. Blood has collected under her fingernail, but she can move her finger without a significant increase in pain.
5. A conveyor operator's arm was amputated just above the elbow. The worker did not fall. The worker is speaking in a clear voice, sitting against the wall, clutching the stump. There is major arterial bleeding and the worker appears pale.
6. When a fire started in a shipper’s office, they were overcome by smoke. After being helped from the office, the worker stands outside, coughing vigorously.
7. A worker was struck in the chest by a metal rod as it was propelled from a motor. The worker is supine and the rod protrudes from the right side of the worker’s chest.

Answers

Summary

1. What are the three main categories of the rapid transport criteria?
2. Why should you memorize the rapid transport criteria?

Module 4

Secondary Survey

4. Secondary Survey

4.1. Glasgow Coma Scale
4.2. Secondary survey
4.3. Ongoing assessment and after the call

Lesson 4.1: Glasgow Coma Scale

Learning outcomes

1. Assess a worker's level of consciousness using the Glasgow Coma Scale (GCS).

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Pair and share

Instructions

Use the GCS to assess the level of consciousness of the worker.

Scenarios

1. The worker has a burn on their face and eyes. A bandage has been applied over the eyes. The worker answers your questions, can squeeze your finger when asked, and is fully oriented.
2. The worker suffered a blunt trauma to the lumbar spinal area. The worker is able to describe the incident in full and answers all your questions appropriately. Their eyes are open and they follow you as you move. The worker says, "I can't feel my legs." They are able to grip your fingers, but unable to move their legs or identify which toe is being squeezed.
3. The worker was struck in the head by a plank. As you approach, you see that her eyes are open and hear them moaning. When you call out, the worker asks, "Where am I? What happened? Why does my head hurt so much?" The worker is able to grip your fingers when asked.
4. The worker was in an excavator that rolled over. Their eyes flickered open several times during the primary survey. When you say, "Look at me. Can you open your eyes?", the worker’s eyes do not open. When you apply a pain stimulus to the right index finger, the worker’s eyes flicker open, they moan, and try to pull the finger out of your grasp.
5. The worker fell from a ladder. Whenever you ask the worker a question, their eyes open briefly and then they tell you to go away. The worker will not grip your hand when asked. But when you apply a painful stimulus, they reach over, push you away, and say "go away" again.

Glasgow Coma Scale

Stimulate worker to highest response in order to assess the following:

Eye-opening response:

- 4 = Spontaneous
- 3 = To voice
- 2 = To pain
- 1 = None

Verbal response:

- 5 = Normal
- 4 = Confused but coherent
- 3 = Simple, inappropriate words
- 2 = Incomprehensible speech
- 1 = No speech

Motor response:

- 6 = Obeys commands
- 5 = Localizes to pain (identifies source)
- 4 = Withdraws from pain (reflex)
- 3 = Flexion (decerebrate)
- 2 = Extension (decorticate)
- 1 = None

Total

Answers

Summary

1. What does the Glasgow Coma Scale measure?
2. What three nervous system functions are used to measure the GCS?
3. If the worker doesn't respond to verbal stimulus, what should you do?

Lesson 4.2: Secondary survey

Learning outcomes

1. Take the worker's vital signs.
2. Obtain a medical history of the worker.
3. Assess the worker's level of consciousness using the GCS.
4. Complete a head-to-toe assessment.

Required reading

Advanced First Aid: A Reference and Training Manual

Chapter 3: Initial evaluation of the trauma patient

Theory

Purpose

The fourth stage in the priority action approach is the secondary survey.

The secondary survey is similar to the primary survey, except this assessment is more detailed and takes longer. The purpose is to determine the full extent of the developing injury or illness, and to identify any other injuries or illnesses that may not have been discovered during the primary survey.

For a worker in the rapid transport category (RTC), this is done while waiting for equipment and transportation, or en route to the hospital. Otherwise, it is conducted at the scene. The secondary survey should not take longer than 10 minutes.

What it includes

The secondary survey includes the following areas of assessment:

- Vital signs
- History taking
- Head-to-toe examination

The order in which these areas are assessed depends on the worker's condition and whether they are able to respond. In some cases, it makes more sense to assess the history before the vitals. The attendant will have to consider the mechanism of injury, the anatomy of the injury, and the physical findings in the primary survey to decide.

Vital signs

The worker's vital signs help you identify life-threatening conditions that develop while the worker is in your care. Always record the time the vital signs were taken so that changes in the worker's condition can be evaluated.

Vital signs must be reassessed:

- Every 10 minutes for RTC or if the worker will be transported by BCEHS.
- Every 30 minutes for non-RTC workers.

Vital signs include an assessment of the following for a worker:

- Level of consciousness using the GCS — Is the worker fully conscious?
- Respiration rate, rhythm and volume — Is the worker breathing normally?
- Oxygen saturation of the worker’s blood, referred to as SpO_2.
- Pulse rate and character — Does the pulse feel normal?
- Pupil size and reaction to light — Are the pupils equal in size, and do they react normally to light?
- Skin temperature, colour and whether it is moist or dry — Is the skin normal in appearance and temperature?

History taking

History taking is a verbal assessment of what the worker feels and the worker's past medical history. Some of this information may have been discovered during the primary survey or when taking vital signs. Obtaining a history of the injury is very important and findings must be recorded.

The four components of history taking are:

- Chief complaint — Use the mnemonic PPQRRST (position, provoke, quality, radiation, relief, severity, timing) to investigate pain.
- Allergies — Drugs, chemicals, foods, pollens, animal fur, or dust.
- Medications — Name of drug, dose, frequency, purpose, and compliance.
- Past medical history — Anything related to current problem or illness history, including any recent hospitalizations.

Head-to-toe examination

The head-to-toe examination is a physical examination to assess:

- All injuries — Cuts, discolouration, deformity, and swelling
- Limb circulation — Compare pulses, colour, and temperature
- Neurological function of the limbs — Numbness, tingling, or weakness

Skill practice

If necessary, start this demo with a primary survey.

Goal
Complete a secondary assessment. This is a thorough assessment of the worker to determine the full extent of the developing injury or illness, and to identify any other injuries or illnesses.
Scenario
A worker fell 2 m (6.5 ft.) from a stepladder. The worker was lying supine when you arrived, complaining about pain in their right knee. You've completed the scene assessment and activated the workplace emergency response procedures. The primary survey is complete, and you've applied the modified NEXUS rule, but the worker is unwilling to move their knee because it hurts much more when moved. You've decided to call for an ambulance or the workplace ETV. While waiting, you do a complete secondary survey.

Steps		
1.	Record the worker's name, date, time, and all findings.	
2.	Assess breathing rate, rhythm and quality. • Rate: Count chest wall movements (in and out is one breath). Multiply a 15-second interval by four. Normal is 12 to 20 counts per minute. • Quality: Effective, even, deep, shallow, distressed, laboured, gasping. • Chest wall movement (both sides should expand and relax equally).	Worker's breathing rate is 12 per minute. Effective and even. Both sides expand equally.
3.	Assess the radial pulse. • Rate: Normal pulse is 60 to 80 beats per minute. • Quality: Regular, strong, irregular, easy to feel, weak.	Worker's radial pulse is 68 per minute. Regular and strong.
4.	Take pulse oximeter reading. <95% = Administer oxygen.	The worker's oxygen saturation level ($Sp0_2$) is 100%, so no need for supplemental oxygen.

Steps		
5.	Assess level of consciousness using the Glasgow Coma Scale. Eye-opening response: • 4 = Spontaneous • 3 = To voice • 2 = To pain • 1 = None Verbal response: • 5 = Normal • 4 = Confused but coherent • 3 = Simple, inappropriate words • 2 = Incomprehensible speech • 1 = No speech Motor response: • 6 = Obeys commands • 5 = Localizes to pain (identifies source) • 4 = Withdraws from pain (reflex) • 3 = Flexion • 2 = Extension • 1 = None Total	Worker's GCS score is 15. (4 + 5 + 6 = 15)
6.	Shine light into each eye and note pupil reaction. • Dilated, unequal and/or poorly reactive = Possible brain injury.	Worker's pupil size is normal. Both eyes react equally.
7.	Assess skin colour, temperature, and condition. • Pale = Blood loss and possible shock. • Blue = Cyanosis (low oxygen), possible cardiorespiratory emergency. • Cold, sweating = Possible shock.	Worker's skin is normal, dry, and warm. No signs of shock.

Steps		

8.	Record worker's medical history.
	• Where does it hurt? What happened? Are you under the care of a physician? Medical alert devices?
	• Assess pain (PPQRRST)
	  • P = Position
	  • P = Provoke
	  • Q = Quality
	  • R = Radiation
	  • R = Relief
	  • S = Severity (1 to 10)
	  • T = Timing
	• Associated problems: Breathing, pain, numbness, weakness, tingling, dizziness, blurred vision, nausea, need to void.
	• Allergies.
	• Medications: name, dose, frequency, purpose, compliance.
	• Past medical history related to current problem.
		Right knee hurts. Fell off stepladder.
		Not under care of physician. No medical alerts.
		Sharp pain in knee. Hurts when moved. Holding knee still relieves the pain. Knee pain is three in severity when not moving, but it is seven in severity if moved. Started after fall.
		No associated problems. No allergies.
		No medications.
		No relevant past medical history.

9.	Examine head. • Wounds, lacerations, swelling, deformities? Nose and oral cavity. • Eyes. • Ear canals. • Motor function: Ask worker to smile and whether they've still got all the teeth they came to work with.	No injuries found.
10.	Examine neck. • Swelling, deformities, open wounds, hoarseness, stridor? • Ask worker to swallow. Any pain?	No injuries found.
11.	Examine chest. • Bruising, wounds, tenderness? Observe deep breaths.	No injuries found.

Steps		
12.	Examine abdomen. • Tenderness = Possible internal injury. • Never push down on the iliac crests. This can increase internal damage.	No injuries found.
13.	Examine back. • Bleeding, tenderness, deformity, wounds? • If any wounds are discovered on the back, you may have to roll the worker to assess the injury.	No injuries found.
14.	Examine the legs and feet: a. Expose the injury site and examine knee area. Cover any open injuries with a dressing. b. Remove socks and shoes to examine the lower legs and feet. • Circulation: Numbness or tingling? Assess the pedal pulses on top of foot or inside foot behind ankle. • Motor function: Flex ankles against pressure. Wiggle toes. Lift one leg at a time. • Sensory function: Touch toes and ask what it feels like. • General: Lacerations, swelling, deformity, symmetry? • Distal circulation is fine. Apply ice to injured knee.	Circulation normal. Pulse normal. Motor function normal. Sensory function normal. Discolouration, deformity, point tenderness and swelling in knee of right leg (possible fractured patella). Worker can move ankle but will not lift the injured leg because it causes a significant increase in knee pain.
15.	Examine arms and hands. • General: Lacerations, swelling, deformity, symmetry? • Circulation: Numbness or tingling? Squeeze fingertip. If fracture or deep laceration, take radial pulse on affected side. • Motor Function: Hand grip. Raise arms, one at a time. • Sensory function: Touch fingers and ask what it feels like. • Apply bandages to cover dressings on the injuries found and immobilize the limb as appropriate. (We will cover the principles of immobilization in modules 15 and 17.)	All normal.

Summary

1. How important is it to follow a consistent order when doing the head-to-toe assessment?
2. What should the medical history include?

Lesson 4.3: Ongoing assessment and after the call

Learning outcomes

1. Identify the appropriate interval for reassessing the worker.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Theory

Airway, breathing, and circulation

As explained in the primary survey, assessments using the ABCs are repeated:

- Every five minutes on an RTC worker or an urban worker requiring transport by BCEHS
- Every 10 minutes on a non-RTC worker

If critical interventions were required, check the ongoing effectiveness.

Vital signs

After completing the secondary survey, the vital signs should be reassessed:

- Every 10 minutes for RTC workers or an urban worker requiring transport by BCEHS
- Every 30 minutes for non-RTC workers

Head-to-toe assessment

In most cases, the head-to-toe assessment should be repeated every 30 minutes during transport. If RTC, more frequent assessments may be needed.

Check dressings, bandages and splints. Also check the neurological and circulatory status of injured limbs. Look for changes in head, chest, or abdominal injuries. Don't just focus on injured areas. Look for evidence of new injuries.

After the call

After you have finished with the worker:

- Make sure the first aid record is complete.
- Clean and disinfect the area.

- Safely dispose of sharps and contaminated supplies.

Critical incident stress

As a first aid attendant, you may be called upon to provide emergency care to co-workers and friends. After an incident involving serious injury or death, people sometimes experience critical incident stress. Be aware of early signs of critical incident stress and reach out for help if you need it. Early signs can include nausea, headaches, dizziness, difficulty concentrating, anxiety, depression, and difficulty being alone. Critical incident stress will be covered in more detail in lesson 14.2.

The Critical Incident Response (CIR) Program excerpt on the next is from worksafebc.com/en/claims/report-workplace-injury-illness/critical-incident-response

Summary

1. How often should the ABCs be reassessed?
2. How often should the vital signs be taken?
3. How often should a head-to-toe assessment be repeated?
4. What should you do after the call?

Critical Incident Response (CIR) Program

Critical incident response (CIR) program referral process

To request a critical incident intervention, please follow these steps:

1. Call our toll-free answering service in B.C. and Alberta at 1.888.922.3700. We will return your call between 9 a.m. and 11 p.m., seven days a week. Calls made after 11 p.m. will be returned after 9 a.m. the next morning.
2. Please have as much of the following information as possible when you call:
   - Phone number of contact person seeking critical incident intervention
   - Name of the deceased or injured worker (if applicable)
   - Date and time of the incident
   - Location of the incident
   - Brief description of the incident
   - Number of workers involved (approximate)
3. In an effort to facilitate this process, you'll be asked to provide a time and date that workers will be available to attend the intervention.
4. An individual employee may access these services confidentially by following the same steps.
5. If something changes following your initial request, please do not hesitate to contact us.

For non-emergencies or other issues relating to the CIR Program, please also call our toll-free answering service in B.C. and Alberta at 1.888.922.3700.

Critical Incident Response (CIR) Program

WorkSafeBC

Module 5

Worker Positioning

5. Worker Positioning

5.1. Determining safest position
5.2. Standing and sitting to supine
5.3. Prone to supine
5.4. Supine to ¾-prone
5.5. Fore and aft lift

Lesson 5.1: Determining safest position

Learning outcomes

1. Determine the safest worker position.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 17: Spinal injuries

Theory

Deciding whether to move a worker

To determine whether a worker needs to be moved, ask yourself:

- Can I assess the worker in the position found?
- If the worker is alert or responsive to voice, can critical interventions be provided in the position found?

If the answer to either question is "No," move the worker to the supine position.

Spinal motion restriction

If the mechanism of injury suggests spinal injury, manually stabilize the head and neck. Try not to move the worker's head and neck. If the worker must be moved, stabilize the spine and move the worker's body as a unit. This is best accomplished with help.

Review the need for maintaining ongoing spinal motion restriction later based on the findings of the primary and secondary survey, and the modified NEXUS rule. If you're not sure, err on the side of caution and apply spinal motion restriction.

Summary

1. How do you decide whether to move a worker?
2. What should you do if you're unsure whether spinal motion restriction is required?

Lesson 5.2: Standing and sitting to supine

Learning outcomes

1. Guide a worker from a standing or sitting position to the supine position with spinal motion restriction.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Skill practice

Goal
Guide a worker from standing or sitting to supine with spinal motion restriction.
Scenario
A driver slipped on ice when getting out of a truck in the shipping bay. The worker's head struck the floor on impact. When you arrive, the worker is standing, leaning on the truck, and holding their head. You can see that the driver is unsteady on their feet. The worker is in pain and has a large lump on their head. You're concerned that they may collapse and you would prefer having the worker supine with C-spine control while you continue the assessment. You can see the worker is not fully alert. They have an open airway, are breathing normally, and skin looks normal. You know the worker has a head injury.

Steps	
1.	Approach the worker from the front. Tell the worker to continue looking straight ahead.
2.	If the worker is standing, ask them to keep their head and neck as still as possible while they sit down. Ask the worker to move slowly and carefully to a sitting position. They may need support while they're doing this.
3.	Once the worker is seated, ask them to continue keeping their head and neck as still as possible. Move to the worker's side.
4.	Instruct a helper to kneel beside the worker on the opposite side of you to help support the worker's weight as the worker lies back.

Steps	
5.	Instruct the worker to lie back. Explain that you and the helper will support them as they do so.
6.	While assisting the worker into the supine position, gently help the worker maintain their head in position. Move your hands so that the worker will not be lying on your hands once supine.
7.	Once the worker is supine, move around to the C-spine position at the top of the worker's head and carefully realign the worker if possible. Maintain manual stabilization until the worker is packaged for transport or the need for spinal motion restriction is ruled out.
8.	If possible, train the helper to manually stabilize the worker's head and neck. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help." If there is no help available to maintain manual stabilization of the worker's head and neck, you may have to improvise using readily available materials to maintain head support until help arrives. You should also ask the worker not to move their head and neck while you move around them.

Summary

1. What is the first step in guiding a worker with a possible spinal injury from standing to the supine position?
2. What are the key principles to keep in mind when moving a worker with a possible spinal injury?

Lesson 5.3: Prone to supine

Learning outcomes

1. Maintaining C-spine, roll a worker from the prone position into the supine position with help.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Skill practice

Goal
Move a worker from prone to supine with spinal motion restriction.
Scenario
A brick layer was building a wall when a large piece of lumber fell from above and struck the brick layer in the head and chest. The worker fell to the ground and is lying prone on the ground when you arrive. You complete a scene assessment and can see that the worker is responsive. Their airway is clear, but they are not breathing normally. You decide that the worker may need help with their breathing, but you can't help the worker in the position you found them in. With a helper, you move the worker into the supine position.

Steps	
1.	Kneel at the top of the worker's head.
2.	Grasp the worker's trapezius muscle on the side of their head closest to the ground.
3.	Assess airway: a. Place your other hand on the worker's head and face so your hands are opposite one another. b. Use your fingers to support the worker’s head. c. Lean forward and assess the worker's airway.
4.	Firmly control the worker's head and neck with your forearm and hand. Support your arms on your flexed knees or the ground, if possible.

Steps	
5.	While you continue to support the worker's head and neck, tell a helper to do the following: a. Firmly grasp the worker's shoulder and waist or belt. If other helpers are available, have them support the worker's legs and/or injured areas. Don't turn the worker's head and neck during the roll. b. Pull the worker toward them when you give the go ahead. c. Roll the worker as a unit to the lateral position.
6.	Tell helper to use the hand they had on the worker's hip or waist to: a. Grasp the worker's cheekbones. b. Brace their forearm and elbow against the worker's chest at the worker's midline.
7.	Tell helper to use the other hand that was on the worker's shoulder to: a. Grasp the worker's lower skull. b. Brace their forearm against the worker's back at the worker's midline.
8.	After the helper has manually stabilized the head and neck, you should do the following: a. Release the worker's head. b. Check the worker's airway for debris and air movement. c. Perform a finger sweep and/or suction, if necessary. d. Change your hand position so that you can reposition the worker supine.
9.	If the worker must remain lateral, maintain manual stabilization. Otherwise, continue with the following steps.
10.	Complete the roll to supine: a. Grasp the trapezius muscle on the downward side of the worker's head. b. Place your other hand over the worker's ear with your elbows supported.
11.	Ask a helper to put their hands back on the worker's shoulder and waist and hold, while you support the worker's head and neck.

Steps	
12.	Coordinate the roll from lateral to supine so you and your helper are moving the worker at the same rate. This enables you to maintain the original position of the head and neck when completing the roll to supine. You should finish the roll with your thumbs in the up position.
13.	Realign the worker's head and neck: a. Tell the worker what you are going to do. Ask them to tell you if there is any pain, or if they begin to experience any numbness or tingling during the move. b. If you don't detect any pain, neurological deficits or resistance, realign the worker's head to the anatomical and neutral position. With an unresponsive worker, after realignment of the head you would do a jaw thrust and check for air movement and a carotid pulse.
14.	If possible, train a helper to take over manually stabilizing the head and neck. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."

Summary

1. What are the key principles to keep in mind when moving a worker with a possible spinal injury?

Lesson 5.4: Supine to ¾-prone

Learning outcomes

1. Roll a worker from supine to ¾-prone.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Skill practice

Goal
Maintain an unresponsive worker's airway by placing them ¾-prone.
Scenario
An unresponsive worker with fluid in the airway needs to be placed in the lateral or ¾-prone position. This will help keep the airway open and allow fluid to drain.

Steps	
1.	Kneel beside the supine worker's abdomen.
2.	Place the worker's arm that is closest to you straight out (at 90 degrees).
3.	Place the worker's other arm on their chest.
4.	Using your hand closest to their head, support the worker's head and neck during the roll.
5.	Using your hand closest to the worker's feet, reach across the worker and grasp the worker's clothing just below the waist.
6.	In one smooth movement, roll the worker against your thighs.

Steps	
7.	Place the worker's hand that was on their chest, under their head to prevent their face from making direct contact with the ground. Or you can use a folded blanket to support their head.
8.	Position the worker's leg to prevent the worker from rolling fully prone.
9.	Ensure the worker's head and neck are positioned to ensure an open airway and to allow fluid to drain away by gravity. An oral airway may be needed to keep the mouth open. This will be covered in lesson 10.2.
10.	Reassess the ABCs.

Summary

1. What type of worker should be maintained ¾-prone?
2. What is the purpose of using the ¾-prone position?
3. What device may be needed to facilitate drainage from the airway?
4. How can you prevent a worker in the ¾-prone position from rolling fully prone?

Lesson 5.5: Fore and aft lift

Learning outcomes

1. Move a worker without trauma from a sitting position into a basket stretcher for transport.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 48: Lifts, carries, and stretchers

Skill practice

Goal
Move a worker without trauma from a sitting position into a basket stretcher for transport in a position of comfort.

Goal
Scenario
A worker with an illness that prevents them from moving unassisted needs to be moved into a basket stretcher or onto the floor for assessment and intervention.

Steps	
1.	Tell the worker that you're there to help them and to remain still while you move to their back to support them.
2.	Brace yourself at the worker's back.
3.	Reach under their axilla with each of your forearms.
4.	Grasp the worker's opposite wrist with each hand. Your right hand grasps the worker's left wrist and vice versa.
5.	Tell a helper to do the following: a. Scoop under the worker's legs with their forearm at the worker's knees. b. Reach over the worker's legs with their other arm and lock their hands together at the worker's knees.
6.	Ensure everyone uses proper lifting technique: feet apart, back straight, and eyes forward. Lift with the legs.
7.	Gently lift and move the worker as a unit to the basket or floor.

Summary

1. What type of worker can be moved using a fore and aft lift?

Day 1 Homework (Module 8)

Being a first aid attendant, part 1 of 2

Read Chapter 1 in the textbook. Bring your notes on the following to the next class:

1. Explain what first aid is.
2. Describe your role and responsibilities as a first aid attendant.
3. Describe the scope of your role as a first aid attendant.
4. Describe the legislation that protects first aid attendants.
5. Explain what it means to have a worker's actual or implied consent.

Module 6

Packaging

6. Packaging

6.1. Hard collar
6.2. Spine board
6.3. Scoop-style stretcher
6.4. Spine board — lateral
6.5. Worker care during transport

Lesson 6.1: Hard collar

Learning outcomes

1. Apply a hard collar on a worker.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Theory

Spinal motion restriction

We decide on spinal motion restriction based on the mechanism of injury. We maintain spinal motion restriction and package the worker based on physical and clinical findings. If there is any doubt about whether spinal motion restriction should be maintained, apply a hard collar and package the worker accordingly.

If the mechanism of injury suggests spinal injury and applying the modified NEXUS rule is not appropriate, manually stabilize the head and neck until a hard collar can be applied and the worker is packaged.

Purpose of hard collar

A hard collar helps to stabilize the neck (C-spine). If needed, a hard collar should be applied at the end of the primary survey for workers in the rapid transport category (RTC). A hard collar must be applied whenever the first aid attendant cannot rule out the need for ongoing C-spine control.

Hard collars come in a variety of sizes and are available commercially. Follow the general guidelines included on page 153 of *Advanced First Aid: A Reference and Training Manual* when selecting a particular brand.

The head and neck of the worker must be in the anatomical and neutral position prior to selecting the correct hard collar size.

Skill practice

Goal
Apply a hard collar at the end of the primary survey for an RTC worker.

Steps	
1.	Tell the worker what you're going to do. Ask the worker to tell you if they experience any resistance or pain.
2.	Align head and neck: a. Support the head and neck in position found. Tell the worker you will be realigning to neutral (padding may be necessary to achieve neutral position) and anatomical position. b. Manually stabilize head and neck. c. If possible, train a helper to take over manual stabilization. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."
3.	Select the right collar size: a. Ensure the worker's shoulders are relaxed before measuring (not shrugging). b. Quickly examine the neck and shoulder area for swelling or wounds. Applying a hard collar may not be appropriate. c. Using your fingers, measure the key dimension: the distance between the top of the worker's trapezius and the bottom of the worker's chin. d. Select a hard collar with a neck size that matches this measurement. Proper sizing of the hard collar is essential. If it's too short, it won't provide enough support and may compromise the worker's airway. If it's too tall, it may hyperextend the neck.
4.	Prepare the collar: a. Assemble the chin piece, if required. b. Pre-form the collar by flexing it inward at the hooked Velcro attachment.
5.	Put the collar on: a. Slide the back portion of the collar with the looped (fuzzy) part of the Velcro strap behind the worker's neck. b. Position the front of the collar underneath the worker's chin by scooping the collar chin piece upward under the chin. c. Ensure the worker's chin is in the centre of the collar's chin piece and the worker's chin covers the central fastener (if there is one).

Steps	
6.	Attach the collar: a. Tell the worker that you are going to secure the collar and it shouldn't hurt. Ask them to tell you if it does. b. Hold the collar in place and gently tighten the collar by pulling the strap horizontally. c. Secure the Velcro strap to the hooked Velcro part on the collar. d. Consider adding tape if the Velcro is not attached securely.
7.	Check the fit: a. Check that the chin piece supports the worker's chin and is in line with the midline of the worker's body. b. Check for facial flushing. If the worker's face is flushed after the collar is secured but it was not before securing the collar, the hard collar may be too tight. Adjust as needed.

Summary

1. What happens if the hard collar is too short?
2. What happens if the hard collar is too long?
3. What should you do if you observe facial flushing after applying a hard collar?

Lesson 6.2: Spine board

Learning outcomes

1. Position and secure a worker on a spine board with spinal motion restriction.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 18: Spinal injury management

Theory

The purpose of the spine board

The purpose of a spine board is to prevent further injury. It may be used for transferring a worker with a possible spinal injury to a transport stretcher. It may also be needed if a scoop-style stretcher is not available or not practicable to extract a worker from the position found.

Although the risk of secondary injury to the spine during packaging and transport is very rare, it

does occur. The consequences may be devastating. Supporting the cervical spine in a comfortable manner is important.

At the same time, it is also important to carefully assess the need for using a spine board before securing the worker. In some cases, the risks of immobilizing may outweigh the benefits. For example, securing a worker on a spine board can adversely affect airway and breathing management. That is why we use the modified NEXUS rule.

Modified NEXUS rule

The modified NEXUS rule helps you to assess whether a worker with trauma requires ongoing spinal motion restriction. It consists of two stages:

- When assessing the scene, you consider the mechanism of injury. If there is a possibility of spinal injury, apply spinal motion restriction.
- As you complete the primary survey, go through the questions included in the modified NEXUS rule. If the answer to any of the questions is "Yes," continue spinal motion restriction. But if the answer to all of the questions is "No," you can stop applying spinal motion restriction.

The modified NEXUS rule includes the following:

- Does the worker have an altered or decreased level of consciousness?
- Is the worker showing any signs of intoxication?
- Does the worker have any distracting injuries?
- Are there any concerning physical findings?
  - Midline cervical discomfort?
  - New onset focal neurological deficits?
- Are there any other concerning considerations?
  - Is the worker over the age of 65?
  - Does the worker have any pre-existing spinal conditions?
  - Is this a multi-system trauma?

If you answer "No" to all of the above, spinal motion restriction is not required. If you are in doubt, err on the side of caution and apply spinal motion restriction.

Skill practice

Goal
Position and secure a worker on a spine board with full spinal motion restriction.

Steps	
1.	Align the head and neck: a. Support the head and neck in position found. Tell the worker you will be realigning to neutral and anatomical position. b. Manually stabilize the head and neck. c. If possible, train a helper to take over manual stabilization. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."
2.	Measure and apply a hard collar if injuries permit.
3.	Before using a spine board, it may be necessary to place a rolled blanket between the worker's legs and secure the legs together.
4.	Position the padded spine board close to one side of the worker.
5.	Adjust the straps as needed. Skip securing holes for tall workers. Share securing holes for shorter workers.
6.	Take over manually stabilizing the worker's head and neck.
7.	With one helper holding the right leg and another helper at the side of the worker, roll the worker to the lateral position.
8.	Tell a helper to do the following: a. Examine the worker's back for obvious wounds and deformities. If serious wounds are discovered, the first aid attendant must assess and dress the wounds, if necessary, before rolling the worker supine. b. Empty the worker's pockets. c. Brush off debris. d. Dress open wounds found on the back, if necessary.
9.	Tell a helper to do the following: a. Pull the spine board close to the worker. b. Slide blankets used for padding partway off of the spine board (towards the worker). c. Move the spine board up against the worker's back.

Steps	
	d. Remove any wrinkles in the blankets.
10.	With helpers, roll the worker supine onto the spine board. Coordinate the helpers to have them push and slide the worker as a unit into the centre of the spine board.
11.	Maintain spinal motion restriction.
12.	Secure the worker by applying the straps: • Ask the worker to tell you if they experience any pain. • Always secure the head last. • Do not cinch the straps too tight. • Depending on the size of the worker, you may need to adjust the strap positions. Skip securing holes for tall workers. Share securing holes for shorter workers.
13.	Before lifting the worker, check that all of the straps are secure. If Velcro straps are being used, the hooked side of the straps should be attached to the looped side of the straps. If a strap needs retightening, tighten the opposite side. This helps ensure the worker remains level and does not get pulled to one side.
14.	Apply blankets.
15.	Reassess ABCs.

Summary

1. When is a spine board used and why?
2. How do you decide whether to use a spine board?

Lesson 6.3: Scoop-style stretcher

Learning outcomes

1. Position and secure a worker on a scoop-style stretcher.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 48: Lifts, carries, and stretchers

Theory

Purpose and use

A scoop-style stretcher is an excellent device for lifting workers from the ground or spine board to another kind of stretcher or carrying device. This type of stretcher is used by many ambulances, fire rescue and professional first aid services because it's lightweight, adjusts easily, and can be separated into two halves.

A scoop stretcher should be used whenever a spine board is not needed to extract the worker or to remove a worker from the spine board onto a padded stretcher. The scoop eliminates the need for a log roll and can be applied with minimal worker movement. In addition, the curved shape of the scoop stretcher makes it a more appropriate device to use even if a full package is required because it puts less pressure on the worker's spine.

For workers who meet the criteria for modified spinal motion restriction, the attendant can use a variety of means to restrict worker movements to maximize worker comfort while ensuring effective support for the head and neck.

Skill practice

Goal
Position and secure a worker on a scoop-style stretcher.

Steps	
1.	Assess the worker's weight to determine how many helpers are needed. <90 kg (200 lb) = 2 helpers, 90 to 114 kg (200 to 250 lb) = 4 helpers
2.	Before using a scoop-style stretcher, it may be necessary to place a rolled blanket between the worker's legs and secure the legs together.
3.	Size the stretcher: a. Place the stretcher beside the worker. b. Adjust the stretcher as needed to make it slightly longer than the worker.
4.	Disassemble the stretcher: a. Press the locking mechanism to release the locking pins. b. Insert the locking pins into the closest holes. c. Place your foot between the stretcher and the worker. d. Press the lever that disengages the couplings on either end of the stretcher. e. Pull the stretcher halves apart. If the coupling mechanism sticks, use your foot to prevent the worker from getting hit by the stretcher.
5.	Reassemble the stretcher: a. Move half of the disassembled stretcher around the worker. b. Place each half of the stretcher under the worker. c. Lock the end of the stretcher that supports the uninjured part of the worker. Then lock the other end. d. Re-check that the locking mechanisms are locked. e. Secure the worker to the scoop using the stretcher straps f. Ensure that the receiving stretcher is nearby and prepared. Always go around the worker. Do not move the stretcher part over the worker.

Steps	
6.	Lift and move the worker: a. Squat at one end of the stretcher. Ask a helper to squat at the other end and additional helpers to squat at each side. b. Tell everyone to place their feet shoulder-width apart with their weight evenly distributed. c. Grasp the frame firmly. d. Co-ordinate the lift. Remind everyone to keep their backs straight and use their leg muscles.

Summary

1. Where should you position your foot when disassembling the stretcher?
2. How should the stretcher halves be moved when preparing to apply it to a worker?
3. What techniques should you always follow when lifting?

Lesson 6.4: Spine board - lateral

Learning outcomes

1. Secure a worker on a spine board in a lateral position.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 50: Transportation

Theory

Lateral packaging

Lateral packaging is used for trauma patients with an ongoing partial airway obstruction due to fluid, due to a specific injury that prevents the worker from being secured supine, and for helicopter transportation.

Explain the goal of the skill
Secure a patient in the lateral position (position and secure a patient on the spine board from the supine position to the lateral position)

Explain the goal of the skill
Describe the scenario
The worker rolled a logging truck off a 10-foot bank. The patient is supine and complaining of nausea, pain in the abdomen, and pain in the right leg. The workplace is remote (+3 hours).

Demonstrate the skill, verbalizing each step		
1.	Conduct a scene assessment.	There are no hazards. One person injured. Based on the mechanism of injury, spinal motion restriction is needed.
2.	Assess level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate. Apply a painful stimulus by squeezing the nail bed on the worker's hand.	Worker responds with clear speech, complaining of pain.
3.	Manually stabilize the head and neck. If available, train a helper to take over manual stabilization. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."	

Demonstrate the skill, verbalizing each step		
4.	Activate workplace emergency response procedure. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unconscious adult who was found on a couch.	
5.	Assess the airway.	Worker is talking normally. Airway is clear.
6.	Assess the breathing: • Look, listen and feel. • Approximate Rate (slow, normal, fast) • Rhythm and Quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is slightly rapid and shallow, but worker can speak in full sentences. Both sides of chest expand evenly. Not cyanotic (blue).
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Expose and examine the chest • Rapid body survey (bleeding, fractures)	Radial pulse is weak and rapid. Skin is pale, cool, and clammy. Worker is in shock. RTC There is redness and bruising in the lower-right rib area. Swelling and deformity on the mid right femur. Worker is in extreme pain. No external bleeding.
8.	Apply high-flow oxygen.	

Demonstrate the skill, verbalizing each step		
9.	Transport decision: rapid transport category	The worker will be packaged in the lateral position because of: ☐ Use of a helicopter due to remoteness ☐ High degree of suspicion for vomiting ☐ Difficulty turning the board during flight This patient requires urgent medical attention due to shock.
10.	Other critical interventions: a. Leave worker supine and keep still. b. Provide a blanket for warmth.	
11.	Apply modified NEXUS rule: a. Decreased level of consciousness? b. Worker's age, what happened, pre-existing back or spine problems? c. Any distracting injuries? d. Palpate C-spine region. e. Concerning physical findings: • Midline spine or cervical pain • Feel or move arms and legs without pain or unusual sensations • Numbness or tingling	Worker is reliable. Worker is 35. Has distracting injuries (abdomen and femur) No spinal abnormalities. No pain, unusual sensations, numbness or tingling Spinal motion restriction is required.
12.	Apply a hard collar.	

Demonstrate the skill, verbalizing each step		
13.	Package worker in lateral position. a. Take over C-spine control from the helper and have the helper kneel at the side of the patient across from the spine board. b. Have one helper hold the right leg and place the other helper at the side of the patient. Log roll the worker enough to have the spine board moved 6 to 10 cm under the worker's torso. c. Lay the worker supine so that one side of the worker is slightly on the spine board. (The other side of the patient is still on the ground.) d. Have another helper kneel on and steady the spine board. Have the original helper change sides to help roll the patient on the board up into the lateral position. e. Centre the patient on the spine board as necessary and direct a helper to support the patient in the lateral position. f. Direct the helper to take C-spine control from the side of the patient (sternal clamp). g. Place a padding or a blanket under the worker's head to help maintain the anatomical position. Arrange the worker's head on the pad to ensure a drainage position and make sure the oxygen mask is still in place. h. Place padding to maintain the patient in the lateral position, especially along the leg and hip and/or direct additional helpers to hold the patient in the lateral position. i. Take over C-spine control from the helper and have the helper move to the head of the patient to hold C-spine control. j. Pad and secure the patient to the spine board. k. Ensure any blanket covering the patient is not caught under the straps. l. Secure the head last.	The attendant must be aware of how the spine board will fit into the helicopter in order to determine whether the patient should be positioned left or right side down in order to facilitate airway management. More helpers should be used if available. The padding under the head should be firm enough to support the worker's head in the anatomical position once the head strap is secured.

Demonstrate the skill, verbalizing each step		
14.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
15.	Reassess ABCs every 5 minutes.	
16.	Complete a first aid record.	

Summary

Be prepared to answer:

1. What should you check before transporting the worker?
2. What should you check en route?
3. What should you do if packaging causes the worker pain?

Lesson 6.5: Worker care during transport

Learning outcomes

1. Identify appropriate strategies for worker care during transport.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 50: Transportation

Theory

Prior to transport

Before the worker is transported:

- Check that the worker is positioned appropriately. Avoid motion sickness by positioning the worker with their head toward the direction of travel. Ensure spinal motion restriction has been used if needed.
- Maximize worker comfort. For example, if a spine board must be used, make sure it's well padded. Remove bunched up clothing, belts, and objects from the worker's pockets. If necessary, pre-heat the vehicle.

- Immobilize extremity injuries. Check all splints, bandages, and stretcher-securing straps before transport.
- Check that first aid supplies are available and in good working order for the trip.
- Bring along the worker's medication and personal belongings, if possible. Tell them where their belongings are stowed for safekeeping.

During transport

While en route:

- Assess the worker's ABCs and vital signs at appropriate intervals.
- Reassure the worker. Explain where they're going even if they have a decreased level of consciousness.
- Direct the driver as needed.

Securing a worker

The instructor will demonstrate the procedure for removing a worker from a scoop-style stretcher and applying spinal motion restriction while securing the worker in a basket stretcher.

Remember to:

- Maintain stabilization of the head and neck during the procedure, if necessary.
- The basket should have adequate padding under the worker, but use additional padding, if necessary.
- Place rolled blankets or other suitable padding down the sides of the worker, if necessary. The padding will control lateral motion and maintain alignment.
- If necessary, remove or unbuckle the stretcher straps before breaking the scoop stretcher apart on either end.
- Break apart the scoop at either end of the stretcher and gently slide the two halves out from under the worker. This step may not be possible with some larger workers.
- Secure the worker so the stretcher may be lifted and moved without significant worker movement.
- If the worker's head and neck must be secured, do that last.
- Make sure all strapping allows rapid access to the worker.
- If worker packaging causes pain, reconsider whether there is another way to support the injury.

Summary

1. What should you check before transporting the worker?
2. What should you check en route?
3. What should you do if packaging causes the worker pain?

Module 7

Basic Skills

7. Basic Skills

7.1. Jaw thrust
7.2. Oral airway
7.3. Suctioning
7.4. Pocket mask
7.5. Oxygen administration methods
7.6. Administering oxygen
7.7. Bag-valve mask
7.8. Cardiopulmonary resuscitation and automated external defibrillator (CPR/AED)

Lesson 7.1: Jaw thrust

Learning outcomes

1. Perform a jaw thrust.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

Purpose and use of jaw thrust

The jaw thrust is the preferred method of opening the airway of all workers who require spinal motion restriction. It holds the unresponsive worker's tongue forward and helps keep their airway clear.

Skill practice

Goal
Open the airway of an unresponsive worker with a jaw thrust. Use a mannequin.

Steps	
1.	Manually stabilize the head and neck, and perform a jaw thrust from that position: a. Put your thumbs on the worker's cheekbones. b. Put your fingers under the bony structure of the worker's jaw. c. Hold the worker's head in position. d. Lift the worker's jaw with your fingers. e. Look, listen and feel for air movement.

Steps	
2.	Ask a helper to take over manual stabilization of the head, neck, and the jaw thrust. Tell the helper: a. Put your elbows down and put your fingers and thumbs where mine are. Hold steady. b. Change hands one at a time. c. Do not extend the worker's neck while maintaining the jaw thrust.
3.	Reassess the airway.

Summary

1. What is the purpose of a jaw thrust?
2. What is the preferred method of opening the airway of all workers that require spinal motion restriction?

Lesson 7.2: Oral airway

Learning outcomes

1. Measure and insert an oral airway.
2. Describe when an oral airway is needed.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

Oral airway (oropharyngeal airway or OPA)

The oral airway is a semi-circular, hollow, plastic device that holds the unresponsive worker's tongue forward and helps keep the airway clear. Try to insert an oral airway in all workers who are unresponsive to verbal stimuli. Do not try to insert an oral airway if there are large pieces of vomitus, broken teeth or blood clots. This may worsen the obstruction. When inserting the oral airway, do not use excessive force. It should not cause any pain. Remove the oral airway if resistance is felt or the worker gags or tries to spit out the oral airway.

Skill practice

Goal
Maintain the airway of an unresponsive worker with an oral airway.

Steps	
1.	Measure the oral airway: Match the distance from the corner of the mouth to the angle of the jaw with the curved part of the oral airway.
2.	Insert the oral airway. a. With the curved part of the oral airway against the tongue, slide the oral airway along the roof of the mouth. Describe what you would do, but don't insert an oral airway. Simulate the actions to the side. b. When the oral airway is almost completely inserted, rotate it **180 degrees**. Alternatively, you can open the mouth with a tongue depressor and push the tongue out of the way. Then, under direct vision, insert the oral airway directly into position. The worker accepts the oral airway and is still breathing normally.
3.	Reassess airway.

Summary

1. Why should you not insert an oral airway if there are large pieces of vomitus, broken teeth, or blood clots?
2. What should you do if resistance is felt, or the worker gags or tries to spit out the oral airway?

Lesson 7.3: Suctioning

Learning outcomes

1. Apply suction to clear a worker's airway.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

Use of suctioning

Conscious workers are usually able to clear the oral cavity on their own by spitting or coughing up the material. The worker with a decreased level of consciousness often cannot do this.

It is the responsibility of the first aid attendant to try to keep the airway clear. Positioning the worker to allow drainage helps. Workers with profuse bleeding of the mouth or nose, or who are actively vomiting, should be managed in the lateral or ¾-prone (drainage) position.

More often than not, however, the material is too thick and tenacious to drain away by gravity alone. Although the drainage position and finger sweep are helpful, they are not always effective. The best method is to use a portable suction device.

Skill practice

Goal
Clear the airway of an unresponsive worker with a suction device.

Steps	
1.	Set up the suction: a. Put on eye protection. b. Attach a clean suction tip and tubing to the machine. c. Turn the device on and test it.

Steps	
2.	Ensure the worker is in the lateral or ¾-prone position.
3.	Suction the airway: a. Insert the suction into the mouth only as far as you can see to the side of the worker's lower cheek. b. If the suction unit has a venting hole, do not cover it until the suction has been inserted. c. Suction gently. d. Limit suctioning to 20 seconds at a time. e. Repeat as necessary.

Summary

1. What position should workers with profuse bleeding of the mouth or nose, or who are actively vomiting be put into?
2. What is the time limit for suctioning?

Lesson 7.4: Pocket mask

Learning outcomes

1. Perform ventilation using a pocket mask.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

When to use a pocket mask

Using a pocket mask is the preferred way to ventilate a worker. With a conscious worker, you should use a pocket mask to ventilate if the worker:

- Has rapid, shallow breaths
- Is only able to speak one or two words between gasps
- Has blue lips and face

With an unresponsive worker, you should use a pocket mask to ventilate them if they are not breathing normally but still have a carotid pulse.

Skill practice

Goal
Use a pocket mask to ventilate a worker who is not breathing effectively.
Scenario
A worker has fallen. You are working nearby and hear a call for help. As you approach, the worker is supine. You call out their name, but their eyes only open briefly and they moan. You notice a lump on the worker's forehead. You activate the emergency response procedures and ask for the first aid gear. You apply C-spine. The worker is breathing quietly and has a pulse. You hand over C-spine to a helper and continue the primary survey. When you discover the worker is cyanotic and breathing too slowly, you decide to assist their breathing.

Steps	
1.	Tell the worker that you're going to place a mask on their face. Help them stay calm. Remind the worker to keep breathing and to try not to fight the mask. You tell the helper to watch what you are doing.
2.	Using 2 hands and the jaw thrust position, place the mask over the worker's nose and mouth. Hold the mask with your fingers under the jaw and your thumbs on the mask.
3.	Once every 5 seconds, give the worker a breath using the pocket mask. Time the ventilations with the worker's inhalations, if possible, for a combined total of 12 breaths per minute. If the worker's abdomen starts to distend, ensure the airway is open by adjusting the jaw thrust or slightly extending the neck. If the abdomen is still distending, ventilate with less force.

Steps	
4.	If possible, train a helper to take over ventilation by giving slow, clear directions. a. Tell the helper, "this is a pocket mask." b. Show the helper how to hold the mask and to watch you. c. Give one breath every 5 seconds, continuing to show the helper. d. Ask them to take over ventilating with a pocket mask. e. Assess the effectiveness of the helper's ventilations before continuing the primary survey.

Summary

1. How should you hold the pocket mask against the worker's face?
2. What should you do if the worker's abdomen starts to distend?
3. How should you time the breaths?

Lesson 7.5: Oxygen administration methods

Learning outcomes

1. Describe when oxygen administration is needed.
2. Identify the best method for administering oxygen to the worker.
3. Describe pulse oximetry.
4. Describe the types of oxygen delivery systems.
5. Describe safe handling of oxygen delivery systems.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 7: Oxygen therapy and equipment

Theory

Indications

Whenever a worker's ABCs are not normal, administer oxygen. For example, you should administer oxygen in the following situations:

- Respiratory and/or cardiac arrest
- Hypoxic workers in the rapid transport category
- Acute or chronic shortness of breath
- Shock
- Cardiovascular or respiratory illness
- Inadequate respiration (such as from a drug overdose)

- Decreased level of consciousness
- Pregnant workers
- All medical air evacuation workers
- All workers with decompression illness
- Potential carbon monoxide and/or toxic-smoke inhalation
- Workers with no history of chronic obstructive pulmonary disease (COPD), with blood oxygen saturations that are below normal levels (less than 95%)

Methods

There are four methods for administering oxygen:

- **Nasal cannula** — Oxygen passes through a tube to openings in prongs that are inserted into each of the worker's nostrils. This method gives the worker the greatest freedom to move around and talk while receiving oxygen. It may be appropriate for a worker who is vomiting. Provide oxygen at 24% to 44%. Do not exceed 5 litres per minute (L/min).
- **Face mask** — The face mask connects to a tube that connects to a regulator and oxygen cylinder. The face mask is used when moderate oxygen concentrations are required, and with workers who have nasal irritation. It can be uncomfortable and makes it harder to communicate with the worker. Provide oxygen at 40% to 60% at 6 to 10 L/min.
- **Partial rebreathing mask** — This method combines a face mask with a reservoir bag. Exhaled air enters a reservoir bag, where it's enriched with oxygen. Pure oxygen is added to the enriched mixture and given to the worker. This method is used when increased oxygen concentrations are required. Provide oxygen at 40% to 60% at 6 to 10 L/min. Adjust the flow rate to ensure that the reservoir does not collapse.
- **Non-rebreathing mask** — This mask is similar to the partial rebreathing mask, except it doesn't allow the worker to rebreathe exhaled air. This method is used to deliver high concentrations of oxygen to a spontaneously breathing worker. Provide oxygen at up to 90% at 10 to 15 L/min.

Pulse oximetry

The pulse oximeter is a small battery-operated electronic device that can be used to confirm the blood oxygen saturation of a worker. This helps you decide whether to adjust oxygen flow.

Place the pulse oximeter on a clean finger or a toe that has good circulation. The pulse oximeter should not be used on a worker with hypothermia, smoke inhalation, or carbon monoxide poisoning.

Safe handling practices

Always follow these safe handling practices:

- Never use oil or grease on any device that will be attached to an oxygen cylinder.
- Do not allow smoking or open flames around oxygen equipment.
- Keep oxygen cylinders well secured.
- Store cylinders in a cool, well-ventilated room away from corrosives.
- When opening the cylinder, stand so that the cylinder valve is between you and the regulator.
- Ensure that the valve-seat insert and gasket are in good condition before you assemble the equipment.

- Never attempt to tighten the cylinder valve or any part of the valve. If the cylinder valve is leaking, place it well away from hazards and notify the oxygen supplier immediately.
- Oxygen cylinders are not to be refilled by unauthorized personnel. Always return empty cylinders to qualified plants for refilling.
- Oxygen cylinders should only be refilled with oxygen and should have a hydrostatic test every 5 or 10 years, depending on manufacturer's specification.

Changing oxygen cylinders

Oxygen cylinders come in various sizes. First aid attendants typically use a D size (14.5 cu. ft.), E size (26 cu. ft.) or K size (249 cu. ft.).

Full cylinders usually have between 2000 and 2200 pounds per square inch (PSI). The cylinders should be changed when the PSI drops below 200. Refer to the oxygen cylinder duration table in your textbook.

Skill practice

Goal
Change an oxygen cylinder.

Steps	
1.	Ensure the oxygen flow meter is off.
2.	Close the tank valve by turning it clockwise using the wrench/key or toggle.
3.	If there is any residual pressure, open the flow meter until the regulator pressure gauge drops to zero.
4.	Close the flow meter and unscrew the T-handle on the regulator by turning counter-clockwise.
5.	Remove the regulator from the cylinder’s medical post. Secure the empty tank, and ensure it is tagged out as empty.

Steps	
6.	Inspect the condition of the regulator: • Make sure there is no oil, grease, or dirt anywhere on the regulator or gasket. If the gasket is in poor condition, replace it. • Make sure the pins in the regulator's indexing system are in place.
7.	Remove the plastic cover from the medical post on the new cylinder. Inspect the condition of the medical post. Make sure there is no oil, grease or dirt on it. Make sure there is no smoking. Do not cover the port with your hand. Make sure the cylinder oxygen port is not pointing at anyone.
8.	Use the wrench/key or toggle to quickly crack open and close the valve on the medical post to blow off any dust that may have accumulated while in storage.
9.	Place the regulator yoke over the medical post of the new cylinder. Make sure that the regulator pin indexing system engages properly with the pin slots on the medical post.
10.	Turn the T handle on the regulator clockwise to secure it to the new cylinder. Hand-tighten only.
11.	Reopen the cylinder valve by turning counter-clockwise using the wrench/key or toggle. If you hear hissing when the valve is opened, the regulator is not correctly seated against the medical post. Turn off the valve. Check that the regulator pins are indexed correctly and that a gasket is in place. Retighten. If hissing continues, change tank. The regulator will register the tank contents. A full cylinder ranges between 2000 and 2200 PSI.
12.	If the oxygen is not required for a worker at this step, close the cylinder valve by turning the valve to the right (clockwise) using the wrench/key or toggle until tight. The cylinder is closed but there will still be residual pressure registering on the regulator.
13.	To release the residual pressure, turn on the flow meter until the pressure registered on regulator drops to zero, then turn the flow meter back to zero.

Steps	
14.	Make sure the new cylinder is secured appropriately in the oxygen kit.

Summary

1. Which method should you use to deliver high concentrations of oxygen to a spontaneously breathing worker?
2. What are the advantages and disadvantages of the nasal cannula and the face mask?
3. When should a partial rebreathing mask be used?
4. What does a pulse oximeter do?
5. How should oxygen cylinders be stored?
6. When should an oxygen cylinder be changed?

Lesson 7.6: Administering oxygen

Learning outcomes

1. Administer oxygen to a worker.
2. Demonstrate safe handling of oxygen delivery systems.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 7: Oxygen therapy and equipment

Skill practice

Goal
Administer oxygen to a worker.
Scenario
You've completed the primary survey, called for the emergency transport vehicle (ETV). While waiting for the ETV, you have taken a set of vitals. The vitals indicate that this worker is very sick. You decide to perform a critical intervention. The worker needs oxygen.

Steps	
1.	Inspect the cylinder, regulator, regulator inlet, cylinder outlet, and internal surfaces.
2.	Ensure the cylinder is in a secure position and the regulator is in the off position. Tubing should be attached.
3.	Open the cylinder valve counter-clockwise by one-quarter to one-half a turn.
4.	Open the regulator flow valve clockwise until the flow gauge reaches the desired rate (litres per minute).
5.	Flow oxygen for a few seconds to clear out possible contaminants such as dust before placing the nasal cannula or mask on the worker.
6.	When finished, close the cylinder valve by turning it clockwise. The regulator pressure will bleed to 0. Do not over-tighten the valve.
7.	Turn the regulator flow meter back to 0 by turning it counter-clockwise.

Lesson 7.7: Bag-valve mask

Learning outcomes

1. Perform assisted ventilation using a bag-valve mask.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

The bag-valve mask is generally only used once en route or while waiting for transport after the worker has been fully packaged and the secondary survey has been completed. This method requires considerable expertise, training, and practice to use effectively.

This fact is often not recognized by first aid personnel. To ensure the worker's airway is

managed correctly and to establish a good seal between the mask and the worker's face, the bag-valve mask should only be used when there are two attendants trained in its use.

Skill practice

Goal
Assist ventilation in a worker who is not breathing effectively.
Scenario
You've completed the primary survey, provided critical interventions for a worker who is not breathing effectively, and packaged the worker. You completed the secondary survey and found no additional injuries. A helper is assisting ventilations using the pocket mask. You're trained in how to use a bag-valve mask and have someone to help you. En route to the hospital, you use a bag-valve mask to help the worker breathe.

Steps	
1.	Attach oxygen to the bag-valve mask at 15 L/minute. If oxygen is not available or the flow is insufficient to keep the reservoir inflated, remove the reservoir.
2.	Place the apex of the mask over the bridge of the worker's nose and the base below the lower lip against the chin.
3.	Ask the helper to hold the mask snugly against the worker's face with their thumbs along either side of the mask and their fingers under the angle of the worker's jaw (similar to the jaw thrust).

Steps	
4.	Compress the bag while they hold the mask. Ventilate the worker once every 5 seconds. Time the ventilations with the worker's breathing, if possible. The 2 most common reasons for inadequate ventilation with this device are failure to maintain a proper jaw position and an ineffective seal. If ventilation is not effective, use a pocket mask.

Summary

1. What are the two most common reasons for ineffective ventilation with a bag- valve mask?
2. What should you do if the assisted ventilation with a bag-valve mask is not effective?

Lesson 7.8: Cardiopulmonary resuscitation and automated external defibrillator (CPR/AED)

Learning outcomes

1. Describe when cardiopulmonary resuscitation (CPR) is needed.
2. Provide CPR to an adult.
3. Describe the signs and symptoms of cardiac arrest.
4. Describe what defibrillation is.
5. Describe the importance of workplace policy and procedures for automated external defibrillator (AED) use.
6. Explain how to inspect AED equipment.
7. Apply and use an AED on an adult.
8. Perform two-person CPR.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 13: Cardiopulmonary resuscitation (CPR)

Theory

When to provide CPR

Provide CPR whenever a worker:

- Is unresponsive
- Is not breathing normally or not breathing at all
- Has no pulse or you are not sure if there is a carotid pulse

All workers who are in cardiac arrest should receive resuscitation unless exceptional circumstances apply. A hypothermic worker in cardiac arrest must be packaged and transported immediately while CPR is being administered. All other cardiac arrest workers are managed at the scene and would not be packaged until a pulse is restored.

If cardiac arrest occurs once the worker is en route, the emergency transport vehicle should pull over when it's safe to pull off the road and CPR must be administered at the roadside. Ensure BC Emergency Health Services is updated and is aware of your new location.

Chest compressions used to administer CPR are also used to help clear an unresponsive worker's airway. This will be covered in a later lesson.

Workplace AED policies and procedures

If an AED is provided at a workplace, the written policies and procedures for first aid must describe who will access the AED, how to access the AED, and where the AED is located (as per section 3.17 of the Occupational Health and Safety Regulation). Inspection and maintenance records may be required for the AED as per the manufacturer's instructions. Some inspections may be daily, weekly, monthly, etc. (sections 4.3 and 4.9 of the OHS Regulation).

The AED user manual and spec sheet will allow for the development of a checklist that the first aid attendant should use to conduct inspections of the workplace units.

The brand of AED training simulator used in an advanced first aid or first aid equivalent course may be different from the brand of AED found in a workplace. The worker must be trained in the use of the specific equipment and authorized to use it (section 4.10 of the OHS Regulation).

Do not start CPR in the following circumstances:

1. There is clear evidence a death has occurred (for example, there is decapitation, transection, or decomposition).
2. The adult worker was completely submerged in water for more than 60 minutes.
3. There is another worker with a life-threatening condition. If there are multiple workers and no other attendants, workers with vital signs who are found in life-threatening condition take precedence over those in cardiac arrest.
4. You were notified previously that the worker has a do-not-resuscitate order.

Advanced care directive and do-not-resuscitate orders

Some people think about and document the health care treatment they would like to be given in the event that they become incapable of deciding for themselves. The documents used to record these choices are called advanced care directives and do-not-resuscitate orders.

As part of this process, a person may ask that they not be given CPR if they become unresponsive. People who have a no-CPR medical order are encouraged to wear a medical bracelet that indicates their wishes.

Cardiac arrest

Sudden cardiac arrest is an abrupt, unexpected loss of heart pump function. A worker who is unresponsive, not breathing normally or at all, and has no pulse is assumed to be in cardiac arrest.

Skill practice

Goal
Provide CPR. This demonstration requires at least 5 cycles of 30:2.

Steps	
1.	Conduct a scene assessment.
2.	Assess the level of consciousness.
3.	Activate the workplace emergency response procedure.
4.	Assess the ABCs: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for air movement, for 5 seconds. The worker is not breathing. c. With one hand, carefully slide your fingers to the carotid pulse and assess for 5 seconds. There is no pulse.
5.	Perform 30 chest compressions: a. Ensure that the worker is on a hard surface, and expose the chest. b. Kneel beside the worker with your knees apart. c. Place the heel of your hands on the centre of the worker's chest. d. Interlock your fingers and straighten your arms until your elbows lock. Ensure your shoulders, arms, and hands are directly over the centre of the worker's chest. e. Press straight down. f. Push hard; push fast. Compress at least 5 cm (2 in.) at a rate of at least 100 compressions per minute. Allow chest to recoil.

Steps	
6.	After 30 compressions, do the following if the worker remains unresponsive: a. Open the airway. b. Using a pocket mask, ventilate the worker with 2 breaths. c. Resume 30 chest compressions and 2 ventilations. Repeat until: the worker has been resuscitated; the AED arrives and is ready to apply; medical help arrives and tells you to stop; another first aid attendant takes over; you're too tired to continue; or 30 or more minutes have passed without any return of spontaneous breathing or pulse.

Theory

Electrical activity in the heart

The heart contains an electrical system that sends out impulses that tell it when to contract to pump blood. The leader of this electrical system is the sinoatrial (SA) node. The SA node is the heart's pacemaker and is part of the autonomic nervous system.

Defibrillation

With defibrillation, you use an AED to send a shock through the heart. This shock stops all electrical activity and allows the SA node to regain its role in providing effective electrical impulses.

Ventricular fibrillation (VF) and ventricular tachycardia (VT) are abnormal heart rhythms that need to be defibrillated immediately. If a worker is in cardiac arrest, use the AED immediately, if available.

Inspecting an AED

Inspection requirements vary depending on the manufacturer. Check the manufacturer's instructions that came with your AED unit.

A typical inspection includes the following:

1. Check that all of the components are in the kit including the AED, an extra battery, two sets of pads, at least one disposable razor (two or more is preferable), a cloth or towel, and a user manual.
2. Check that the pads and batteries are within their expiration dates. If the manufacturer recommends it, put the AED through a self-check to make sure it's working properly.
3. If any faults are discovered, contact your AED supplier immediately.

Skill practice

Goal
Use an AED on an adult worker while a helper performs CPR.

Steps	
1.	Prepare the worker and attach the AED: a. Bare the chest if not already bare. b. Turn on AED and follow voice prompts. c. Shave hair, remove med patches, and make sure the chest is dry. d. Apply pads at least 2.5 cm (1 in.) from any implanted devices.
2.	Analyze the heart rhythm: a. When the pads are attached, tell the helper, "Stop compressions and don't touch the worker." b. Make sure no one is touching the worker and look around to make sure everyone is standing clear. c. Follow AED voice prompts or press the Analyze button.
3.	Deliver a shock: a. Say, "I'm clear. Everyone is clear. Do not touch the worker." b. If prompted to do so, press the Shock button.
4.	If worker remains unresponsive after the shock or you get a "No shock" prompt: a. Continue administering CPR for 2 minutes or 5 cycles of 30:2. b. Reanalyze the heart rhythm when prompted by the AED. c. If a helper is available to take over CPR, then measure and insert an oral airway, if available. Apply oxygen to the pocket mask if available.

Skill practice

Goal
Provide CPR and use an AED on an adult worker. CPR requires at least 5 cycles of 30:2 and a second shock is advised.

Goal
Scenario
A worker was found slumped over in a chair and was carefully positioned on the floor by co-workers. When you arrive, you rule out the need for spinal motion restriction. A helper tells you that an AED is being retrieved.

Steps	
1.	Conduct a scene assessment.
2.	Assess the level of consciousness. The worker is unresponsive to voice and pain.
3.	Activate workplace emergency response procedures.
4.	Assess the ABCs: a. Open the airway with a head-tilt chin-lift. b. Look, listen and feel for air movement for 5 seconds. The worker takes only occasional gasps. Airway looks clear. c. Maintain an open airway and feel for a carotid pulse for the next 5 seconds. After 10 seconds of assessing airway, breathing, and circulation; you can't feel a carotid pulse. This worker is in cardiac arrest. d. Ensure BCEHS is updated and ask if the AED has arrived. The AED has not arrived.

Steps	
5.	Perform 30 chest compressions: a. Ensure the worker is on hard surface and expose their chest. b. Kneel beside the worker with your knees apart. c. Place the heel of your hands on the centre of the worker's chest. d. Interlock your fingers and straighten your arms until your elbows lock. Ensure your shoulders, arms, and hands are directly over the centre of the worker's chest. e. Press straight down. Push hard, push fast. Compress at least 5 cm (2 in.) at a rate of at least 100 compressions per minute. Allow the chest to recoil.
6.	After 30 compressions, if the worker remains unresponsive: a. Open the airway. b. Using a pocket mask, ventilate the worker with 2 breaths.
7.	Repeat Step 5 and 6 until any of the following occur: ☐ Spontaneous circulation and breathing are restored. ☐ Another trained attendant takes over. ☐ Worker is transferred to BCEHS. ☐ You are too tired to continue. ☐ Thirty minutes pass without even a temporary return of normal breathing (worker is not hypothermic). If a helper is available, you can switch roles every 2 minutes or 5 cycles of 30:2.
8.	Have a helper take over CPR, prepare the worker, and attach the AED: a. Bare the chest if not already bare. b. Turn on AED and follow voice prompts. c. Shave hair, remove med patches, and make sure the chest is dry. d. Apply pads at least 2.5 cm (1 in.) from any implanted devices.
9.	Analyze the heart rhythm: a. When the pads are attached, tell the helper, "Stop compressions and don't touch the worker." b. Make sure no one is touching the worker and look around to make sure everyone is standing clear. c. Follow the AED voice prompts or press the Analyze button.

Steps	
10.	Deliver a shock: a. Say, "I'm clear. Everyone is clear. Do not touch the worker." b. If prompted to do so, press the Shock button.
11.	If the worker remains unresponsive after the shock or you get a "No shock" prompt: a. Continue administering CPR for 2 minutes or 5 cycles of 30:2. b. Reanalyze the heart rhythm when prompted by the AED. c. Measure and insert an oral airway, if available. d. Apply oxygen to the pocket mask, if available.
12.	Tell the attendant administering CPR when you're ready to take over CPR. Switch roles every 2 minutes.

You are required to perform CPR compressions during this course. Performing CPR compressions on a classmate for real could result in discomfort or injury. **You must only perform chest compressions on a mannequin.**

Demonstration materials required

- Gloves
- Pocket mask with one-way valve
- Mannequin
- AED
- Safety eyewear

Skill practice — Two-person CPR

The attendant is called to the washroom for an unresponsive worker.

Assess		Response
1.	Scene assessment The first aid attendant is alerted about a medical situation in one of the restrooms.	• No danger • One worker • Co-workers in the area report one worker suddenly felt ill and was helped to the floor. • No trauma

Assess		Response
2.	Assess worker's level of consciousness using the AVPU system.	• The worker does not respond to your voice or pain.
3.	Approach the worker from the front, identify yourself, and attempt to talk with them. Pinch the finger on the worker's hand closest to you.	The worker does not respond to pain.
4.	Transport decision	Because this worker is not responsive, they require urgent medical attention.
5.	Activate the worksite emergency response procedures: • Instruct the co-worker to activate the procedures. • When calling the ambulance, say "There is an unresponsive adult worker" and to report back.	
6.	First attendant performs primary survey: • From the side of the worker, open the airway using a head-tilt chin-lift. • Assess breathing for 5 to 10 seconds.	• There is no breathing.
7.	Request any other first aid attendants or workers trained in CPR to assist. Designate a co-worker to update the ambulance that you are starting CPR/AED.	

Assess		Response
8.	First attendant: Administer 2 minutes of CPR chest compressions. Second attendant: Prepare to ventilate worker after 30 compressions. Repeat 30 compressions and 2 breaths for a total of 5 cycles.	Administer 30 chest compressions and 2 breaths (ventilations): • Hand position is in the centre of the chest between the nipples. • Chest is compressed at least 5 cm (2 in.). • Chest compressions are at a rate of at least 100 to 120 per minute. • Chest wall rises with each ventilation. Allow the chest to recoil after each compression.
9.	Repeat cycles with 2 minutes of CPR until any of the following occurs: • A physician assumes responsibility. • The worker is transferred to ambulance personnel. • The attendant is physically exhausted and unable to continue. • Spontaneous breathing and circulation are restored.	Switch the roles of compressor and ventilator every 2 minutes.

(10 minutes)

• Working in groups of 2 with a mannequin:	**Student practice**
• Each participant will manage an unresponsive worker in respiratory and/or cardiac arrest. • If time permits for a third and fourth rotation, have the AED arrive during the second set of 30 compressions.	Students should practice until they can demonstrate proficiency, without instructor guidance for CPR, and with minimal guidance for the use of an AED.

Summary

1. When is CPR needed?
2. To what depth should chest compressions be given?

3. At what rate should chest compressions be given?
4. What should happen to the worker's chest in between chest compressions?
5. What is sudden cardiac arrest?
6. What happens when you use an AED?

Day 2 Homework (Module 8)

Being a first aid attendant, part 2 of 2

Read Chapter 1 in the textbook. Bring notes on the following to the next class:

1. As a first aid attendant, what is your role in the occupational health and safety management system for your workplace?
2. Describe the legislation that sets out the basic principles of occupational health and safety.
3. What first aid policies and procedures are required by legislation?

Module 8

Being a First Aid Attendant

8. Being a First Aid Attendant

8.1. Role of attendant

Lesson 8.1: Role of attendant

Learning outcomes

1. Describe what first aid is.
2. Describe the role and responsibilities of a first aid attendant.
3. Describe the scope of the role played by a first aid attendant.
4. Describe the legislation that protects first aid attendants.
5. Explain what it means to have a worker's actual or implied consent.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 1: Introduction to occupational first aid

Pair and share

Instructions

Working in pairs, answer the question assigned to you. When asked, share your answer with the whole class.

Questions

1. What is first aid?
2. Describe your role and responsibilities as a first aid attendant.
3. Describe the scope of your role as a first aid attendant.
4. Describe the legislation that protects first aid attendants.
5. What does it mean to have a worker's actual or implied consent?

Answers

Summary

1. What are your key responsibilities as a first aid attendant?
2. What is the scope of your role as a first aid attendant?
3. Why is worker consent important?

Module 9

Airway and Breathing — Unresponsive Worker

9. Airway and Breathing — Unresponsive Worker

9.1. Signs of airway obstruction
9.2. Partial airway obstruction (fluids)
9.3. Complete airway obstruction
9.4. Signs of respiratory emergencies
9.5. Respiratory distress
9.6. Respiratory arrest

Lesson 9.1: Signs of airway obstruction

Learning outcomes

1. Describe the signs and symptoms of airway obstruction.
2. Describe the precautions when performing airway manoeuvres.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Theory

Breathing

Air is moved into the lungs and expired through the air passages. The upper air passages consist of the nose and mouth. The back of the throat (pharynx) divides at its lower portion to become the windpipe (trachea) in front and the food pipe (esophagus) in back. A small flap of tissue called the epiglottis closes when we swallow and protects the windpipe (trachea) opening. The trachea extends to the centre of the chest and is supported by rings of cartilage. The air passages branch off and become smaller and smaller. The smallest of these passages are called alveoli, and this is where the gas exchange takes place in the lungs.

Signs of airway obstruction

As you approach, ask what happened. If the worker is unable to speak clearly, you should suspect airway obstruction. Look and listen for signs of airway obstruction.

Signs of partial obstruction include:

- Noisy, congested, or gurgling breathing
- Hoarseness
- High-pitched noise on inspiration or expiration (stridor)
- Blue lips and face (cyanosis)

Signs of complete obstruction include:

- Being unable to speak or cough, if conscious
- Blue lips and face (cyanosis)
- No movement of air in or out of the mouth
- Chest wall doesn't rise with ventilation

Causes of airway obstruction

Airway obstruction may be caused by:

- Blockage by the tongue (common cause with unresponsive supine workers)

- Blockage by foreign bodies such as broken teeth, food, fluid or other objects (snow or dirt)
- Blockage by vomitus or blood
- Swelling from throat injury

Precautions

The airway-clearing manoeuvre you should use depends on whether there is a possible spinal injury and whether the worker is responsive.

Refer to the Priority Action Approach and Critical Interventions flow chart in your textbook. Review decisions related to airway manoeuvres.

Indications of a clear airway

With a conscious worker, a clear airway is indicated by:

- Clear speech (even if the worker is confused)
- Effortless and quiet breathing

With an unresponsive worker, a clear airway is indicated by:

- The flow of air in and out of the mouth and nose
- The chest and abdomen rising on inspiration
- Quiet and effortless breathing

Summary

1. What are the signs of a partial airway obstruction?
2. What are the signs of a complete airway obstruction?

Lesson 9.2: Partial airway obstruction (fluids)

Learning outcomes

1. Manage an unresponsive worker with a partial airway obstruction due to fluids.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Skill practice

Goal
Clear and maintain the airway of an unresponsive worker who has a partial airway obstruction due to fluids.

Goal
Scenario
A worker was struck in the face by the moving hook on an overhead warehouse crane. The worker was knocked to the ground. When you arrive, the worker is lying supine and not moving, with blood on their face.

Steps		
1.	Conduct a scene assessment.	The crane hook is secure and the crane has been deactivated. There are no hazards. One person is injured. Based on mechanism of injury, spinal motion restriction is required.
2.	Assess the worker's level of consciousness. • Approach the worker from the front, identify yourself, and attempt to communicate. • Do not attempt painful stimulus due to the urgent need to manage the airway.	Worker doesn't respond to verbal stimulus. There is blood in and around the worker's mouth. You hear gurgling. Clearing the airway is a priority. Do not delay.
3.	Activate the workplace emergency response procedure: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unconscious adult with facial trauma.	
4.	Manually stabilize the head and neck.	

Steps		
5.	Manage the airway: a. Assess the airway with a jaw thrust. b. Ask for help, if available. c. Roll the worker into the lateral position while you maintain stabilization of the head and neck. d. If possible, train a helper to take over manually stabilizing head and neck in the lateral position. Tell the helper: "Grasp the back of the worker's head with your hand that's on the worker's hip. Use your forearm to prevent the worker from moving away from you. Then, with the hand that's on the worker's shoulder, cup your hand under the worker's cheek, and brace your elbows against worker's chest and hold in this position." e. With the worker's head, neck and upper body supported in the lateral position by the helper, finger sweep the mouth and reassess the airway while lateral.	Worker is gurgling. There is fluid in the airway. Finger sweep does not fully clear the airway.

Steps		
	If previous methods don't clear the airway, apply suction: a. Put on wraparound safety glasses, goggles, or a face shield, and use a suction barrier device, if available. b. Attach a clean suction tip and tubing to the battery-operated machine or use the manual suction device in the kit. c. Suction for no more than 20 seconds. Suction only as far back in the throat as you can see. Be gentle. Aggressive suctioning may stimulate retching or vomiting, or cause injury. The suction tip may clog. If it does, dip it into a small container of water or saline solution, or replace the suction tip with a new one.	Airway clears after suctioning.
6.	If airway continues to drain fluids: a. Ask your helper to maintain the worker in the lateral position and place something (e.g., a rolled or folded blanket) under the worker's head to maintain position. Complete the primary survey in this position. b. Suction as needed.	Airway is clear.

Steps		
	Reassess airway: a. Take over manual stabilization of the head and neck. b. Ask helper to put their hands back on the worker's shoulder and hip and prepare to reposition supine. c. Reposition worker supine. d. Apply jaw thrust. e. Reassess airway. f. If possible, get the helper to take over manual stabilization of the head and jaw thrust.	Worker breathes quietly.
7.	Measure and insert oral airway.	The worker accepts oral airway. Airway is still clear.
8.	Assess breathing: • Look, listen and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Worker continues to breathe normally.
9.	Assess the circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse present. No signs of shock. No injuries beyond facial trauma.
10.	Apply high-flow oxygen.	
11.	Apply a blanket for warmth.	
12.	Transport decision: rapid transport category	

Steps		
13.	Apply the modified NEXUS rule.	Since the worker is unresponsive, spinal motion restriction should be maintained.
14.	Apply a hard collar. Describe this and the remaining steps. There is no need to demonstrate.	
15.	Position and secure worker on a spine board or scoop-style stretcher.	
16.	Lift worker onto a basket stretcher.	
17.	Complete a secondary survey while waiting for transport or en route to hospital.	
18.	Complete a first aid record	

Summary

1. How can you tell if an unresponsive worker has a partial airway obstruction that is due to fluids?
2. How can you clear the airway of an unresponsive worker with a partial airway obstruction that is due to fluids?

Lesson 9.3: Complete airway obstruction

Learning outcomes

1. Manage an unresponsive worker with a complete airway obstruction.
2. Open a worker's airway using a head-tilt chin-lift.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Skill practice

Goal
Clear and maintain the airway of an unresponsive worker with a complete airway obstruction.
Scenario
A worker is found unconscious in a chair. As you approach, co-workers gently lay the worker supine. Use a mannequin for steps 1 through 11, but use classmates to practise positioning the worker prone.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Based on mechanism of injury, spinal motion restriction is not required.
2.	Assess the worker's level of consciousness. a. Approach the worker from the front, identify yourself, and attempt to communicate. b. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate means.	Worker does not respond to verbal stimulus. Worker does not respond to pain. Based on AVPU, the worker is unresponsive.
3.	3. Activate workplace emergency response procedures: Ask someone to call an ambulance or have an ETV prepared. If calling an ambulance, tell them there is an	

Steps		
	unconscious adult who was found in a chair.	
4.	Assess ABCs: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for air movement for 5 seconds. c. Assess carotid pulse for 5 seconds.	Worker is not breathing. Pulse is present.
5.	Ventilate the worker: a. Attempt to ventilate the worker using a pocket mask. b. Check head-tilt chin-lift and attempt to ventilate again.	No chest rise on first vent. No chest rise on second vent. There is a complete airway obstruction.
6.	Clear airway: a. Perform 30 chest compressions. b. Look in the mouth and remove any visible object. c. Attempt to ventilate the worker using a pocket mask. d. Repeat steps until able to ventilate.	A candy is seen and removed after the second set of compressions. Two breaths go in and the worker starts to breathe again.
7.	Assess carotid pulse for 5 seconds.	Pulse is present.
8.	Measure and insert oral airway.	The worker accepts the oral airway and is breathing normally.

Steps		
9.	Reassess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	You can hear and feel regular, quiet breathing. The chest rises and falls.
10.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present Normal, warm, dry skin. No cyanosis. No injuries.
11.	Apply high-flow oxygen.	
12.	Apply a blanket for warmth.	
13.	Place the worker in ¾-prone: a. Kneel beside the worker's abdomen. b. Reach across the worker and grasp the worker's clothing just below the waist. c. In one smooth movement, roll the worker against your thighs. d. Position the worker's leg to prevent the worker from rolling fully prone. All unconscious workers who do not require spinal motion restriction and are not actively being resuscitated should be placed ¾-prone.	
14.	Transport decision: rapid transport category	
15.	Position and secure the worker on a spine board or scoop-style stretcher Describe this and the remaining steps. There is no need to demonstrate.	

Steps		
16.	Reassess ABCs every 5 minutes.	
17.	Complete a secondary survey while waiting for transport or en route to hospital.	
18.	Complete a first aid record.	

Summary

1. How can you tell if an unconscious worker has a complete airway obstruction?
2. What should you do to remove the obstruction?
3. What should you do to maintain the airway?
4. How can you prevent a worker in the ¾-prone position from rolling?

Lesson 9.4: Signs of respiratory emergencies

Learning outcomes

1. Describe the major parts of the respiratory system and how they work.
2. Describe the signs and symptoms of respiratory distress and chest injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 6: Respiratory emergencies

Theory

Respiratory system

The major components of the respiratory system are the:

- Airway — nose, mouth, pharynx, trachea and bronchi
- Lungs — bronchioles, alveoli and pleura
- Thorax — muscles and bones involved in breathing

Breathing

During inhalation, the respiration muscles contract, pulling down the diaphragm and lifting the ribs. This enlarges the thoracic cavity. When the thoracic cavity enlarges, pressure decreases, causing a negative pressure within the chest. This causes lung tissue to expand and, provided

the airway is clear, air rushes in to fill the air sacs.

During exhalation, the respiration muscles relax, which decreases the size of the thoracic cavity. As the pressure in the chest increases, air is pushed out through the trachea.

Three processes are essential for the transfer of oxygen:

- Ventilation is the process by which air moves in and out of the lungs.
- Diffusion is the spontaneous movement between the gas in the alveoli and the blood in the capillaries in the lungs.
- Perfusion is the process by which the cardiovascular system pumps blood throughout the lungs.

Respiratory distress

General signs and symptoms of respiratory distress include:

- Shortness of breath (dyspnea)
- Gasping
- Blue lips, fingernails or earlobes (cyanosis)
- A history of chest trauma
- Pain at the injury site
- Pain when taking a deep breath

Chest injury

Signs and symptoms of chest injury include:

- Pain at the injury site
- Pain that's aggravated by breathing
- Shortness of breath or difficulty breathing
- Failure of one or both sides of the chest to expand normally
- Coughing up blood
- Rapid and weak pulse
- Cool or moist skin
- Blue lips, fingernails or earlobes (cyanosis)
- Air under skin tissues (subcutaneous emphysema)
- Anxiety and fear

COPD

Chronic obstructive pulmonary disease (COPD) is a long-standing obstructive airway disease. It affects more than one-fifth of all North American adults. The most common forms of COPD are emphysema and chronic bronchitis.

Chest injuries

A closed pneumothorax is caused by a blunt injury, such as a rib fracture, that punctures the lung. The chest wall is intact, but the lung tissue is torn, permitting air to enter the pleural space.

An open pneumothorax is caused by a penetrating chest wound, such as a metal rod puncturing the chest. With this type of injury, air passes back and forth through the wound on inspiration and expiration. Because this occasionally creates a sucking sound, this type of wound is called a sucking chest wound.

Asthma (bronchospasm)

Asthma is a disease characterized by attacks during which the airways narrow and breathing becomes difficult. The factors that cause an acute asthmatic attack depend on the person. An attack may be caused by an allergic reaction, respiratory infection, cold air, medication, emotional stress, exercise, or other irritants.

Suspected opioid overdose

Morphine, heroin, methadone, oxycodone, and fentanyl are all opioid drugs. Taking too much of any opioid drug can make breathing slow down or stop. Naloxone reverses this, restoring normal breathing and consciousness.

Summary

1. What are the major components of the respiratory system?
2. What happens during the two phases of breathing?
3. What are the signs and symptoms of a chest injury?

Lesson 9.5: Respiratory distress — unresponsive

Learning outcomes

1. Manage an unresponsive worker with respiratory distress.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 6: Respiratory emergencies

Skill practice

Goal
Manage an unresponsive worker with respiratory distress who is still breathing.
Scenario

Goal
A co-worker at a work camp is found unresponsive by housekeeping staff. The worker is on the couch in their room and there is an empty pain prescription bottle on the coffee table.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One person is injured. Based on the mechanism of injury, spinal motion restriction is not needed.
2.	Assess the level of consciousness. • Approach the worker from the front, identify yourself, and attempt to communicate. • Apply a painful stimulus by squeezing the nail bed on the worker's hand.	Worker doesn't respond to verbal or painful stimulus. Based on AVPU, they are unresponsive. Worker is obviously cyanotic (blue) around their lips and earlobes.
3.	Activate workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unconscious adult who was found on a couch.	
4.	Carefully reposition the worker onto the floor.	

Steps		
5.	Assess airway, breathing, and circulation: a. Apply a head-tilt chin-lift. b. Look, listen and feel for air movement for 5 seconds. c. With one hand, carefully slide your fingers to the carotid pulse and assess for 5 seconds. d. Attempt to ventilate the worker.	Airway is clear. Breathing is extremely slow and shallow. Chest barely rises. Skin is blue (cyanosis). Carotid pulse is present. Chest rises easily upon ventilation.
6.	Ventilate the worker: a. Every 5 seconds, give the worker one breath with a pocket mask. Time the ventilations with the worker's inhalations, if possible, for a combined total of 12 breaths per minute. b. If possible, train a helper to take over. Give clear directions. "Hold the mask with your fingers under the jaw and your thumbs on the mask." Make sure the helper keeps the mask seal tight and uses a sufficient volume of breath.	
7.	Measure and insert an oral airway.	Worker accepts the oral airway.
8.	Apply high-flow oxygen to the pocket mask. Tell the helper to continue venting.	
9.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse present Cold, dry, blue skin (cyanosis)

Steps		
10.	Other critical interventions: a. Administer naloxone if available. Giving naloxone can prevent death or brain damage from lack of oxygen during an opioid overdose. b. Keep the worker supine as they are being actively resuscitated. c. Apply a blanket for warmth.	A naloxone kit is not available at the camp.
11.	Transport decision: rapid transport category	
12.	Package the worker for transport. Describe this and the remaining steps. There is no need to demonstrate.	
13.	Complete a secondary survey while waiting for transport or en route to hospital.	
14.	Reassess the worker's ABCs every 5 minutes.	
15.	Complete a first aid record.	

Summary

1. If there is no need for spinal motion restriction, what manoeuvre should you use to open the airway?
2. Why should you administer naloxone to a worker with a suspected opioid overdose?

Lesson 9.6: Respiratory arrest

Learning outcomes

1. Manage an unresponsive worker in respiratory arrest.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 6: Respiratory emergencies

Skill practice

Goal
Manage an unresponsive worker who has stopped breathing.
Scenario
While repairing a light fixture, a worker contacted a live electrical line and fell 4 m (13 ft.) from their ladder to the concrete floor. When you arrive, the worker is lying supine.

Steps		
1.	Conduct a scene assessment.	There are no hazards. The scene has been secured. One person is injured. Based on the mechanism of injury, spinal motion restriction is needed.
2.	Assess the level of consciousness. • Approach the worker from the front, identify yourself, and attempt to communicate. • Apply a painful stimulus by squeezing the nail bed on the worker's hand.	The worker does not respond to verbal stimulus. The worker does not respond to pain stimulus. Based on AVPU, the worker is unresponsive.

Steps		
3.	Activate workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unconscious adult worker who has been electrocuted.	
4.	Manually stabilize the head and neck.	
5.	Apply a jaw thrust.	
6.	Assess airway, breathing and circulation: a. Look, listen and feel for air movement for 5 seconds. b. With one hand, carefully slide your fingers to the carotid pulse and assess for 5 seconds. c. Hand over manual stabilization of head and neck with jaw thrust to a helper, if available. d. Attempt to ventilate the worker twice to determine if the airway is clear.	There is no breathing. The carotid pulse is present. Helper can maintain the manual stabilization of head and neck with jaw thrust. Chest rises easily both times. Airway is clear.
7.	Ventilate the worker: a. Every 5 seconds, give the worker one breath with a pocket mask. Time the ventilations with the worker's inhalations, if possible, for a combined total of 12 breaths per minute. b. If possible, train a helper to take over. Give clear directions. "Hold the mask with your fingers under the jaw and your thumbs on the mask." Make sure the helper keeps the mask seal tight and uses a sufficient volume of breath.	

Steps		
8.	Measure and insert an oral airway.	Worker accepts oral airway.
9.	Apply high-flow oxygen to the pocket mask.	
10.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse present Cold, dry, blue skin (cyanosis) Burns on both hands (entry and exit wounds)
11.	Other critical interventions: a. Keep worker supine. b. Apply a blanket for warmth. c. Cover burns to both hands with moistened gauze dressings, if available.	
12.	Transport decision: rapid transport category	
13.	Apply the modified NEXUS rule.	Since the worker is unresponsive, spinal motion restriction should be maintained.
14.	Apply a hard collar. Describe this and the remaining steps. There is no need to demonstrate.	
15.	Attach and secure worker to spine board or scoop-style stretcher.	
16.	Lift the worker onto a basket stretcher.	
17.	Complete a secondary survey while waiting for transport or en route to hospital.	

Steps		
18.	Reassess worker's ABCs every 5 minutes.	
19.	Complete a first aid record.	

Summary

1. How do you determine whether an unresponsive worker with respiratory arrest should be ventilated?
2. How should you time the ventilations?

Module 10

Airway and Breathing — Conscious Worker

10. Airway and Breathing — Conscious Worker

10.1. Partial airway obstruction
10.2. Complete airway obstruction
10.3. Respiratory distress — no ventilation
10.4. Respiratory distress — ventilation

Lesson 10.1: Partial airway obstruction

Learning outcomes

1. Manage a conscious worker with a partial airway obstruction.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Skill practice

Goal
Clear and maintain the airway of a conscious worker with a partial airway obstruction.
Scenario
A worker stood up and began to cough forcefully immediately after taking a bite of food.

Steps		
1.	Conduct a scene assessment.	No hazards. One person is injured. Based on mechanism of injury, spinal motion restriction is not required.
2.	Assess the worker's level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open and they are coughing forcefully. Based on AVPU, the worker is alert.

Steps		
3.	Activate workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult with a partial airway obstruction (who is choking).	
4.	Assess airway.	The worker is talking, coughing forcefully, and saying, "I'm choking. Help me."
5.	Encourage coughing and position the worker to maximize their efforts to cough.	The worker continues to cough effectively. If the worker doesn't, you would perform back blows and abdominal thrusts to clear the obstruction.
6.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	The worker inhales adequately before each cough and is able to speak in short three- to four-word sentences between coughs. Both sides of the chest are rising equally.
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Modified rapid body survey (bleeding, fractures)	Pulse is present. Skin colour is warm and the face is flushed red. There are no injuries.
8.	Apply a blanket for warmth.	Worker doesn’t want a blanket.

Steps		
9.	Transport decision: rapid transport category (RTC).	The worker has a partial airway obstruction that is not relieving. He is showing signs of respiratory distress and becoming more agitated.
10.	Apply high-flow oxygen.	
11.	Package worker in position of comfort.	
12.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	Watch for signs of a complete airway obstruction.
13.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
14.	Complete a first aid record.	

Summary

1. How can you tell if a conscious worker has a partial airway obstruction?
2. What position should the worker be placed in?
3. What critical interventions should you provide?

Lesson 10.2: Complete airway obstruction

Learning outcomes

1. Manage a conscious worker with a complete airway obstruction.
2. Perform back blows and abdominal thrusts.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 5: Airway management

Skill practice

Goal
Clear and maintain the airway of a conscious worker with a complete airway obstruction.
Scenario
While eating a doughnut during a tailgate safety meeting, a worker starts to choke and stands up, clutching their throat with a look of panic in their eyes.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One worker is injured. Based on mechanism of injury, spinal motion restriction is not required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	Eyes are open, but the worker is unable to speak. Based on AVPU, the worker is alert.
3.	Activate workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult with a complete airway obstruction (who is choking).	
4.	Assess the airway. Ask, "Are you choking?"	Worker's eyes follow you, but they are unable to speak. The worker nods, confirming that they are choking. This is a

Steps		
		complete airway obstruction.
5.	Perform back blows: a. Tell the worker what you will be doing. b. Place your arm across the worker's upper body as support and brace yourself. c. Give up to 5 forceful back blows. Back blows, abdominal thrusts or chest thrusts are only used on a conscious worker with a suspected foreign-body obstruction of the upper airway.	
6.	If back blows don't dislodge the object, and the worker is not too large to manage or obviously pregnant, perform abdominal thrusts: a. Stand behind the worker and place one of your legs between their legs and brace yourself, locate the top of the worker's hips with your forearms and wrap both of your arms around the worker's waist. If you can't get your arms around the worker, use chest thrusts. b. Make a fist with one hand and hold your fist with your thumb against the worker's abdomen in the midline, just above the navel. c. With your other hand, grasp your fist and press it into the worker's abdomen with a quick, forceful thrust directed inward and upward. d. Give up to 5 abdominal thrusts.	The worker is not too large to manage and is not obviously pregnant.
7.	Repeat back blows and abdominal thrusts until the object clears, the worker starts to cough, or the worker becomes unresponsive.	The airway clears, the worker gasps and starts coughing forcefully.

Steps		
8.	Position the worker for comfort and assess the breathing: • Look, listen and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Worker is coughing and taking deep breaths. Both sides of the chest are rising equally. Breathing is effective
9.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Modified rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is normal, warm, and dry. Worker is complaining of abdominal pain where you performed abdominal thrusts.
10.	Apply high-flow oxygen.	
11.	Apply a blanket for warmth.	
12.	Transport decision: medical aid	
13.	Package the worker.	
14.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
15.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
16.	Complete a first aid record.	

Summary

1. How can you tell when a conscious worker has a complete airway obstruction?
2. When should back blows and abdominal thrusts be used?
3. What should you do if you can't get your arms around the worker's waist?

Lesson 10.3: Respiratory distress — no ventilation

Learning outcomes

1. Manage a conscious worker with respiratory distress who does not need to be ventilated.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 6: Respiratory emergencies

Theory

Chest injuries

With a chest injury, you won't be able to tell the magnitude of the injury from looking at the worker. There may be few external signs of injury, yet there could be extensive internal damage. Unless treated, these injuries can be rapidly fatal.

Signs and symptoms of a chest injury include:

- Pain at the injury site
- Pain when breathing
- Shortness of breath or difficulty breathing
- Failure of one or both sides of the chest to expand normally
- Coughing up blood
- Rapid and weak pulse
- Cool or moist skin
- Blue lips, earlobes or nail beds
- Air under the skin tissues

Types of chest injuries

There are two types of chest injuries: closed and open.

With a closed chest injury, the skin is intact. But there could be serious internal damage. Any time that a worker has a significant impact to the chest, such as a crush injury, you should suspect a closed chest injury.

With an open chest injury, there are signs that the chest wall has been penetrated by a knife, bullet, broken rib, or other sharp object. To avoid making the injury worse, do not remove the protruding object from the wound.

Ventilation

You should ventilate all workers who are not breathing effectively. They may be panicking because they feel like they can't breathe.

Ventilate if the worker:

- Has breathing that is too rapid, too slow or too shallow
- Has blue lips, earlobes or nail beds
- Can only speak one or two words without gasping

Skill practice

Goal
Manage a conscious worker with respiratory distress who does not require ventilation.
Scenario
A firefighter who had been fighting a forest fire returns to the bush camp to recover. The worker is having trouble breathing and is coughing a lot.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One person is injured. Based on the mechanism of injury, spinal motion restriction is not needed.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open. Based on AVPU, they are alert.

Steps		
3.	Activate the workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult with respiratory distress due to smoke inhalation.	
4.	Assess airway.	The worker is coughing and short of breath, but able to talk. Airway is clear.
5.	Position worker for ease of breathing and assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	The worker is coughing and short of breath, but able to speak in four- to five-word sentences between coughs.
6.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Modified rapid body survey (bleeding, fractures)	Pulse is present. No signs of shock. Worker has small amounts of black soot on their face, including around the mouth and nostrils.
7.	Apply high-flow oxygen by a non-rebreathing mask.	Smoke inhalation
8.	Other critical interventions: a. Keep worker in an upright, comfortable position to facilitate easier breathing. b. Apply a blanket for warmth.	
9.	Transport decision: rapid transport category	

Steps		
10.	Package in a comfortable position.	
11.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
12.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
13.	Complete a first aid record.	

Summary

1. How can you determine whether a conscious worker in respiratory distress should be ventilated?
2. All workers in respiratory distress should be given oxygen, what flow and delivery device should be used?

Lesson 10.4: Respiratory distress ventilation

Learning outcomes

1. Manage a conscious worker with respiratory distress who needs to be ventilated.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 6: Respiratory emergencies

Theory

You should ventilate workers who have a carotid pulse but are not breathing effectively. Their breathing may be too fast/rapid, too slow, or too shallow. They may have blue lips, earlobes, and nail beds. If conscious, they may only be able to speak one or two words without gasping. They may be panicking because they feel like they can't breathe.

Skill practice

Goal
Manage a conscious worker with respiratory distress who requires ventilation (open pneumothorax).
Scenario
A worker was not wearing fall restraint and fell 4.5 m (15 ft.) from a building. The worker fell onto a pile of debris. When you arrive, the worker is sitting, struggling to breathe, and holding their chest.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One person is injured. Based on the mechanism of injury, spinal motion restriction is required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open and they respond with clear speech. Based on AVPU, the worker is alert.
3.	Activate the workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult who has taken a significant fall and is showing signs of respiratory distress.	

Steps		
4.	Manually stabilize the back of the worker's head and neck from the side of the worker.	
5.	Ask a helper to kneel down across from you and lay the worker supine. Have the helper kneel at the top of the worker's head and manually stabilize the head and neck.	Tell the worker what you're going to do.
6.	Assess the airway.	The worker is able to talk. Their airway is clear.
7.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally) rate, rhythm, quality and chest wall movement.	The worker's breathing is laboured with shallow, rapid, gasping breaths. The worker is only able to speak one or 2 words before gasping for breath. They are very weak.
8.	Ventilate: a. Tell the worker that you are going to place a mask on their face to help them breath. Ask them to try not to fight it. b. Every 5 seconds, give the worker one breath using a pocket mask. Time the ventilations with the worker's inhalations, if possible, for a combined total of 12 breaths per minute. c. Train a helper to take over the ventilations. Give clear directions. "Hold the mask with your fingers under the jaw and your thumbs on the mask." Breaths should be 1 second long. Make sure the helper keeps the mask seal tight and uses a sufficient volume of breath.	

Steps		
9.	Apply high-flow oxygen to the pocket mask.	
10.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Expose and examine the chest • Rapid body survey (bleeding, fractures)	Pulse is present. Skin is cool, pale and clammy. There are lacerations and instability on the right lateral chest wall. There is an open wound on the right anterior chest wall.
11.	Other critical interventions: a. Leave worker supine. b. Apply a blanket for warmth. c. Cover the wound with gauze to control any bleeding, but do not seal the open wound.	
12.	Transport decision: rapid transport category Describe the remaining steps. There is no need to demonstrate.	
13.	Apply modified NEXUS rule: a. Decreased level of consciousness? b. Worker's age, what happened, pre-existing back or spine problems? c. Any distracting injuries? d. Palpate C-spine region. e. Concerning physical findings: • Midline spine or cervical pain • Can feel and move arms and legs without pain or unusual sensations • Numbness or tingling	The worker is unable to answer questions due to serious respiratory distress and attendant intervention. Cannot rule out spinal motion restriction.
14.	Apply a hard collar.	

Steps		
15.	Attach and secure worker to spine board or scoop-style stretcher.	
16.	Lift the worker onto a basket stretcher.	
17.	Complete a secondary survey while waiting for transport or en route to hospital.	
18.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
19.	Complete a first aid record.	

Summary

1. How should you train a helper to ventilate a worker?
2. What should you make sure the helper does when helping to ventilate a worker?
3. Should you bandage an open chest wound on a worker in respiratory distress?

Day 3 Homework

Types of shock (Module 12)

Read Chapter 9 in the textbook. Bring notes on the following to the next class:

1. What are the 5 types of shock?
2. What are the signs and symptoms of hypovolemic and cardiogenic shock?
3. What are the signs and symptoms of anaphylactic shock?
4. What are the signs and symptoms of neurogenic shock?
5. What are the signs and symptoms of septic shock?

Module 11

Cardiac Emergencies

11. Cardiac Emergencies

11.1. Circulatory system
11.2. Angina
11.3. Heart attack
11.4. Cardiac arrest

Lesson 11.1: Circulatory system

Learning outcomes

1. Describe the major parts of the circulatory system and how they work.
2. Describe the potential impact of arteriosclerosis on cardiovascular health.
3. Describe strategies for managing a worker with congestive heart failure.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 8: Anatomy and function of the circulatory system

Theory

The two systems

The circulatory system is made up of two separate systems:

- Pulmonary circulation, which provides circulation through the lungs
- Systemic circulation, which provides circulation through the rest of the body

Pulmonary circulation

Pulmonary arteries are the blood vessels from the right side of the heart. They branch and re-branch, finally forming the pulmonary capillaries. These capillaries form an extensive network over the surface of each alveolus in the lung tissue.

Oxygen from the alveoli is absorbed by the blood, and carbon dioxide from the blood is released to the alveoli. The oxygenated blood from the lungs returns to the heart and enters the left atrium. It then passes into the left ventricle and is pumped into the systemic circulation system again.

Systemic circulation

The systemic circulation system includes:

- Arteries, which carry blood away from the heart to the organs and other parts of the body
- Veins, which return blood from the capillary system to the heart
- Capillaries, which allow exchanges of oxygen, water and other nutrients between blood and body cells. This is also how carbon dioxide and other waste products pass from tissue cells into the blood to be carried away.

Heart

The heart is a hollow muscular organ, slightly bigger than a fist. It is located between the lungs, to the left of the midline of the body.

The heart is really a double pump. The right atrium of the heart receives the venous blood returning from body tissues. It delivers this venous blood to the right ventricle, which pumps the blood into the capillary network of the lungs. At this point, oxygen passes into the blood and carbon dioxide passes from the blood into the alveoli.

This blood, which is now rich in oxygen, flows from the lungs into the left atrium of the heart. The left atrium delivers this oxygenated blood to the left ventricle where it is pumped to all parts of the body.

The pumping action of the different chambers of the heart is initiated by the heart's intrinsic pacemaker, which is the sinoatrial node.

Arteriosclerosis

Atherosclerosis is the buildup of fatty deposits in the inner walls of an artery. These deposits, known as plaque, are made up of fats such as cholesterol. As these deposits build, the artery is narrowed and the flow of arterial blood is restricted.

Over time, calcium can be deposited at the site, causing the area to harden and the vessel to lose its elasticity. This affects blood flow and increases blood pressure. Blood clots may form and break off, causing heart attacks.

Congestive heart failure

With congestive heart failure, the lungs become swollen with blood and the worker has trouble breathing. All workers with congestive heart failure are in the rapid transport category (RTC).

Key strategies for helping a worker with congestive heart failure include the following:

- Keep the worker calm.
- Provide oxygen quickly.
- Suction the airway.
- Ventilate the worker, if needed.

Summary

1. How does the pulmonary circulation system work?
2. What does the systemic circulation system include?
3. How does the heart work?
4. What is atherosclerosis?
5. What are the key strategies for helping a worker with congestive heart failure?

Lesson 11.2: Angina

Learning outcomes

1. Manage a worker who is having an angina attack.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 12: Non-traumatic cardiac emergencies

Theory

Signs and symptoms of angina

With angina, the classic symptom is chest pain. There is a reduction of oxygen supply to the heart muscle due to narrowing of the heart's arteries. The lack of oxygen may cause pain that is similar to the pain of a heart attack, which is referred to as angina pectoris.

The pain may occur suddenly or build gradually. The pain is usually preceded by physical activity and is located beneath the sternum in the anterior chest. The pain may radiate across the anterior chest. It may also be felt in the arms, neck or jaw, or through the back.

Signs and symptoms of angina are:

- Pain (usually eases with rest and nitroglycerin; lasts less than 15 minutes)
- Nausea
- Apprehension or uneasiness
- Pallor
- Shortness of breath

Skill practice

Goal
Manage a worker who is having an angina attack.
Scenario
A weigh scale operator began experiencing chest pain. The worker’s co-workers asked you to come to the area and help him. When you arrive, the worker is sitting on a box, leaning against a stack of pallets. They say they were helping to ship an order when their angina started to flare up.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One worker. Since there is no trauma, spinal motion restriction is not required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	Based on AVPU, worker is alert.
3.	Place the worker in a comfortable position, preferably supine.	Worker prefers to stay where he is.
4.	Assess airway.	Worker speaks clearly. Airway is clear.
5.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is shallow, but it is effective.
6.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is cool, pale and dry. No pain anywhere else.
7.	Administer high-flow oxygen.	
8.	Because there is no history of trauma, assess the pain using PPQRRST (position, provoke, quality, radiation, relief, severity, timing).	Sub-sternal, heavy lifting, feels tired and short of breath. No radiation of pain. Rest helps. Pain was 5/10 at first but is getting better (2/10 now).

Steps		
		Started about 5 minutes ago.
9.	Help with medication: a. Ask if worker has taken any medications. If the worker took an erectile dysfunction medication (such as Viagra or Cialis) within the last 24 to 48 hours, they cannot take nitroglycerin. b. Check the expiry date of nitroglycerin. c. Help the worker take the nitroglycerin.	Worker hasn't taken any meds today. Angina meds are in the worker's coat pocket in the weigh scale shack. About 5 minutes after taking medication, the worker begins to feel better.
10.	Transport decision: Not enough information to decide if medical aid is needed	Not in RTC at this time
11.	Complete a secondary survey. Monitor worker for a while before allowing them to return to work	Worker is feeling better with rest and medication.
12.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	Second set of vitals shows improvement.
13.	Complete a first aid record.	Since worker's vitals are stable, the worker can return to less physical work.

Summary

1. What should you ask the worker before helping them take their nitroglycerin?
2. How can you decide whether the worker with angina can return to work?

Lesson 11.3: Heart attack

Learning outcomes

1. Manage a worker who is having a heart attack.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 12: Non-traumatic cardiac emergencies

Theory

Signs and symptoms of a heart attack

If part of the heart is deprived of oxygen for long enough, the heart muscle cells in that area will die. This is called a heart attack.

The pain may occur suddenly or build gradually. The pain is usually located beneath the sternum in the anterior chest and may radiate across the anterior chest. It may also be felt in the back, arms, neck or jaw. It may be described as choking, squeezing, vice-like, burning, or intense indigestion. Workers who are having a heart attack often experience a feeling of pressure.

A heart attack usually lasts longer than 30 minutes and is constant. It is not affected by coughing, movement, deep breaths, oxygen, angina medication, or rest.

Signs and symptoms of a heart attack are:

- Chest pain
- Apprehension and denial
- Marked weakness, especially in the arms
- Shortness of breath or difficulty breathing
- Sweating
- Pallor
- Nausea or vomiting, and the desire to defecate
- A weak, rapid and/or irregular pulse

Skill practice

Goal
Manage a worker who is having a heart attack.
Scenario

Goal
A worker walks into the first aid room and sits down. The worker tells you they have pain in their chest that started when they were shoveling snow. The worker looks pale and sweaty, and says they are very tired.

Steps		
1.	Conduct a scene assessment.	There are no hazards. One worker. Spinal motion restriction is not required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	The worker is very anxious, but able to speak clearly. Based on AVPU, the worker is alert.
3.	Position the worker in the most comfortable position, preferably supine if the worker is willing.	The worker prefers to sit and lean back in a chair or the cot.
4.	Assess the airway.	The worker is speaking clearly. Airway is clear.
5.	Assess the breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is shallow, but effective.

Steps		
6.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Modified rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is cool, pale and clammy. No pain elsewhere.
7.	Administer high-flow oxygen.	
8.	Determine if worker is on medication.	The worker is on medication for high blood pressure. No previous history of chest pain.
9.	Because there is no history of trauma, assess the pain using PPQRRST (position, provoke, quality, radiation, relief, severity, timing)	Pain is behind the breastbone. Feels vice-like and radiates down left arm. Severity is 7 out of 10m pain is constant and it is getting worse. Pain has lasted 40 minutes with no relief.
10.	Activate the workplace emergency response procedures. Ask someone to call an ambulance or have an ETV prepared.	Tell the dispatcher there's a responsive person with chest pain that started 40 or more minutes ago.
11.	Critical intervention: a. Check that the worker isn't allergic to ASA, having a heart attack due to stroke, or under 19 years of age. b. If no to all of the above, offer the worker two 80 mg chewable tablets of ASA or one regular-strength 325 ASA tablet to chew. It must be ASA, not acetaminophen or ibuprofen.	No allergies to ASA Not having a stroke Over 19

Steps		
12.	Transport decision: rapid transport category	
13.	Help the worker move into the basket stretcher or do a fore and aft lift. If you use a fore and aft lift, ask the worker to remain still.	
14.	Package the worker in a position of comfort with minimal securing. Describe this and the remaining steps. There is no need to demonstrate.	
15.	Continue with a secondary survey en route or while waiting for the ETV or ambulance.	
16.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
17.	Complete a first aid record.	

Summary

1. Where is the pain associated with a heart attack and what does it feel like?
2. What should you offer to a worker who is having a heart attack?
3. Are possible heart attacks in the rapid transport category?

Lesson 11.4: Cardiac arrest

Learning outcomes

1. Manage a worker who is in cardiac arrest.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 13: Cardiopulmonary resuscitation (CPR)

Skill practice

Goal
Manage a worker who is in cardiac arrest.
Scenario
A worker was found slumped over a table in the storeroom and was carefully laid supine on the floor by co-workers.

Steps		
1.	Conduct a scene assessment.	No hazards. One worker ill. Spinal motion restriction is not required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate stimulus.	Worker does not respond to verbal or pain stimuli.
3.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. If calling an ambulance, tell them there is an unresponsive adult and to report back.	The worker requires urgent medical help.

Steps		
4.	Assess airway, breathing, and circulation: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for air movement for 5 seconds. c. With one hand, carefully slide your fingers to the carotid pulse and assess for 5 seconds.	The worker is not breathing normally. There is no pulse.
5.	Perform 30 chest compressions: a. If an AED is available at the scene, apply it now (see step 9). Or send a helper to bring the AED. b. As you perform chest compressions, train a helper to take over, if possible. c. Make sure the worker is on a hard surface and expose their chest. d. Kneel beside the worker with your knees apart. e. Place your hands on the centre of the worker's chest. f. Interlock your fingers and straighten your arms until your elbows lock. g. Press straight down. Push hard, push fast. Compress at least 5 cm (2 in.) at a rate of at least 10 compressions per minute. Allow the chest to recoil. h. If available, have the helper take over compressions. Switch roles every 2 minutes or 5 cycles of 30:2.	AED is not at the scene. You have a helper that has had CPR training in the past. The helper takes over CPR.
6.	Measure and insert an oral airway.	
7.	Apply high-flow oxygen to pocket mask.	

Steps		
8.	If the worker remains unresponsive: a. Perform a head-tilt chin-lift. b. Using a pocket mask, ventilate the worker with 2 breaths after each cycle of 30 chest compressions. Use about 1 second per breath, just enough to make the chest rise.	
9.	When AED arrives, work around the helper, prepare worker, and attach the AED: a. Bare the chest if you haven't already. b. Turn on the AED and follow voice prompts. c. Shave hair, remove patches, and make sure the chest is dry. d. Apply pads at least 2.5 cm (1 in.) from implanted devices.	Chest is dry. No chest hair, medication patches, or medical devices
10.	Analyze the heart rhythm: a. Follow voice prompts or press the Analyze button. b. Tell the helper, "Stop compressions and don't touch the worker." c. Make sure no one is touching the worker and everyone is standing clear.	
11.	Deliver a shock: a. Say, "I'm clear. Everyone is clear. Do not touch the worker." b. If prompted to do so, press the Shock button.	
12.	Continue CPR/AED until: • Spontaneous circulation and breathing are restored. • Worker is transferred to BC Emergency Health Services (BCEHS). • You are too tired to continue. • Thirty minutes passes without even a temporary return of normal breathing or pulse.	

Steps		
13.	Confirm transport decision: rapid transport category.	
14.	Package worker if hypothermic; otherwise continue CPR/AED at the scene.	Worker is not hypothermic.
15.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
16.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
17.	Complete a first aid record.	

Summary

1. How can you determine whether a worker is in cardiac arrest?
2. How long should you continue CPR/AED?

Module 12

Shock

12. Shock

12.1. Signs of shock
12.2. Hypovolemic shock
12.3. Life-threatening allergic reaction

Lesson 12.1: Signs of shock

Learning outcomes

1. Describe what shock is.
2. List the types of shock.
3. Describe the signs and symptoms of shock.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 9: Shock

Theory

Definition of shock

A worker who is in shock has inadequate perfusion of their cells. This results in a lack of oxygen and ineffective waste removal at the cell level. Wastes begin to accumulate and cells begin to die. The body tries to compensate by increasing breathing and pulse rates. The blood vessels constrict in parts of the body — for example, the skin and digestive tract. Blood is moved away from non-vital organs so more blood is available to the vital organs such as the brain and heart.

Causes of shock

There are three main causes of shock:

- Low blood volume due to bleeding or fluid loss
- Excessively dilated blood vessels due to spinal injury or a severe allergic reaction called anaphylaxis
- Heart damage due to a heart attack or direct trauma to the chest

Class discussion

1. As a first aid attendant, what are the five main types of shock you may encounter? What is the cause of each type?

Answer

Group share

1. What are the signs and symptoms of hypovolemic and cardiogenic shock?
2. What are the signs and symptoms of anaphylactic shock?
3. What are the signs and symptoms of neurogenic shock?
4. What are the signs and symptoms of septic shock?

Answer

Class-based scenario exercise

Instructions

Identify the type of shock and its symptoms in each of the following scenarios.

Scenarios

1. While performing their regular duties, a shop supervisor developed chest pain. When you approach the supervisor, you notice that they are pale and sweaty. They appear anxious.
2. A piece of sheet metal fell off a forklift and struck a worker in the chest. The worker was thrown to the ground and is bleeding severely. As you approach, you notice that they are pale and sweaty. The worker's pulse is rapid and they have agonal breathing.
3. A worker was riding an ATV between worksites when it started to rain. The ATV skidded out of control, throwing the driver onto the road. The worker is having difficulty breathing and you can't find their radial pulses. Plus, the worker says that they can't feel their legs.
4. A tree planter was at the crew truck, preparing for work, when a bee stung their arm. The area around the sting is red and swollen. The worker has tingling around their mouth and is having difficulty breathing.

Answer

Summary

1. What are the main causes of shock?
2. What are the signs and symptoms of hypovolemic shock?
3. What are the signs and symptoms of anaphylactic shock?
4. What are the signs and symptoms of neurogenic shock?

Lesson 12.2: Hypovolemic shock

Learning outcomes

1. Manage a worker who is in hypovolemic shock.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 9: Shock

Skill practice

Goal
Manage a worker who is in hypovolemic shock.
Scenario
A piece of lumber fell off a conveyor and struck a worker in the lower-right ribs. The worker was knocked 4 m (13 ft.) to the ground. When you arrive, the worker is lying supine.

Steps		
1.	Conduct a scene assessment.	No hazards. One worker is injured. Based on the mechanism of injury, spinal motion restriction is required.

Steps		
2.	Assess the level of consciousness: • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open, they appear anxious, and they respond with clear speech. Based on AVPU, the worker is alert.
3.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, say there is a responsive adult who has taken a significant fall.	
4.	Manually stabilize the head and neck. If available, train a helper to take over manual stabilization. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."	
5.	Assess the airway.	The worker is talking normally. Airway is clear.
6.	Assess the breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is slightly rapid and shallow, but worker can speak in full sentences. Both sides of chest expand evenly. Not cyanotic (blue).

Steps		
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Expose and examine the chest • Rapid body survey (bleeding, fractures)	Radial pulse is weak and rapid. Skin is cool, pale and clammy. Worker is in shock. There is redness and bruising in the lower-right rib area. Possible internal bleeding of liver. No external bleeding.
8.	Apply high-flow oxygen.	
9.	Transport decision: rapid transport category	
10.	Other critical interventions: a. Leave worker supine and keep them still. b. Provide a blanket for warmth.	
11.	Apply modified NEXUS rule: a. Decreased level of consciousness? b. Worker's age, what happened, pre-existing back or spine problems? c. Any distracting injuries? d. Palpate C-spine region. e. Concerning physical findings: • Midline spine or cervical pain • Feel and move arms and legs without pain and unusual sensations • Numbness or tingling	The worker is reliable. The worker is 35 and does not have pre-existing problems or distracting injuries. No spinal abnormalities. No pain, unusual sensations, numbness, or tingling. Spinal motion restriction is not required.
12.	Package the worker in a comfortable position.	
13.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps.	

Steps		
	There is no need to demonstrate.	
14.	Reassess ABCs every 5 minutes.	
15.	Complete a first aid record.	

Summary

1. How can you tell if a worker is in hypovolemic shock?
2. What critical interventions can be provided for a worker in hypovolemic shock?

Lesson 12.3: Life-threatening allergic reaction

Learning outcomes

1. Manage a worker who is having a life-threatening allergic reaction.

Required reading

Advanced First Aid: A Reference and Training Manual

Chapter 9: ShockSkill practice

Goal
Manage a worker who is in anaphylactic shock.
Scenario
A tree planter was stung by a bee and is having an allergic reaction.

Steps		
1.	Conduct a scene assessment.	No hazards. One worker injured. Spinal motion restriction is not required.
2.	Assess the level of consciousness: • Approach the worker from the front, identify yourself, and attempt to communicate.	Eyes are open. Worker is anxious but responds with clear speech. There's a bee sting on their hand. They tell you they're allergic to them. Alert — based on AVPU.
3.	Activate workplace emergency response procedure: • Ask someone to call an ambulance or have an ETV prepared.	
4.	Assess the airway.	Worker is talking normally. Airway is clear.
5.	Assess the breathing: • Look, listen and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is shallow. Worker is wheezing.
6.	Assess circulation: • Radial pulse • Signs of anaphylactic shock (skin is flushed and red) • Rapid body survey (bleeding, fractures)	Medical alert bracelet indicates that worker is allergic to bee stings. Tells you, "I've used an auto-injector, but it isn't working." Has a rapid, weak pulse, abdominal cramps, swelling and tingling around mouth.

Steps		
7.	Treat severe allergic reaction: a. Ask a helper to retrieve the auto-injector from the kit. b. Check the expiration date of the auto-injector. c. Help worker use the epinephrine auto-injector.	The work truck first aid kit has another epinephrine auto-injector in it.
8.	Apply high-flow oxygen.	
9.	Provide a blanket for warmth.	
10.	Transport decision: RTC.	
11.	Assist worker to ETV or package in position of comfort.	
12.	Complete a secondary survey while waiting for transport or en route to hospital.	
13.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
14.	Complete a first aid record.	

Summary

1. How can you tell if a worker is in anaphylactic shock?
2. What critical interventions can be provided for a worker in anaphylactic shock?

Day 4 Homework

Obstetrical and nervous system

Read Chapter 14, Chapter 24, and Appendix A in the textbook. Take notes on the following:

1. What are the signs and symptoms of a pregnancy or childbirth emergency?
2. How can you help a worker who is pregnant or having a childbirth emergency?
3. What are the major parts of the nervous system and how do they work?

Module 13

Bleeding

13. Bleeding

13.1. Signs of bleeding
13.2. Using a tourniquet
13.3. Massive bleeding — conscious
13.4. Amputation
13.5. Massive bleeding — unresponsive

Lesson 13.1: Signs of bleeding

Learning outcomes

1. Describe the signs and symptoms of external bleeding.
2. Describe the signs and symptoms of internal bleeding.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 10: Bleeding and its managementTheory

External bleeding

The signs and symptoms of external bleeding depend on which vessel is mostly involved:

- Arterial bleeding — The blood spurts or pulses out, and is usually bright red.
- Venous bleeding — The blood comes in a steady flow and is usually darker than arterial blood.
- Capillary bleeding — There is a continuous, steady ooze.

External bleeding can usually be controlled by applying direct pressure on the wound. Although this may cause pain, it is necessary to control the bleeding. If bleeding is not controlled by direct pressure, a tourniquet should be applied proximal to the wound site.

Internal bleeding

Signs of symptoms of internal bleeding include:

- Cool, pale and clammy skin
- A weak and rapid pulse
- Shortness of breath and agonal breathing
- Faintness and dizziness
- Thirst, anxiety, and restlessness
- Nausea and vomiting

Summary

1. What are the signs and symptoms of external bleeding?
2. What are the signs and symptoms of internal bleeding?

Lesson 13.2: Using a Tourniquet

Learning outcomes

1. Apply a tourniquet if needed.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 10: Bleeding and its management

Theory

Purpose and use of tourniquets

A tourniquet is a constricting or compressing bandage used to control severe bleeding from an extremity and can be used to control hemorrhage in the following circumstances:

- Direct pressure fails to control bleeding
- Another life-threatening priority demands your attention
- You're unable to access the injury (such as when an arm or leg is trapped in machinery or equipment, and you can't get to the bleeding site to apply direct pressure)

The best type of tourniquet to use is a commercial tourniquet designed for tactical applications such as a combat application tourniquet. This type of tourniquet has been studied and recommended for use in first aid settings.

Skill practice

Goal
Apply a tourniquet.

Steps	
1.	Unfasten the tourniquet and secure the strap into the buckle.
2.	Place the tourniquet around your arm (or thigh) and tighten by pulling on the strap.
3.	Twist the windlass until the bleeding stops. Do not actually tighten.
4.	Anchor the windlass and record the time it was applied.

Summary

1. When should a tourniquet be used to control bleeding?

Lesson 13.3: Massive bleeding — conscious

Learning outcomes

1. Manage a conscious worker with massive bleeding.
2. Apply pressure to help control external bleeding.
3. Dress and bandage the injury as needed.
4. Apply a tourniquet if needed.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 10: Bleeding and its management

Skill practice

Goal
Manage a conscious worker with massive external bleeding.
Scenario
A worker was struck in the left leg by a chainsaw that kicked back. When you arrive, the chainsaw has been turned off and the worker is lying supine on the ground.

Steps		
1.	Conduct a scene assessment.	No hazards. One person is injured. Left thigh is bleeding. There's a pool of blood underneath the leg. The worker confirms that they did not fall or hit their head. Spinal motion restriction is not required.
2.	On approach, give gloves to helpers.	Helpers put on gloves.
3.	Assess the level of consciousness: • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open, but they are extremely anxious. The worker responds with clear speech. Based on AVPU, the worker is alert.
4.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult who has severe bleeding from a cut on the leg.	
5.	Assess the airway, breathing, and circulation on approach.	The worker is speaking in full sentences. Airway is clear. Breathing is normal. Both sides of chest expand evenly. The worker is conscious so their heart must be beating.

Steps		
6.	Apply direct pinpoint pressure: a. Open the first aid kit, find scissors, and expose the site of bleeding. b. Using absorbent dressings, apply direct pinpoint pressure on the wound site and maintain pressure. c. Apply additional dressings and pinpoint pressure. d. Ask a helper to take over maintaining direct pressure on the wound with an absorbent dressing.	Spurts of bright-red blood (arterial) and a heavy flow of dark-red blood (venous). Bleeding is not controlled by direct pinpoint pressure. The dressings soak through. Bleeding is still not controlled by direct pressure. Dressings continue to soak through. A tourniquet is needed.
7.	Apply a tourniquet: a. Apply a windlass-style tourniquet several inches proximal to the wound site. b. Secure the tourniquet strap firmly around the limb. c. Tighten the windlass until the bleeding stops. d. Anchor the windlass. e. Attach a tag to the tourniquet that indicates when it was applied.	The bleeding stops with correct application of the tourniquet.
8.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is pale, cool and dry. There are no other injuries.
9.	Apply high-flow oxygen.	
10.	Other critical interventions: a. Apply more dressings over those already applied and one or more fracture straps over all of the dressings on the wound. Do not cover the tourniquet. b. The worker should remain supine.	

Steps		
	c. Apply a blanket for warmth.	
11.	Transport decision: rapid transport category	
12.	Package the worker.	
13.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
14.	Reassess ABCs every 5 minutes and vitals every 10 minutes. Check that the bandages and tourniquet are still controlling the bleeding.	
15.	Complete a first aid record.	

Summary

1. When should direct pressure be applied to a massive bleed?
2. If the source of massive bleeding is obvious, do you need to do a rapid body survey?

Lesson 13.4: Amputation

Learning outcomes

1. Manage a worker with an amputation.
2. Apply a tourniquet if needed.
3. Prepare the amputated part for transport.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 29: Soft tissue injuries

Skill practice

Goal
Manage a worker with an amputation.
Scenario
A worker was cutting lumber on a radial saw when they caught their hand in the blade. The hand was fully amputated at the wrist. When you arrive, the worker is on their knees, clutching the stump.

Steps		
1.	Conduct a scene assessment.	No hazards. One person is injured. A significant amount of blood has soaked into the worker's sleeve and is pooling on the ground. Based on the mechanism of injury, spinal motion restriction is not required.
2.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a responsive adult who has amputated their hand. • Put on gloves and protective eyewear.	

Steps		
3.	Assess the level of consciousness: • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker's eyes are open. They are extremely anxious but respond with clear speech. The worker confirms that they did not fall. Based on AVPU, the worker is alert.
4.	Assess the airway, breathing, and circulation on approach.	The worker is able to call out for help, so the airway is clear. The worker is breathing normally. The worker is conscious, so the heart must be beating.
5.	Control bleeding: a. Apply direct pressure over the wound and position worker supine. b. Cut away the worker's sleeve to expose the site of the bleeding. c. Keep the point of the worker's elbow in contact with the ground. Do not fully elevate the limb. d. Apply direct pinpoint pressure over the wound with absorbent dressings. e. Apply additional dressings over the initial dressing and apply more pressure. f. Ask a helper to put on personal protective equipment and take over direct pinpoint pressure. g. Apply additional dressings, if needed. h. Apply more direct pinpoint pressure, if needed.	The bandage soaks through rapidly and continues to bleed. Apply additional dressings over the initial dressing and apply more pressure. Bright-red blood is spurting out of the wound. This is arterial bleeding The helper applies direct pressure with gloved hands.

Steps		
6.	Apply a tourniquet: a. Apply a commercially prepared tourniquet several inches proximal to the wrist. b. Secure the tourniquet strap firmly around the limb. c. Tighten the windlass until the bleeding stops. d. Anchor the windlass. e. Attach a tag to the tourniquet that indicates when it was applied.	The bleeding stops with correct application of the tourniquet.
7.	Assess circulation: • Radial pulse on uninjured arm • Signs of shock (cool, pale, clammy skin) • Rapid body survey	The radial pulse is weak and rapid. Skin is cold, pale, and dry. No other injuries are found.
8.	Apply high-flow oxygen.	
9.	Other critical interventions: a. Apply additional ABD dressing. b. Secure the dressings with a crepe roller bandage. c. The worker should remain supine. d. Apply a blanket for warmth.	Do not cover the tourniquet with the bandages.
10.	Prepare the amputated part for transport: a. As carefully as possible, clean any gross foreign matter from the amputated part. b. Dress the part in sterile, moist gauze. c. Place the dressed part in a waterproof bag, and seal. d. Place the bag inside another filled with ice. e. Label the bag with the date and time of the amputation. f. Transport the part with the worker.	

Steps		
11.	Transport decision: rapid transport category.	
12.	Package the worker.	
13.	Complete a secondary survey while waiting for transport or en route to hospital.	
14.	Reassess ABCs every 5 minutes and vitals every 10 minutes. Reassess the bandages and tourniquet.	
15.	Complete a first aid record.	

Summary

1. What should you do if the dressing becomes soaked in blood?
2. How should you clean an amputated part?
3. How should you store an amputated part?

Lesson 13.5: Massive bleeding — unresponsive

Learning outcomes

1. Manage an unresponsive worker with massive bleeding.
2. Apply pressure to help control external bleeding.
3. Dress and bandage the injury as needed.
4. Apply a tourniquet if needed.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 10: Bleeding and its management

Skill practice

Goal
Manage an unresponsive worker with massive external bleeding.
Scenario
A traffic control person was struck by an oncoming vehicle travelling at about 50 km/h through a construction zone. When you arrive, the traffic control person is lying supine on the ground.

Steps		
1.	Conduct a scene assessment.	No hazards. Traffic has been stopped. One person is injured. Right thigh is bleeding. There is a pool of blood underneath the leg. Based on the mechanism of injury, spinal motion restriction is required.

Steps		
2.	On approach, give helpers gloves and the first aid kit. Ask them to apply pressure on the wound. The helper may have to expose the injury site first. The helper must be trained in at least basic first aid. If a trained helper is not available, do a basic assessment of the ABCs with spinal motion restriction, as for all unresponsive workers, and then control the bleed as quickly as possible.	A trained helper is not available.
3.	Assess the level of consciousness: a. Approach the worker from the front, identify yourself, and attempt to communicate. b. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate stimulus.	Worker doesn't respond to verbal or pain stimulus. Based on AVPU, the worker is unresponsive.
4.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unresponsive adult who has been struck by a car at 50 km/h.	
5.	Manually stabilize the head and neck.	

Steps		
6.	Assess airway, breathing, and circulation: a. Apply a jaw thrust. b. Look, listen, and feel for air movement for 5 seconds. c. Check carotid pulse for 5 seconds. d. If possible, train a helper to take over manual stabilization. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."	You hear and feel regular, quiet breathing. The chest rises and falls normally. The carotid pulse is present.
7.	Apply direct pressure: a. Open the first aid kit, find scissors, and expose the site of bleeding. b. Using absorbent dressings, reapply direct pinpoint pressure on the wound site and maintain pressure. c. Ask a helper to take over maintaining direct pressure on the wound with an absorbent dressing.	Moderate flow of dark blood (venous) Bleeding is controlled by direct pressure. A tourniquet is not needed.
8.	Measure and insert an oral airway.	Worker accepts the oral airway and is still breathing normally.
9.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is normal, warm, and dry. Worker has a large contusion on the side of the head in addition to the leg injury discovered earlier.
10.	Apply high-flow oxygen.	

Steps		
11.	Other critical interventions: a. Apply more dressings over the ones already applied and one or more fracture straps over all of the dressings on the right thigh. b. The worker should remain supine. c. Apply a blanket for warmth.	Bleeding is controlled with direct pressure and one or more bandages, provided the dressings are completely covered and the bandages are tight.
12.	Transport decision: rapid transport category	
13.	Apply the modified NEXUS rule.	Since the worker is unresponsive, spinal motion restriction should be maintained.
14.	Apply a hard collar.	
15.	Attach and secure the worker to the spine board or scoop-style stretcher.	
16.	Lift the worker onto a basket stretcher.	
17.	Complete a secondary survey while waiting for transport or en route to hospital. Describe this and the remaining steps. There is no need to demonstrate.	
18.	Reassess ABCs every 5 minutes and vitals every 10 minutes. Remember to reassess the bandages	
19.	Complete a first aid record.	

Summary

1. What should you do if the dressing becomes soaked in blood?

Day 5 Homework

Medication and mental health (Module 14)

Read page 199 and Chapters 46 and 47 in the textbook. Take notes on the following:

1. What should you do before giving non-prescription medication to a worker?
2. What are your responsibilities when helping a worker with a prescription medication?
3. What are the most common types of mental health emergencies?
4. What can you do to help a person experiencing a mental health emergency?

First aid record

Complete the first aid record exercise below. The correct answer will be debriefed in class the next day.

First aid record exercise

Complete a first aid record based on the following scenario:

On April 1, 2018, at 2:40 p.m., a millwright came into the first aid room to report an injury. The worker reached into a motor on power unit 16 to tighten the exhaust manifold. As the worker pulled their arm out, they cut it on a sharp piece of metal. The injury happened at 2:35 p.m.

A co-worker was working with the millwright when it happened and is available as a witness.

The injured worker's ABCs are normal. They have a 2 cm (1 in.) laceration just through the skin on the upper-inside of their left forearm. There is minimal bleeding and pain, and no swelling. The wound appears clean. Circulation and nerve function are normal.

Supporting the worker's arm on a large sterile dressing, you cover the wound with sterile gauze. You examine the arm from shoulder to fingertips and find no unusual symptoms or other injuries. With the wound covered, you cleanse around the wound with wound-cleansing towelettes. Then you walk over to the sink and remove the gauze to clean inside the wound with running tap water or sterile saline. Because this wound gapes slightly, you apply skin closures to close the wound. You dress the wound with four layers of sterile gauze and an absorbent dressing, which you bandage with a roller bandage.

Before the worker returns to work, you advise them to get a tetanus booster within the next 36 hours and discuss the minor wound handout sheet on taking care of the wound. You tell the worker to keep the dressing clean and dry, and to return immediately if the dressing gets wet or dirty, or starts to come off. You also tell them to return to first aid at the start of the next shift for reassessment.

Module 14

Medical Emergencies

14. Medical Emergencies

14.1. Medication
14.2. Critical incident stress
14.3. Diabetic emergencies
14.4. Poison management

Lesson 14.1: Medication

Learning outcomes

1. Describe what you must do before giving non-prescription medications to a worker.
2. Describe your responsibilities when helping a worker with prescription medication.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 26: First aid room procedures

Group discussion

1. What should you do before giving non-prescription medication to a worker?
2. What are your responsibilities when helping a worker with a prescription medication?

Answers

Summary

1. What must you know before giving non-prescription medication to a worker?
2. What must you know before giving prescription medication to a worker?

Lesson 14.2: Critical incident stress

Learning outcomes

1. Describe the signs and symptoms of critical incident stress.
2. Describe strategies for managing critical incident stress.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 46: Critical incident stress

Theory

Physical effects

The physical effects of critical incident stress include:

- Nausea, weight loss, and diarrhea
- Dizziness, shakiness, a weak feeling in the legs, and sweating
- Pounding heart, hyperventilation, and a feeling of fatigue
- Headaches, general aches and pains, and chest pains

Cognitive effects

The cognitive effects of critical incident stress include:

- Difficulty concentrating, absent-mindedness
- Confusion and difficulty making decisions
- Difficulty performing tasks

Emotional effects

The emotional effects of critical incident stress include:

- Feeling anxious, jumpy and irritable
- Feeling guilt, anger, fear and grief
- Feeling depressed, having mood swings, nightmares, and flashbacks
- Feeling lost, helpless, and abandoned

Behavioural effects

The behavioural effects of critical incident stress include:

- Increased use of drugs or alcohol

- Difficulty going certain places, or withdrawal from family, friends, and colleagues
- Difficulty being alone

Class-based discussion (15 min)

1. What are some strategies for self-care that can help you manage critical incident stress?
2. What other resources are helpful?

Answers

Summary

1. What are the possible physical effects of critical incident stress?
2. What are the possible behavioural effects of critical incident stress?
3. How will you take care of yourself?

Lesson 14.3: Diabetic emergencies

Learning outcomes

1. Describe what diabetes is.
2. Describe the signs and symptoms of a diabetic emergency.
3. Manage a worker who is having a diabetic emergency.

Required reading

Advanced First Aid: A Reference and Training Manual

Chapter 45: Diabetes

Theory

Types of diabetes

With workers who have diabetes, the body's ability to regulate blood glucose is impaired.

There are two types of diabetes:

- Type 1 diabetes is caused by a total lack of insulin production. Workers who have this type of diabetes must take insulin to control their disease.
- Type 2 diabetes is caused by insufficient insulin production (insulin resistance). Many workers with this type of diabetes can control it by diet alone. Others need oral medication.

Hypoglycemia (low blood sugar)

Early signs of hypoglycemia include:

- Hunger
- Pale and clammy skin
- Dizziness, trembling, and weakness
- Confusion, restlessness, and irrational behaviour

As the condition progresses, these signs may also appear:

- Slurred speech
- Seizures

Hyperglycemia (high blood sugar)

Early signs of hyperglycemia include:

- Thirst
- Excessive urination
- Loss of appetite
- Weakness and dizziness

As the condition progresses, these signs may also appear:

- Nausea and vomiting
- Deep, rapid breathing
- Dry mouth
- A fruity, sweet odour on the breath
- Weak, rapid pulse
- Warm, dry skin
- Decreased level of consciousness

Skill practice

Goal
Manage a worker who is having a diabetic emergency.
Scenario
A site manager who is known to have diabetes suddenly feels faint and starts to collapse. A co-worker standing nearby catches the manager and gently lowers them to a supine position on the floor. When you arrive, the site manager's eyes are closed and their skin is pale.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Co-workers saw the manager collapse. The manager did not hit their head or neck. Spinal motion restriction not required.
2.	Assess the worker's level of consciousness. a. Approach the worker from the front, identify yourself, and attempt to communicate. b. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate stimulus.	There is no response to verbal or pain stimulus. The worker is unresponsive.
3.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is an unresponsive adult who is a known diabetic.	

Steps		
4.	Assess airway, breathing, and circulation: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for the movement of air for 5 seconds. c. Check for carotid pulse for 5 seconds. d. If possible, get a helper to maintain the head-tilt chin-lift. e. Measure and insert an oral airway. f. Ensure suction device is ready. g. Reassess that the worker is still breathing quietly and effectively.	Airway is clear. You hear and feel regular, quiet breathing. You see the worker's chest rise and fall normally. The carotid pulse is present. The worker accepts the oral airway and is still breathing normally.
5.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. The worker's skin is pale and clammy. No other injuries are found.
6.	Apply high-flow oxygen.	
7.	Place the worker in the ¾-prone position.	
8.	Apply a blanket for warmth.	
9.	Place sugar or glucose in the pocket of the cheek that's closest to the ground. Monitor the airway closely.	
10.	Transport decision: rapid transport category	Package and transport ¾-prone.
11.	Package the worker.	
12.	Complete a secondary survey while waiting for transport or en route to hospital.	

Steps		
13.	Reassess ABCs every 5 minutes and vitals every 10 minutes.	
14.	Complete a first aid record.	

Summary

1. What are the two types of diabetes?
2. What are the signs and symptoms of hypoglycemia?
3. What are the signs and symptoms of hyperglycemia?
4. What critical intervention should you provide to a worker having a diabetic emergency?
5. What made this worker rapid transport category?

Lesson 14.4: Poison management

Learning outcomes

1. Describe the ways poison can enter the body.
2. Describe strategies for managing a worker who has been poisoned.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 42: Poisons

Theory

Inhaled poisons

Inhaled poisons can cause damage in three main ways:

- Reduction of the oxygen-carrying capacity of the blood, such as with carbon monoxide poisoning
- Direct irritation of the lung tissues, such as with chlorine gas poisoning
- A direct toxic effect on cells, such as with hydrogen sulfide poisoning

Ingested poisons

Ingested poisons affect the body by destroying the tissues of the digestive tract, or by being absorbed into the body and causing adverse health effects. Accidental poisoning by ingestion is usually caused by drugs, chemicals, or bacterial toxins.

Skin-contact poisons

Some substances cause skin destruction or irritation on contact — for example, with a chemical burn. Other substances such as pesticides may cause adverse health effects when in contact with the skin, eyes, or mucous membranes.

Class-based scenario exercise (20 min)

How would you manage the worker in each of the following scenarios?

1. A mechanic has been complaining of a headache, dizziness, and nausea. When you take the worker out of the shop, they begin to feel better. A co-worker checks the air quality in the shop and discovers there's a carbon monoxide leak.
2. A worker at a pulp and paper plant begins to experience eye and nose irritation. The worker tears up excessively and can't stop coughing. There is a pain in their throat. A pungent and disagreeable odour has come into the room.
3. A mill worker says they feel weak and has trouble breathing. The worker is pale, sweaty, and confused. Their breath smells like bitter almonds.
4. A roofer is walking by a landscaper and is accidentally sprayed with pesticide. The worker’s skin begins to burn.
5. A worker at a glass etching plant accidentally splashes their ankle with hydrofluoric acid. The worker immediately experiences excruciating pain from the chemical burn.

Answers

Answers

Summary

1. How should you manage a worker who has been exposed to chlorine gas?
2. What is the first thing you should do when responding to a worker who has been exposed to a hazardous gas?
3. How should you treat a chemical burn?
4. What is hydroxocobalamin?

Module 15

Minor Injuries

15. Minor Injuries

15.1. First aid record
15.2. Minor wounds
15.3. Applying a spica ankle wrap
15.4. Minor sprains
15.5. Minor fractures
15.6. Minor dislocations
15.7. Activity-related soft tissue disorders
15.8. Minor ear, nose, and eye injuries
15.9. Assessing burns
15.10. Minor burns
15.11. Ongoing management

Lesson 15.1: First aid record

Learning outcomes

1. Explain the purpose of the first aid record and when it should be completed.
2. Complete a first aid record.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 26: First aid room procedures

Theory

Purpose of the first aid record

You must complete a first aid record for every worker you see. This includes the initial visit as well as any follow-up visits.

The first aid record:

- Gives the attendant a history of how the injury occurred
- Helps ensure that proper follow-up is provided
- Provides evidence of work relatedness for compensation claims
- Identifies trends so the employer can take action
- Identifies work areas, and procedures or practices that may be causing injuries or illnesses

First aid records are confidential. Ensure they are stored securely. First aid records must be retained by the employer for at least three years.

Only people who need to see the first aid records should be allowed access, such as:

- The worker
- The worker's direct supervisor
- Personnel who manage health and safety, compensation claims, or return-to-work programs at the workplace
- A WorkSafeBC prevention officer

For some reviewers, first aid records may need to be redacted to protect the identity of the worker. For example, the joint health and safety committee may review first aid records as part of the regular committee meetings. Their interest would primarily be the mechanism of injury (what happened) and the specifics of where the worker was injured. The committee does not need the name or other identifiable information about the worker in order to do committee work.

Summary

1. Why is it important to complete the first aid record accurately?
2. What could happen if you don't complete the first aid record accurately?

Lesson 15.2: Minor wounds

Learning outcomes

1. Assess a minor wound.
2. Clean, dress, and bandage a minor wound.
3. Provide follow-up care for a minor wound.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 25: The priority action approach to the walk-in patient
Chapter 29: Soft tissue injuries

Theory

Medical aid

The following soft tissue injuries must be referred for medical aid:

- Wounds longer than 3 cm (1 in.) through the full skin thickness
- Wounds to hands in areas of joints or tendons
- Wounds that require stitches
- Wounds that are very dirty, including human or animal bites
- Wounds with embedded materials
- Wounds that have any sign of infection

Signs of infection

Signs of a wound becoming infected include:

- Pain and local tenderness around the wound
- Heat and redness around the affected area
- Redness around the area
- Pus beneath the skin or draining from the wound
- Swelling of the infected part or lymph nodes
- Red streaks extending from the area

Tetanus prevention

All minor wounds must be thoroughly cleaned. If medical attention is necessary but will be delayed beyond 36 hours, it is even more essential to properly clean and dress the wound. For major wounds with gross contamination, once hemorrhage has been controlled, there may be justification for some wound cleansing. Workers with a wound should receive a tetanus booster as soon as possible, preferably within 36 hours.

Skill practice

Goal
Assess and treat a minor wound.
Scenario
A worker comes into the first aid room with a cut on their arm. While working on a motor, the worker was cut by a piece of metal.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.
2.	Modified primary survey: a. Look at the worker to assess the airway. b. Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally) c. Assess circulation. • Look for signs of shock (cool, pale, clammy skin). • Do a verbal rapid body survey. Ask, "Did you hurt yourself anywhere else"?	Worker is talking clearly. Airway is clear. Breathing is normal. Skin colour is normal. When asked, worker says, "Only my arm hurts."

Steps		
3.	Position: a. Position the worker based on the findings of the modified primary survey. • If the worker is reacting to the injury (pale, anxious), position them supine. • If worker's colour is normal and they are not showing anxiety, position sitting. b. Support arm and cover the injury with a sterile dressing or gauze pad.	Worker can remain sitting.
4.	Wash your hands and put on gloves.	
5.	Look at the injury to make the initial transport decision: return to work after treatment.	Laceration is only 2 cm (¾ in.) and does not require stitches. Minimal bleeding. No swelling. Laceration appears clean.
6.	Modified secondary survey: a. Question the worker about their medical history. b. Ask if their tetanus is up to date. c. Thoroughly examine the injured area. d. Take pulse distal to the injury. e. Assess nerve function.	Worker has no allergies and is not on any medications. Tetanus was updated within the last 5 years. No discolouration, swelling, deformity, or excessive pain No underlying damage Pulse is normal. Neurological function is normal.

Steps		
7.	Injury care: a. Keep the wound covered with sterile gauze while you cleanse the surrounding skin with mild antibacterial soap or warm water. b. Flush inside of wound with warm running water. c. If the worker is returning to work, use skin closures to hold the wound closed. d. Apply a dressing large enough to cover the entire wound site. e. Wrap it with a bandage large enough to cover the entire dressing.	
8.	Complete a first aid record.	
9.	Tell the worker how to care for the wound and provide an at-home care sheet: • Keep dressings clean and dry. • Watch for signs of infection. • Make sure tetanus is up to date. • Return for reassessment.	

Summary

1. What parts of the secondary survey need to be completed for a worker who is otherwise healthy but has a minor wound that does not require medical treatment?
2. How do you cleanse a minor wound?
3. How do you dress a minor wound?
4. How do you decide whether the worker needs medical aid?

Lesson 15.3: Applying a spica ankle wrap

Learning outcomes

1. Apply a spica ankle wrap.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 29: Soft tissue injuries

Skill practice

Goal
Apply a spica ankle wrap.

Steps	
1.	Anchor the bandage at the metatarsal arch.
2.	Wrap the bandage across the top of the foot, around the heel, and back to the start. A criss-cross pattern forms at the top of the foot as you follow a figure-eight pattern (around the foot, around the leg).
3.	Continue wrapping in the same pattern, overlapping the bandage by about half of its width, moving up the foot and toward the calf.

Summary

1. What is the purpose of a spica ankle wrap?

Lesson 15.4: Minor sprains

Learning outcomes

1. Manage a worker with a minor sprain.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 33: Sprains, dislocations, and fractures

Theory

Medical aid

A worker with a suspected sprain who has any of the following should be referred for medical aid:

- A sudden deceleration injury, such as with a fall from height
- Pain, numbness, tingling, or weakness in an extremity distal to the injury
- Sudden onset of very severe pain
- Difficulty walking

Skill practice

Goal
Assess and treat a minor sprain.
Scenario
A worker limps into the first aid room, complaining about pain in their ankle. While walking down the stairs, the worker twisted their ankle. They say they did not fall down the stairs.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.

Steps		
2.	Modified primary survey: a. Look at worker to assess the airway. b. Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally) c. Assess circulation. • Look for signs of shock (cool, pale, clammy skin). • Do a verbal rapid body survey. Did you hurt yourself anywhere else?	The worker is talking clearly. The airway is clear. Breathing is normal. Skin colour is normal. When asked, worker says, "Only my ankle hurts."
3.	Position: a. Position the worker based on the findings of the modified primary survey. • If the worker is reacting to the injury (pale, anxious), position them supine. • If the worker's colour is normal and they are not showing anxiety, position sitting. b. Support the injury.	Position the worker and support the injured limb.
4.	Wash your hands and put on gloves.	
5.	Ask the worker to remove both of their shoes and socks.	You'll need to compare both feet and ankles.

Steps		
6.	Look at the injury to make an initial transport decision: • No obvious deformity • Minimal swelling • Worker was bearing weight when they came into the first aid area	Return to work after treatment.
7.	Modified secondary survey: a. Question worker about medical history. b. Assess the pain using PPQRRST (position, provoke, quality, radiation, relief, severity, timing). c. Thoroughly examine the injured area. d. Take pulse distal to injury. e. Assess sensory and nerve function. f. Compare both ankles and feet. g. Conduct a range-of-motion check.	The worker has no allergies and is not on any medications. They do not have serious pain. Symptoms started after the initial incident, but pain increased gradually. The worker is ambulatory. There is no obvious deformity or bleeding. She has slight pain when you touch their lateral ankle. No obvious swelling when compared to uninjured side. Circulation and nerve functions are normal. Pain slightly increases when the foot is inverted during range-of-motion check.

Steps		
8.	Injury care: a. Elevate the injured leg. b. Apply an ice pack with a protective barrier for 20 minutes. c. Reassess the ankle. d. Using a crepe roller bandage, apply a spica to support the injured area. e. Wrap from the toes to calf. f. Check circulation after wrap. g. Pulse, skin (colour, temperature, condition of toes) h. Have the worker bear weight on the foot.	No swelling or increased pain after ice. No obvious impaired circulation after wrap. The worker is able to walk. There is nothing to indicate the need for medical aid.
9.	Confirm a transport decision.	
10.	Tell the worker how to care for the injury and provide an at-home care sheet: • Elevate, ice, and remove the bandage at night. • Carry on activities within the limitations of pain. Complete rest extends the recovery time. • Return for reassessment and re- wrapping.	
11.	Complete a first aid record.	

Summary

1. How should you treat a sprain?
2. What should you tell the worker about caring for the sprain?
3. How do you decide whether the worker needs medical aid?

Lesson 15.5: Minor fractures

Learning outcomes

1. Manage a worker with a minor fracture.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 33: Sprains, dislocations, and fractures

Theory

Medical aid

A worker with a suspected fracture who has any of the following should be referred for medical aid:

- A sudden deceleration injury, such as with a motor vehicle crash, direct blow to the body, or a fall from a height
- Pain, numbness, tingling, or weakness in an extremity distal to the injury
- Bowel or bladder symptoms
- Sudden onset of very severe pain
- Difficulty walking

Skill practice

Goal
Assess and treat a minor fracture.
Scenario
A worker walks into the first aid room, supporting their right forearm. They were struck on the forearm by a drive shaft while working on a vehicle. The worker says they did not fall or hit their head.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.
2.	Modified primary survey: a. Look at the worker as they approach. Note their posture, movement, and level of anxiety. b. Ask the worker what happened. Observe how they talk to assess the airway. c. Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally) d. Assess circulation. Look for signs of shock (cool, pale, clammy skin). Do a verbal rapid body survey. "Did you hurt yourself anywhere else?"	Worker is alert. Worker is cradling their forearm, but otherwise walking and talking normally. Worker is talking clearly. Airway is clear. Breathing is normal. Skin colour is normal. Worker is in some pain. Worker does not hurt anywhere else.
3.	Position: a. Position the worker based on the findings of the modified primary survey. If the worker is reacting to the injury (pale, anxious), position supine. If the worker's colour is normal, and they're not showing anxiety, position sitting. b. Support the injury.	
4.	Wash your hands and put on gloves.	

Steps		
5.	Look at the injury to make an initial transport decision: medical aid.	There is swelling, redness, bruising, pain and angulation at the mid-third section of the worker's forearm.
6.	Modified secondary survey: a. Take the worker's vital signs. b. Question the worker about their medical history. c. Assess the pain using PPQRRST (position, provoke, quality, radiation, relief, severity, timing). d. Thoroughly examine the injured area. e. Take pulse distal to the injury. f. Assess sensory and nerve function. g. Compare both arms, hands, and fingers.	Vitals are all normal. The worker has no allergies and is not on any medications. There is point tenderness when the injured area is touched. Swelling. Increase in pain on range-of-motion check. The worker can feel and move areas distal to the wound. Neurological function is normal when compared to uninjured side.
7.	Injury care: a. Apply an ice pack with a protective barrier for 20 minutes. b. Immobilize the limb with a splint. c. Keep the joints above and below the injured area from moving. d. Recheck circulation and nerve function. e. Reapply ice. f. Apply a sling and transverse bandage.	
8.	Confirm transport decision.	
9.	Transport worker to medical aid.	

Steps		
10.	Reassess ABCs every 10 minutes and vitals every 30 minutes.	
11.	Complete a first aid record.	

Summary

1. What are the signs and symptoms of a fracture?
2. How do you assess the level of pain?
3. What are the objectives of immobilization?
4. How do you immobilize the limb?

Lesson 15.6: Minor dislocations

Learning outcomes

1. Manage a worker with a minor dislocation.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 33: Sprains, dislocations, and fractures

Theory

Medical aid

The worker with a suspected dislocation who has any of the following should be referred for medical aid:

- A sudden deceleration injury, such as with a motor vehicle crash or a fall from a height
- Pain, numbness, tingling, or weakness in an extremity distal to the injury
- Bowel or bladder symptoms
- Sudden onset of very severe pain
- Difficulty walking

Assessment and treatment

Workers with a minor dislocation are assessed the same way as those who have a minor fracture.

However, injuries like a minor shoulder dislocation are treated as follows:

1. Apply an ice pack with a protective barrier for 20 minutes.
2. Apply a large arm sling.
3. Place a pad under the worker's elbow to fill the gaps between the body and the position of the arm.
4. Apply a wide transverse bandage around the elbow and torso. Tie it on the uninjured side.
5. Recheck circulation and nerve function.
6. Reapply ice.

Summary

1. What are the signs and symptoms of a dislocation?
2. How should you treat a dislocation?

Lesson 15.7: Activity-related soft tissue disorders

Learning outcomes

1. Describe how you would manage a worker with an activity-related soft tissue disorder (ASTD).

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 31: Activity-related soft tissue disorders

Class-based discussion (10 min)

Manage the worker described in the following scenario. Refer to Chapter 31 in your textbook as needed.

> A worker comes into the first aid room, complaining of a sore wrist. The worker has been painting guardrails for several days. Painting is not their usual job. The worker's wrist was sore after work yesterday. Although it felt better in the morning, it's getting sore again today. They experience some pain when they flex and extend the wrist.
>
> There is no swelling, but there is some tenderness along the tendon sheath that increases when extending and flexing. Circulation and nerve functions are normal.

Answers

Summary

1. What are the signs and symptoms of an ASTD?
2. What can you do to treat an ASTD?

Lesson 15.8: Minor ear, nose, and eye injuries

Learning outcomes

1. Manage a worker with a minor eye, nose, or ear injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 19: Facial injuries and their management
Chapter 20: Eye injuries
Chapter 21: Dental injuries
Chapter 22: Ear injuries

Theory

Minor nose injuries

To treat a minor nosebleed, ask the worker to lean forward and pinch the nose for 15 to 20 minutes. Then ice the nose for 10 minutes, stop for five minutes, and repeat until the bleeding stops.

Minor ear injuries

The most common minor ear injury is an infection of the middle ear. The main symptoms are ear pain and hearing impairment at the time of an upper respiratory infection.

A worker with an ear injury may appear very ill. In addition to ear pain, they may have dizziness, nausea, and vomiting.

Inner ear trouble may be a sign of a more serious condition, such as meningitis. Refer the worker to a physician.

Minor eye injuries

The most common minor eye injury is a foreign body in the eye. Most foreign bodies in the eye are superficial and can be removed without any complications.

Skill practice

Goal
Assess and treat a minor eye injury.
Scenario
A worker walks into the first aid room and tells you they have dust in their eye. The worker was sweeping the loading dock when some dust entered their eye.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.
2.	Modified primary survey: a. Look at worker to assess the airway. b. Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally) c. Assess circulation: Signs of shock (cool, pale, clammy skin) Do a verbal rapid body survey. "Did you hurt yourself anywhere else?"	The worker is talking clearly. Airway is clear. Breathing is normal. Skin colour is normal. There are no other injuries.
3.	Position: a. Position the worker based on the findings of the modified primary survey. • If the worker is reacting to the injury (pale, anxious), position supine. • If the worker's colour is normal and they are not showing anxiety, position sitting. b. Give the worker gauze to cover the eye.	
4.	Wash your hands and put on gloves.	
5.	Look at the injury to make an initial transport decision: return to work after treatment.	

Steps		
6.	Modified secondary survey: a. Question the worker about their medical history. b. Thoroughly examine the injured area.	The worker has no allergies and is not on any medications. There are no vision problems. You can see a fleck of dust.
7.	Injury care: a. If the worker is wearing a contact lens, ask them to remove it. b. Clean the area around the eye. Make sure there is no debris or cosmetics on the eyelashes. c. Tell the worker to rinse the eye a couple of times. d. Have the worker pull their upper lashes down over their lower lashes. e. Examine the eye more closely. f. Remove the dust with a moistened swab. g. Reassess vision by comparing the uninjured eye to the injured one.	When you pull back the eyelid, you see a speck of dust. After you remove the dust, the worker feels relief. The worker reports no blurry vision.
8.	Complete a first aid record.	

Summary

1. How should you treat a worker with dust in their eye?
2. Do you need to complete a first aid record for a simple treatment like getting the worker to flush their own eye?

Lesson 15.9: Assessing burns

Learning outcomes

1. Describe the types of burns.
2. Describe the difference between first-degree, second-degree, and third-degree burns.
3. Describe the signs and symptoms of burn injuries.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 38: Burns

Theory

First-degree burns

First-degree burns affect only the outer layer of skin. The skin is red and the worker experiences mild pain, such as with a mild sunburn or a minor scald. This type of burn usually heals in about a week.

Second-degree burns

Second-degree burns can be partial or full thickness. Partial-thickness second-degree burns affect the outer layer of the skin. Full-thickness second-degree burns affect the outer layer of skin and part of the second layer of skin.

Signs and symptoms include:

- Blisters
- Reddening of the skin
- Pain
- Fluid loss

A worker with a significant second-degree burn to less than 10% of the body surface should be referred for medical aid. If the burn is worse than that, the worker requires rapid transport.

Third-degree burns

Third-degree burns involve damage to the layers of skin and underlying structures. Muscles, bones and deeper structures may be damaged.

Signs and symptoms include:

- Charred, dry or pale skin
- Fluid loss

A worker with a third-degree burn to less than 2% of the body surface should be referred for medical aid. If the burn is worse than that, the worker requires rapid transport.

Rule of nines

A first-degree burn may not have blisters when you first encounter the worker. In order to determine the extent of the burns, you need to consider more than the signs and symptoms.

The fastest and easiest way to estimate the extent of burns is to estimate the percentage of the body that has been burned. This is done using the rule of nines:

- Each upper extremity counts 9%.
- The head and neck together count 9%.
- Each lower extremity counts 18%.
- The anterior and posterior surfaces of the trunk each count 18%.
- The perineum and genitalia together count 1%.
- An area the size of the worker's hand can be assumed to be 1%.

Mechanism of injury

Another important consideration is the mechanism of injury. A worker involved with a sudden flash or scalding liquid is likely to have first-degree burns, second-degree burns, or both. If the worker's clothing caught fire, there may be third-degree burns. If the worker was burned in an enclosed space, there may be respiratory burns or smoke inhalation. If there was an explosion, there may be other associated injuries. The attendant should try to cool burns as soon as possible during the primary survey.

Rapid transport category

The following burns are in the rapid transport category:

- Any burn with associated smoke inhalation injury
- Second-degree burns to more than 10% of the body surface
- Third-degree burns to more than 2% of the body surface
- Significant burns involving the face
- Burns encircling a limb
- Major burns to the hands, feet, or genitalia
- All electrical burns
- All chemical burns

Summary

1. What are the signs and symptoms of a first-degree burn?
2. What are the signs and symptoms of a second-degree burn?
3. What are the signs and symptoms of a third-degree burn?
4. Which burns are in the rapid transport category?

Lesson 15.10: Minor burns

Learning outcomes

1. Manage a worker with a minor burn.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 38: Burns

Skill practice

Goal
Assess and treat a minor burn.
Scenario
A worker comes into the first aid room with a burn on their arm. They tell you that they burned their arm while repairing a motor.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.
2.	Modified primary survey: a. Look at the worker as they approach. Note their posture, movement and level of anxiety. b. Ask the worker what happened. Observe how they talk to assess the airway. c. Assess circulation: • Signs of shock (cool, pale, clammy skin) • Do a verbal rapid body survey. "Did you hurt yourself anywhere else?"	Worker is talking clearly. Airway is clear. Breathing is normal. Skin colour is normal. There are no other injuries.
3.	Cool the burn as soon as possible.	
4.	Position the worker based on the findings of the modified primary survey. • If the worker is reacting to the injury (pale, anxious), position supine.	

Steps		
	• If the worker's colour is normal and they're not showing anxiety, position sitting.	
5.	While cooling, look at the injury to make an initial transport decision: return to work after treatment.	
6.	Wash your hands and put on gloves.	
7.	Modified secondary survey: a. Question the worker about their medical history. b. Thoroughly examine the injured area. c. Take pulse distal to the injury. d. Assess sensory and nerve function.	The worker has no allergies and is not on any medications. There is a first-degree and second-degree burn to the arm. Circulation and nerve functions are normal.
8.	Injury care: a. Cover the area with moist, sterile gauze. b. Cover the gauze with another gauze dressing. c. Lightly secure the dressings with a roller bandage.	
9.	Complete a first aid record.	
10.	Tell the worker how to care for the injury: • Keep bandage clean and dry. • Report back immediately to first aid if the bandage gets wet or dirty, or starts to come off. • Come back the next day for reassessment. • Give worker a handout on care for burns.	

Summary

1. How should you treat a first-degree burn?
2. How long do first-degree burns take to heal?

Lesson 15.11: Ongoing management

Learning outcomes

1. Describe the ongoing management of an injured worker who remains at the workplace.

Required reading

Covered earlier.

Theory

Return-to-work program

In cases involving more serious injuries and illnesses, the worker may need to take time off for treatment and therapy. This is managed through a return-to-work program. This program provides a systematic, progressive, individualized, and time-limited process for helping injured workers get back into their normal routine at home and at the workplace as quickly and safely as possible.

The first aid program and return-to-work program focus on:

- Compliance with the *Workers Compensation Act* and OHS Regulation
- First aid best practice that meets or surpasses set guidelines
- Early intervention to prevent further damage
- Stay-at-work options that allow workers to remain at work on modified duties while they heal

Summary

1. What is a return-to-work program?
2. How does a return-to-work program help workers and the organization as a whole?

Day 6 Homework

Occupational first aid safety (Module 16)

Read Chapters 26, 29, and 44 in the textbook. Bring notes on the following to the next class:

1. What are the regulatory requirements for first aid kits and equipment used by first aid attendants?
2. How can you keep first aid equipment clean and disinfected?
3. What should you do to clean and disinfect the work environment after you've provided first aid?
4. How should you dispose of sharps and contaminated supplies?
5. How are diseases and infections passed from one person to another?
6. How can you prevent the spread of infection?
7. Where can you find first aid information for hazardous products used in the workplace?

Module 16

First Aid Safety

16. First Aid Safety

16.1. General safety practices

Lesson 16.1 General safety practices

Learning outcomes

1. Describe the legislation requirements for first aid kits and equipment used by first aid attendants.
2. Describe strategies for keeping first aid equipment clean and disinfected.
3. Describe how to safely dispose of sharps and contaminated supplies.
4. Describe how diseases and infections are passed from one person to another.
5. Describe strategies for preventing the spread of infection.
6. Describe the first aid information included in safety data sheets.

Required reading

Advanced First Aid: A Reference and Training Manual

Chapter 26: First aid room procedures

Chapter 29: Soft tissue injuries

Chapter 44: Communicable diseases

Pair and share (20 min)

1. What are the regulatory requirements for first aid kits and equipment used by first aid attendants?
2. How can you keep first aid equipment clean and disinfected?
3. What should you do to clean and disinfect the work environment after you've provided first aid?
4. How should you dispose of sharps and contaminated supplies?
5. How can you prevent the spread of infection?
6. Where can you find first aid information for hazardous products used in the workplace?

Answers

Summary

1. When should you wash your hands?
2. How should you clean and disinfect instruments?
3. How often should the first aid room be cleaned and disinfected?
4. What is a safety data sheet (SDS)?

Module 17

Major Injuries

17. Major Injuries

17.1. Musculoskeletal system
17.2. Major sprains, dislocations, and fractures
17.3. Major ear injuries
17.4. Major nose injuries
17.5. Major eye injuries
17.6. Major burns

Lesson 17.1: Musculoskeletal system

Learning outcomes

1. Describe the major parts of the musculoskeletal system and how they work.
2. Describe the principles of splinting.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 27: Anatomy and function of the skin and soft tissues
Chapter 32: Anatomy and function of the skeletal system
Chapter 34: Immobilization

Theory

The musculoskeletal system

The skeleton is the bony framework of the body. It gives the body shape, strength and rigidity. It also protects the organs and acts as a movable framework so that muscular contractions can move the body.

Bones are connected by joints. Ball and socket joints, such as the hip and shoulder, are the most mobile. Hinge joints, such as the knee and elbow, permit free movement in a single plane.

Muscles and their tendons pass around and across joints. A tendon is a band of strong, white, fibrous tissue that connects a muscle to a bone. When a muscle contracts, it pulls on the tendon, which moves the bone. Tendons are so tough they are seldom torn.

Ligaments are fibrous tissue bands that connect one bone to another at a joint.

Most skeletal muscles exist in groups or pairs, which have equal but opposite functions. Voluntary contraction of one group of muscles is accompanied by an automatic relaxation of the opposing group.

Limb injuries

In order to assess and correctly treat a limb injury, you need to be able to tell the difference between a joint injury and a mid-third injury.

To do this, you will use the *rule of thirds*. According to this rule, long bones are divided into thirds. An upper or lower third injury is a joint injury. Joint injuries can affect the circulation and nerve function in a limb. A middle-third injury is a limb injury.

A dislocation is a displacement of one or more bone ends at a joint. A fracture is a break in a bone.

Soft tissue injuries

Soft tissue damage includes damage to skin, muscles, ligaments, tendons, blood vessels or nerves.

Principles of splinting

When splinting a sprain, dislocation or fracture, do the following:

- Steady and support the injured limb at all times.
- Dress and bandage open wounds before splinting.
- Fully expose the entire limb to be immobilized.
- Check circulation and nerve function before and after immobilization, and every 30 minutes thereafter.
- Apply cold if circulation is not impaired.
- Secure the splint from the stable part of the limb to the unstable part of the limb.
- Pad the entire splint wherever it rests against the limb.
- Avoid splinting over the wound and deformities if possible.
- Do not use an encircling bandage under a splint.
- Do not trap bandage knots or attachments under the splint.
- Elevate the limb after it has been immobilized if circulation is not impaired and it does not cause any increase in pain.

Summary

1. What is the purpose of splinting an injury?
2. What should you do if the limb is cold and pulseless with obvious angulation?

Lesson 17.2: Major sprains, dislocations, and fractures

Learning outcomes

1. Manage a worker with a major sprain, dislocation, or fracture.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 35: Management of upper limb injuries
Chapter 36: Management of lower limb injuries

Theory

Causes

Sprains, dislocations, and fractures may be caused by:

- An angular force, such as when a person falls on their outstretched hand
- A direct blow

- A compression force, such as when a person falls from a height and lands on their feet
- A crush, such as when an object lands on a person

Signs and symptoms

The signs and symptoms of a major sprain, dislocation, or fracture are:

- Severe pain
- Obvious gross deformity and irregularity
- A complete or near-complete inability to move the injured limb
- A complete or near-complete inability to put weight on the injured limb
- Swelling and point tenderness
- A grating sound or feeling (fracture only)

Assessing nerve damage

The following may indicate nerve damage:

- The worker has numbness and tingling in the extremities
- The worker is unable to move the limb
- The worker is unable to identify which toe you touch on the injured limb

Manipulating limb with physician supervision

If the limb is cold and pulseless with obvious angulation, it may be necessary to manipulate the limb in an attempt to restore some circulation. Only do this if advised to do so by a qualified medical advisor.

Contact a physician for instructions if both of the following conditions exist:

- The limb is cold and pulseless with a joint injury or obvious angulation.
- There will be more than one hour between the time of the injury and the worker's arrival at hospital.

Medical aid

A worker with a suspected sprain, dislocation, or fracture who has any of the following should be referred for medical aid:

- A sudden deceleration injury, such as with a motor vehicle crash or a fall from height
- Pain, numbness, tingling, or weakness in an extremity distal to the injury
- Sudden onset of very severe pain
- Significant swelling
- Bowel or bladder symptoms
- Difficulty walking

Rapid transport category

A worker with a severe crush injury, two or more proximal long-bone fractures, or a pelvic fracture is in the rapid transport category.

Skill practice

Goal
Manage a worker with a major sprain, dislocation, or fracture.
Scenario
A faller was struck on the right leg by a falling branch. When you arrive, the worker is in the lateral position with their right side down. They are holding onto their right thigh.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Based on the mechanism of injury, spinal motion restriction is required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	Based on AVPU, the worker is alert. The worker is yelling about extreme pain in the right thigh.
3.	Activate the workplace emergency response procedures.	
4.	Manually stabilize the head and neck. With helpers, support the leg and roll the worker supine.	
5.	Have a helper take over manually stabilizing the head and neck. Have another helper support the injured leg.	

Steps		
6.	6. Assess the airway.	The worker is talking clearly. Airway is clear.
7.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is regular and effective.
8.	Assess circulation: • Pulse distal to the injury • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures) • Stabilize the leg by holding it still. • Cover the blood-soaked area with dressing.	Radial pulse present. Skin is normal, warm and dry. A small amount of blood soaked through the pant leg. You feel a baseball-sized deformity in the right mid-thigh region. No pain elsewhere.
9.	Apply the modified NEXUS rule: a. Decreased level of consciousness? b. Worker's age, what happened, pre-existing back or spine problems? c. Any distracting injuries? d. Palpate the C-spine region. e. Concerning physical findings: • Midline spine or cervical pain • Feel or move arms and legs without pain or unusual sensations • Numbness or tingling f. If in doubt, apply a hard collar with full spinal motion restriction.	Not intoxicated. Mid-40s, alert, able to answer all questions, and no pre-existing spinal problems or distracting injuries. No midline spine or cervical pain. No neurological deficits.

Steps		
10.	Transport decision: medical aid Ask for an ETV and inform BC Emergency Health Services (BCEHS).	
11.	Secondary survey: a. Assess the worker's vital signs. If oxygen was applied earlier, titrate down. b. Record the worker's medical history. c. Assess the pain using PPQRRST (position, provoke, quality, radiation, relief, severity, timing). d. Thoroughly examine the injured area. Compare the injured limb with the uninjured limb. e. Assess sensory and nerve function.	Vitals as found. Worker is stable. Nothing remarkable Sharp pain, mid-thigh, 5 out of 10, pain increases if leg moved. Compound mid-one-third femur fracture with minimal bleeding, and slight deformity mid-thigh. Sensory and nerve function normal.
12.	Provide injury care: a. Immobilize the leg using materials that will meet the objectives of immobilization for the limb. b. Apply ice pack with a protective barrier for 20 minutes. c. Recheck circulation and nerve function.	No changes to sensory, circulation, or motor function distal to the injury.
13.	Package for transport: modified spinal motion restriction.	Motion restriction of the pelvis will help meet the principles of immobilization for this injury.
14.	Monitor ABCs.	
15.	Monitor vitals.	
16.	Complete a first aid record.	

Summary

1. How can you tell if an injury is limb-threatening?
2. What injury care should you provide for a major sprain, dislocation, or fracture?

Lesson 17.3: Major ear injuries

Learning outcomes

1. Describe the signs and symptoms of major ear injuries.
2. Manage a worker with a major ear injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 22: Ear injuries

Skill practice

Goal
Manage a worker with a major ear injury.
Scenario
An electrician walks into the first aid room and tells you they cut their ear. The worker said they were working on a ceiling fan without locking out the switch when someone turned the fan and the fan blade hit them in the ear.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required. The worker can be assessed and treated sitting in a chair.

Steps		
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	Based on AVPU, the worker is alert. The worker says that a fan blade cut their ear.
3.	Assess the airway.	The worker is talking clearly. The airway is clear.
4.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is normal.
5.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. Skin colour is normal. There's a 3.8-cm (1.5-in.) jagged laceration to the outer ear (pinna). There are no other injuries.
6.	Apply pressure to ear with gauze.	Bleeding is controlled with gauze and pressure.
7.	Transport decision: medical aid.	The ear will need sutures (stitches).

Steps		
8.	Secondary survey: a. Assess worker's vital signs. b. Record worker's medical history (tetanus). c. Thoroughly examine the injured area. d. Assess sensory function, nerve function, and hearing.	Tetanus immunization history is unknown. 3.8-cm (1.5-in.) jagged laceration on outer area (pinna) of ear. Hearing in the injured ear is not affected.
9.	Provide injury care: a. Cleanse surrounding area. b. Cover both sides of the outer ear with a sterile dressing. c. Wrap with roller gauze around the ear and head, and secure with tape.	Skin closures should not be applied to this injury as the worker will be referred for sutures.
10.	Complete a first aid record.	

Summary

1. Should you apply wound closures to an ear injury that will require sutures (stitches)?

Lesson 17.4: Major nose injuries

Learning outcomes

1. Describe the signs and symptoms of major nose injuries.
2. Manage a worker with a major nose injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 19: Facial injuries and their management

Theory

Nose injuries

The signs and symptoms of nose injuries are obvious. They include pain and bleeding. But that does not mean that a nose injury can't become a medical emergency.

By themselves, a nosebleed and a nasal fracture are not medical emergencies. Yet if they are the result of blunt trauma, there may be a brain and/or spinal injury. Also, due to the bleeding, there is the possibility of airway obstruction.

Summary

1. How can you tell if a worker with a nose injury has an airway obstruction that is due to fluids?
2. How can you clear the airway of a worker with an airway obstruction due to a nose injury that is bleeding?

Lesson 17.5: Major eye injuries

Learning outcomes

1. Describe the signs and symptoms of major eye injuries.
2. Manage a worker with a major eye injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 20: Eye injuries

Theory

Eye injuries

Eye injuries are common in the workplace. They can result from a variety of workplace activities, including:

- Working with or near chemicals, lasers, or UV light
- Flying particles from bursts of compressed air or other compressed gases
- Windblown debris

The main types of eye injuries are:

- Direct blows from sharp or blunt objects (lacerations, contusions, extruded eyeball)
- Burns (chemical, thermal, radiation)
- Foreign bodies (penetrating, superficial)

Skill practice

Goal
Manage a worker with a major eye injury.
Scenario
During a tree trimming procedure, a worker slipped from a ladder, fell face-first into a tree, and then dropped 2 m (6.5 ft.) to the ground. When you arrive, the worker is lying supine on the ground. There is a small twig protruding from the worker’s eye.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Based on the mechanism of injury, spinal motion restriction is required.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate. Ask the worker to close both eyes if they can, and to keep their hands away from the injured eye.	The worker responds with clear speech but is very anxious. The worker complains about pain in the eye.
3.	Manually stabilize the worker's head and neck. If available, train a helper to take over manual stabilization: "Hands over mine, fingers and thumbs where mine are, elbows braced. Don’t move while I reposition myself. Let me know if you have to move so I can help."	

Steps		
4.	Activate the workplace emergency response procedures.	
5.	Assess the airway.	The worker talks clearly. Airway is clear.
6.	Assess the breathing: • Look, listen, and feel. • Approximate Rate (slow, normal, fast) • Rhythm and Quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is shallow, but effective.
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present, but rapid and weak. Skin is cool and pale. There is no major bleeding or other gross deformity.
8.	Provide injury care: a. Tell the worker what you're doing. b. Ask a helper to put on gloves. If it's a large object, ask the helper to support the twig to ensure no movement occurs. c. Cover both eyes with sterile dressings. Use bulky dressing or supportive bandages to maintain the position of the twig.	
9.	Apply oxygen	
10.	Transport decision: rapid transport category.	

Steps		
11.	Apply the modified NEXUS rule: a. Decreased level of consciousness? b. Worker's age, what happened, pre-existing back or spine problems? c. Any distracting injuries? d. Palpate the C-spine region. e. Concerning physical findings: • Midline spine or cervical pain • Feel or move arms and legs without pain or unusual sensations • Numbness or tingling	Alert, not intoxicated. Mid-30s, alert, and able to answer all questions, no pre-existing spinal problems or distracting injuries. No midline spine or cervical pain. No neurological deficits.
12.	Position and secure the worker on a spine board or scoop-style stretcher.	
13.	Lift the worker onto a basket stretcher.	
14.	Complete a secondary survey en route.	
15.	Complete a first aid record.	

Summary

1. How should you treat a worker with a penetrating eye injury?

Lesson 17.6: Major burns

Learning outcomes

1. Manage a worker with a major burn.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 38: Burns

Skill practice

Goal
Manage a worker with a major burn to both hands.
Scenario
A painter was working at height, applying labels to the plant flow piping near the top of a 4 m (13.1 ft.) step ladder when they lost their footing. As the worker reached out to prevent themself from falling, they grabbed an active steam pipe with both hands. When you arrive, the worker is at the industrial sink, cooling their burned hands.

Steps		
1.	Conduct a scene assessment. Confirm the mechanism of injury.	There are no hazards. One person is injured. Based on the mechanism of injury, spinal motion restriction is not needed. The worker did not fall.
2.	Assess the level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	Worker's eyes are open. He is anxious. Based on AVPU, the worker is alert.
3.	Initiate or continue flushing the worker's hands with cool water.	
4.	Activate the workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared.	Major burns to the hands, feet or genitalia are in the rapid transport category.

Steps		
	• If calling an ambulance, tell them there is a responsive adult with a serious burn on their hands.	
5.	Assess the airway.	He's able to talk. Airway is clear.
6.	Assess breathing: • Look, listen and feel. • Approximate Rate (slow, normal, fast) • Rhythm and Quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	He's able to speak in full sentences.
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. There are no signs of shock. There are major third-degree burns to the palms and fingers of both hands. There are no other injuries.
8.	Continue cooling and remove any rings, watches or jewelry.	
9.	Transport decision: rapid transport category.	Describe the remaining steps. There is no need to demonstrate.
10.	Monitor the ABCs.	
11.	Package the worker in a comfortable position for transport.	

Steps		
12.	Continue cooling and conduct a secondary survey while waiting for transport or en route.	
13.	Provide treatments: a. Cover the area with moist, sterile gauze. b. Lightly secure the dressing with a roller bandage. c. Keep hands elevated, if possible.	
14.	Complete a first aid record.	

Summary

1. What is the first thing you should do for a worker with a major thermal burn?
2. What critical interventions should you provide for a worker with a major thermal or chemical burn?

Module 18

Exposure to Heat and Cold

18. Exposure to Heat and Cold

18.1. Signs of heat and cold injuries
18.2. Heatstroke
18.3. Hypothermia
18.4. Frostbite

Lesson 18.1: Signs of heat and cold injuries

Learning outcomes

1. Describe the signs and symptoms of heat exhaustion, heatstroke, frostbite, and hypothermia.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 37: Exposure to heat and cold

Theory

Environmental injuries

Environmental injuries can occur when workers are exposed to the environment without the ability to protect themselves from it. Some examples of environmental injuries include frostbite, hypothermia, heat exhaustion, heatstroke, sunburn, snow blindness, trench foot, drowning, decompression illness, and altitude sickness.

These injuries may be caused by exposure to:

- Cold
- Heat
- Sun (UV rays)
- Wind
- Rain or water
- Atmosphere
- Altitude
- Decompression

Heat exhaustion

The signs and symptoms of heat exhaustion include:

- Shallow respiration
- Increased respiratory rate
- Weak and rapid pulse
- Cool, pale, and clammy skin
- Sweating
- Weakness, fatigue, or dizziness
- Headache and nausea
- Fainting
- Muscle cramps

The presence of sweating is an important finding because it is often the only way to differentiate heat exhaustion from the life-threatening emergency of heatstroke.

Workers with heat exhaustion should be managed by positioning supine, loosening restrictive clothing, cooling, and fanning.

If fully alert and not nauseated, non-alcoholic and non-caffeinated oral rehydrating solutions will help. These workers will usually improve within 30 minutes but should still be transported to medical aid.

Heatstroke

The signs and symptoms of heatstroke include:

- Hot, dry, flushed skin
- Absence of sweating
- Agitation and confusion
- Decreased level of consciousness
- Headache
- Nausea and vomiting
- Seizures
- Increased respiratory rate
- Irregular pulse
- Shock
- Cardiac arrest

All workers with heatstroke are in the rapid transport category.

Frostbite

The signs and symptoms of frostbite include:

- Pain and redness in the affected area
- Pale skin, tingling, and numbness as the frostbite worsens
- White or blue and white skin
- Skin feels frozen solid to the touch

Workers with frostbite alone are not in the rapid transport category but will need medical attention.

Hypothermia

The signs and symptoms of hypothermia include:

- Mild — Shivering, body temperature 33 to 35°C
- Moderate — Confusion, decreased level of consciousness, slowed heart rate, slowed breathing, body temperature 29 to 32°C. As the body rewarms and the cold blood in the skin and extremities returns to the core, the core temperature may lower (core temperature afterdrop)
- Severe — Lowed respiratory rate, slowed heart rate, dilated and poorly reactive pupils, unresponsive, frothy sputum, body temperature below 28°C, cardiac arrest, coma

Workers with mild hypothermia are not in the rapid transport category. Workers with moderate to severe hypothermia are.

Hypothermic workers in cardiac arrest

Hypothermic workers in cardiac arrest should receive CPR. If an AED is available, apply the pads, and if prompted, deliver one shock only. A hypothermic worker in cardiac arrest is in the rapid transport category and should be transported without delay. CPR should be administered en route to the hospital, if possible. This is the only time that a worker in cardiac arrest should be transported prior to the restoration of normal breathing and pulse.

Summary

1. How do the symptoms of heat exhaustion differ from the symptoms of heatstroke?
2. What are the signs and symptoms of frostbite?
3. What is the difference between moderate and severe hypothermia?
4. Which heat and cold injuries are in the rapid transport category?
5. Why is moderate hypothermia in the rapid transport category?

Lesson 18.2: Heatstroke

Learning outcomes

1. Manage a worker experiencing heatstroke.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 37: Exposure to heat and cold

Skill practice

Goal
Manage a worker experiencing heatstroke.
Scenario
A construction worker who is part of a crew that is building a residential high-rise tower walks into the first aid office. It's a hot day and the worker has been outside all morning. They are agitated and tell you that they have a really bad headache.

Steps		
1.	Conduct a scene assessment.	You send a helper to check on the rest of the crew. None of them have been affected by the heat, but the helper reminds the crew to take breaks and drink water. The worker looks very sunburned. They tell you they feel sick. Spinal motion restriction is not required.
2.	Assess the worker's level of consciousness. • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker responds with clear speech but is agitated. Based on AVPU, the worker is alert.
3.	Activate the workplace emergency response procedures.	Suspected heat related illness
4.	Position the worker supine on a cot with their head elevated. Loosen or remove excess clothing.	
5.	Assess the airway.	The worker is speaking clearly. The airway is clear.
6.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is normal.

Steps		
7.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present, but irregular. The worker's skin is hot, dry, and flushed. Headache and nausea. There are no other injuries.
8.	Critical interventions: a. If still in direct sunlight, move the worker to the coolest spot available. b. Get a biohazard bucket ready. c. Remove all outer clothing. d. Sponge or soak the worker with cool water, and use a fan. e. Give worker fluids to drink. Juice, non-caffeinated soft drinks, or a sports drink is best. If that's not available, mix 1 teaspoon of salt in 2 cups of water.	Place the worker in a comfortable position. The worker does not feel like they will vomit.
9.	Transport decision: rapid transport category. Describe the remaining steps. There is no need to demonstrate.	
10.	Package the worker in a comfortable position.	
11.	Conduct a secondary survey while waiting for transport or en route. If possible, monitor and record the worker's core temperature.	
12.	Complete a first aid record.	

Summary

1. When you have a worker with heatstroke, what should you do as part of the scene assessment?
2. What critical interventions should you provide for a worker who is experiencing heatstroke?

Lesson 18.3: Hypothermia

Learning outcomes

1. Manage a worker experiencing hypothermia.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 37: Exposure to heat and cold

Skill practice

Goal
Manage a worker with moderate to severe hypothermia.
Scenario
A worker has been outdoors for several hours in the cold. Co-workers notice that the worker is acting confused and sluggish. The co-workers tell you that the worker decided to just lie down right where they were because they were very tired. When you arrive, the worker is lying supine and the co-workers tell you that they just won't get up.

Steps		
1.	Conduct a scene assessment.	Ask a helper to check on other workers and caution them about the dangers of hypothermia. Spinal motion restriction is not required. The worker can be

Steps		
		assessed in the position found.
2.	Assess the worker's level of consciousness. a. Approach the worker from the front, identify yourself, and attempt to communicate. b. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate means.	There is no response to your voice. The worker does not respond to verbal or pain stimulus. Based on AVPU, the worker is unresponsive.
3.	Activate the workplace emergency response procedures. • Ask someone to call an ambulance or have an ETV prepared. If calling an ambulance, tell them there is an unresponsive adult and to report back.	
4.	Assess airway, breathing, and circulation: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for air movement for 5 seconds. c. With one hand, carefully slide your fingers to the carotid pulse and assess for up to 30 seconds.	The worker is not breathing. There is no pulse.

Steps		
5.	Perform 30 chest compressions: a. Send a helper to bring the AED. b. Make sure the worker is on a hard surface and expose their chest. c. Place your hands on the chest between the nipples. d. Interlock your fingers and straighten your arms until your elbows lock. e. Press straight down. Push hard, push fast. Compress at least 5 cm (2 in.) at a rate of at least 100 compressions per minute. Allow the chest to recoil. f. As you perform chest compressions, train a helper to take over, if possible.	A helper is available and can assist with CPR
6.	Have the helper take over compressions: a. Perform a head-tilt chin-lift. b. Using a pocket mask, ventilate the worker with 2 breaths.	
7.	Measure and insert an oral airway.	
8.	Administer high-flow oxygen using the pocket mask.	
9.	When the AED arrives, prepare the worker and attach the AED: a. Bare the chest. b. Shave hair, remove patches, and make sure the chest is dry. c. Turn on AED and follow voice prompts. d. Apply pads at least 2.5 cm (1 in.) from implanted devices.	Chest is dry. No chest hair, medication patches or medical devices.

Steps		
10.	Analyze the heart rhythm: a. Follow voice prompts or press the Analyze button. b. Tell the helper, "Stop compressions and don't touch the worker." c. Make sure no one is touching the worker and everyone is standing clear.	
11.	Deliver one shock: a. Say, "I'm clear. Everyone is clear. Do not touch the worker." b. If prompted to do so, press the Shock button.	Spontaneous circulation and breathing are restored.
12.	Other critical interventions: a. Move the worker to a warm environment as soon as possible. Handle the worker gently. Use a stretcher. Do not suppress shivering. It helps the worker generate heat. b. Continue to assist ventilations using the pocket mask to a maximum of six breaths per minute (the worker is hypoxic). If the worker was not hypoxic, apply high-flow oxygen and non-rebreathing mask. c. Remove all wet clothes, cover the worker with blankets, and turn up the heat. d. Do not give the worker anything by mouth.	
13.	Transport decision: rapid transport category. The instructor will describe the remaining steps. Worker packaging is not a new skill.	
14.	Package the worker for transport.	
15.	Monitor the worker's ABCs.	

Steps		
16.	Complete a secondary survey while waiting for transport or en route. Reassess the worker frequently. Record the worker's core temperature, if possible.	
17.	Complete a first aid record.	

Summary

1. For how long should you assess the carotid pulse if the worker is hypothermic?
2. Besides CPR and AED if the worker is in cardiac arrest, what else can you do to help a worker with moderate to severe hypothermia?

Lesson 18.4: Frostbite

Learning outcomes

1. Manage a worker with frostbite.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 37: Exposure to heat and cold

Skill practice

Goal
Manage a worker with frostbite.
Scenario
A worker has been outdoors for several hours in the wind chill. They walk into your office. The worker is worried that they might have frostbite on her right ear. At first, it stung. Now, it's numb.

Steps		
1.	Conduct a scene assessment.	Send a helper to check on other workers and caution them about the possibility of frostbite. Spinal motion restriction is not required. The worker can be assessed sitting in a chair.
2.	Assess the worker's level of consciousness. • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker responds with clear speech. Based on AVPU, the worker is alert.
3.	Assess the airway.	The worker is speaking clearly. The airway is clear.
4.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is normal.
5.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. The outer ear is pale. It is also tingling and numb. There are no other injuries.
6.	Transport decision: Non-rapid transport category,	

Steps		
	medical aid.	
7.	Secondary survey: a. Take the worker's medical history. b. Take the worker's vitals. c. Thoroughly examine the injured area. d. Assess sensory and nerve function.	History and vitals as found. As the ear rewarms, the worker experiences pain. Reassure them that the pain is normal and a good sign, indicating that the affected part will recover.
8.	Injury care: a. Lightly dress the ear and behind the ear with sterile dressing. b. Wrap it in roller gauze.	Explain that swelling and blisters may form a few hours after rewarming.
9.	Complete a first aid record.	

Summary

1. When you have a worker with frostbite, what should you do as part of the scene assessment?
2. What critical interventions should you provide for a worker who has frostbite?

Day 7 Homework

Effective communication (Module 19)

Read pages 19–20 in the textbook. Bring notes on the following to the next class:

1. When should you first notify BC Emergency Health Services (BCEHS)? When should you give BCEHS updates?
2. What information should you give to BCEHS when you transfer responsibility?

Module 19

Effective Communication

19. Effective Communication

19.1. Your communication role
19.2. Communication strategies

Lesson 19.1: Your communication role

Learning outcomes

1. Describe when BCEHS should be called.
2. Describe the information that should be provided to BCEHS when you transfer worker responsibility.

Required reading

Advanced First Aid: A Reference and Training Manual

Chapter 3: Initial evaluation of the trauma patient

Discussion (10 min)

1. When should you first notify BC Emergency Health Services (BCEHS)?
2. When should you give BCEHS updates?
3. What information should you give to BCEHS when you transfer responsibility?

Answers

Pair-based scenario exercise (20 minutes)

Instructions

Take turns practising what you should say when you hand over the worker to the next level of care.

Scenarios:

1. While performing their regular duties, a 40-year-old worker developed chest pain. When you arrive, the worker is standing beside the photocopier. They are alert but showing signs of shock. The worker is on medication for high blood pressure but has no previous history of chest pain. The severity of the chest pain is 7 out of 10. The pain has not lessened in the last 40 minutes. The worker is not allergic to anything, having a heart attack because of stroke, or under 19 years of age. You offered them two 80 mg chewable tablets of ASA which they took about five minutes ago.

   The worker's vital signs are as follows:

   - LOC: 4/5/6=15
   - Breathing: 28, short of breath but effective Pulse: 100, irregular
   - SpO_2 96%
   - Skin: cool, pale, and clammy Pupils: 4 mm, equal and reactive

2. You are called to a meeting room where a worker has been complaining of chest pain. About 10 minutes ago, the 53-year-old worker appeared to be faint and had to be helped to the floor. They are unresponsive, not breathing normally, and do not have a carotid pulse. They have no medication patches or medical alert devices. You've been administering CPR/AED for 25 minutes. The AED advised no shock during CPR. Spontaneous circulation and breathing have not been restored.
3. A 19-year-old agriculture equipment salesman was visiting an orchard to promote his goods when he was stung by a bee. The worker is alert, but anxious when they tell you what happened and that they're allergic to bee stings. The worker's airway is clear, their breathing is shallow, and their radial pulse is weak. You help the worker use their epinephrine auto-injector about four minutes before the next level of care arrives. By the time the next level of care arrives, it's been 10 minutes since the worker was stung.

   The worker's vital signs are as follows:

   - LOC: 4/5/6=15
   - Breathing: 28, shortness of breath, effective Pulse: 88, weak
   - SpO_2 98%
   - Skin: warm, flushed red, and dry Pupils: 4 mm, equal and reactive

4. A 32-year-old sawmill worker was struck in the face by a log as it broke free from a jam. When you arrive, the worker is unresponsive to voice and their lips are cyanotic. Co-workers tell you what happened. Based on the mechanism of injury, spinal motion restriction is

required. There is blood in and around the worker's mouth and gurgling. Suctioning clears the airway and they accept an oral airway. You provide assisted ventilations with high-flow oxygen.

The worker's vital sings are as follows:

- LOC: 2/2/4=8
- Breathing: 20 assisted
- Pulse: 68 regular
- SpO_2 95%
- Skin: pale, cool, and dry Pupils: 3 mm, equal and reactive

5. A 42-year-old worker is experiencing respiratory distress. They were carried out of an area due to a gas leak. The worker is unresponsive to voice but withdraws from pain stimulus. You ventilate with a pocket mask and give them high-flow oxygen. The worker accepts an oral airway.

   The worker's vital signs are as follows:

   - LOC: 1/2/4=7
   - Breathing: 20 assisted
   - Pulse: 104 regular
   - SpO_2 92%
   - Pupils: 5 mm, equal and slow to react Skin: pale, cool, and clammy

6. A box of machine parts hit a 23-year-old worker on the head. Co-workers heard them scream and found them unresponsive on the floor. Based on the worker's mechanism of injury, spinal motion restriction is required. The worker is unresponsive and not breathing. Their carotid pulse is present and the airway is clear. Their skin is cold, dry, and blue. You ventilate them with a pocket mask, insert an oral airway, and provide high-flow oxygen. The next level of care arrives before you have time to take the worker's vital signs.
7. At a health and safety meeting, 47-year-old worker started to choke on their snack. You activate the workplace emergency response procedures and call for BCEHS. The worker remains alert while you clear the airway using back blows and abdominal thrusts. You give the worker high-flow oxygen. There is no relevant medical history, medications, or allergies.

   The worker's vital signs are as follows:

   - LOC: 4/5/6=15
   - Breathing: 24, regular but effective
     Pulse: 96 regular
   - SpO_2 98%
   - Pupils: 3 mm, equal and reactive
     Skin: normal, warm, and dry

You decide that rapid transport is no longer necessary and update BCEHS

8. A 23-year-old worker was thrown out of their forklift when they drove the left wheels into a ditch and the forklift tipped over. The worker has massive bleeding on their left thigh. They have been conscious since the incident. Based on the mechanism of injury, spinal motion restriction is required. You apply direct pressure, but it doesn't control the bleeding. You apply a tourniquet at 2:35 p.m., and that stops the bleeding. You give the worker high-flow oxygen.

   The worker's vital signs are as follows:

   - LOC: 4/5/6=15
   - Breathing: 28, shallow, effective
     Pulse: 112, weak and regular
     SpO_2: 98%
   - Pupils: 3 mm, equal and reactive
     Skin: pale, cool, and dry

9. A 56-year-old worker known to have diabetes was taking stock in the warehouse when they felt faint. A co-worker helped them to the floor. You give the worker high-flow oxygen and glucose.

   The worker's vital signs are as follows:

   - LOC: 3/4/5=11
   - Breathing: 20, shallow, effective
     Pulse: 104, regular
   - SpO_2 98%
   - Pupils: 4 mm, equal and reactive Skin: pale, cool, and clammy

10. A 26-year-old worker was on a high-rise when a piece of lumber fell from above and struck them in the face. The worker is unresponsive to voice. Their nose was bleeding profusely but has been controlled. The accident happened about 20 minutes ago. Spinal motion restriction was applied. Suctioning clears the airway. You insert an oral airway and give the worker high-flow oxygen.

    The worker's vitals are as follows:

    - LOC: 1/2/4=7
    - Breathing: 20, regular, effective
      Pulse: 88, regular
    - SpO_2 98%
    - Pupils: 5 mm, equal and reactive
      Skin: normal, warm, and dry

11. A 46-year-old worker was completing inventory in the warehouse when they began to have a seizure. They slid to the floor without hitting their head or neck. When you arrive, the seizure has stopped, but they are unresponsive. The worker rejects an oral airway and shows no signs of shock. The next level of care arrives before you take any vital signs.
12. A 58-year-old worker was at their desk when they began to behave strangely. Their face drooped and their speech became garbled. The worker said they were dizzy, then became unconscious and slid to the floor without hitting their head or neck. The worker seems to hear you but is confused. They show signs of a stroke. You apply suction to clear the airway and give the worker low-flow oxygen using a nasal cannula. The next level of care arrives before you take any vital signs.

Answers

Answers

Summary

1. When should you call BCEHS?
2. What should you tell BCEHS?

Lesson 19.2: Communication strategies

Learning outcomes

1. Describe strategies for effective communication with workers.
2. Describe barriers to effective communication with workers.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 3: Initial evaluation of the trauma patient

Theory

Effective communication strategies

When talking to workers:

1. Be calm and reassuring.
2. Tell them you're prepared and have practised for this type of situation.
3. Use the worker's name and make eye contact.
4. Explain what you're going to do and reassure the worker even if they are confused or comatose.
5. Listen attentively and paraphrase what you've heard.
6. Tell the truth, or you may destroy the worker's trust in you.
7. Use appropriate body language such as a pat on the shoulder.
8. Avoid being coldly detached, angry, or irritated with the worker.

Class discussion

Barrier to effective communication

What are possible solutions to the following communication barriers?

1. The worker speaks a different language than you or has hearing challenges.
2. In the heat of the moment, you could miss something important the worker says.
3. The scene of the accident is next to a noisy work area.
4. The worker seems to be confused by your question.

Answers

Summary

1. How can you reassure a worker who is feeling anxious?
2. What is just as important as talking?
3. What should you do if the worker does not speak your language?

Module 20

Head and Nervous System

20. Head and Nervous System

20.1. Spinal injuries
20.2. Altered level of consciousness
20.3. Seizure
20.4. Stroke

Lesson 20.1: Spinal injuries

Learning outcomes

1. Describe the signs and symptoms of a spinal injury.
2. Manage a worker with a possible spinal injury.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 17: Spinal injuries
Chapter 18: Spinal injury management

Theory

Mechanism of injury

You should assume that the worker has a spinal injury if any of the following mechanisms of injury occurred:

- Motor vehicle crash
- Fall from a height
- Direct blow to the spine
- Severe electrical shock
- Facial and head injury
- Using the modified NEXUS rule reveals that spinal precautions are necessary

Signs and symptoms of spinal injury

The signs and symptoms of a spinal injury include:

- Pain, tenderness, or stiffness in the affected area
- Numbness, tingling, or weakness in one or more extremity
- Any noticeable deformity of the spine
- Swelling
- Difficulty breathing if the spinal cord was injured

Difference between spinal cord and bony spine injuries

It is important to remember that spinal cord injuries and bony spine injuries are different and may occur independent of one another.

The spinal cord is the delicate tissue inside the spinal column. If the signs and symptoms of spinal injury include neurological deficits, you should suspect the spinal cord has been injured.

The bony spine is part of the skeleton. If the signs and symptoms do not include neurological deficits, it is a bony spine injury.

Skill practice

Goal
Manage a worker with a spinal injury.
Scenario
A worker was struck by roof trusses and knocked to the ground. The worker is lying supine on the ground, complaining about back pain and supporting both sides of their pelvis. You are 2 hours from a hospital.

Steps		
1.	Use all appropriate personal protective equipment for the site.	
2.	Conduct a scene assessment.	The trusses have been moved. One injured. Based on the mechanism of injury, spinal motion restriction is required.
3.	Activate the workplace emergency response procedures. Due to the mechanism of injury, ask someone to bring the ETV right away, and call BCEHS.	
4.	Assess the worker's level of consciousness: • Approach the worker from the front, identify yourself, and attempt to communicate.	The worker responds with clear speech. Based on AVPU, the worker is alert.

Steps		
5.	Manually stabilize the worker's head and neck.	
6.	Assess the airway.	The worker is speaking clearly. Airway is clear.
7.	If possible, train a helper to take over manually stabilizing the head and neck. "Hands over mine, fingers and thumbs where mine are, elbows braced. Don't move while I reposition myself. Let me know if you have to move so I can help."	
8.	Assess breathing: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	Breathing is normal.
9.	Assess circulation: • Radial pulse • Signs of shock (pale, cool, clammy) • Rapid body survey	Radial pulse is present No signs of shock. Pain in neck and lumbar area of back and on both sides of the pelvis. Numbness and tingling in both legs.
10.	Apply oxygen. Apply a blanket for warmth, if necessary.	
11.	Transportation decision: rapid transport category.	Spinal cord injury is rapid transport category.

Steps		
12.	Do not apply the modified NEXUS rule. • Numbness or tingling	Midline cervical pain, worker midline lumbar back pain, and neurological deficit. Maintain spinal motion restriction.
13.	Apply a hard collar.	Midline cervical and lumbar pain, and neurological deficits found.
14.	Tie the worker's legs together.	
15.	Use a scoop-style stretcher, if available, or position the worker on a spine board.	
16.	Lift the worker onto a basket stretcher.	
17.	Complete the secondary survey while waiting for transport or en route.	
18.	Check ABCs every 5 minutes and vital signs every 10 minutes.	
19.	Complete a first aid record	

Summary

1. What are the signs and symptoms of a possible spinal injury?
2. How can you tell the difference between a spinal cord and a bony spine injury?
3. What is the main thing to remember when assessing and treating a worker with a possible spinal injury?
4. How should you package a worker who has a possible spinal injury?

Lesson 20.2: Altered level of consciousness

Learning outcomes

1. Describe strategies for managing a worker with an altered level of consciousness.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 15: Patients with an altered level of consciousness

Group-based scenario exercise

Instructions

Identify the possible cause of the altered level of consciousness and come up with strategies for managing the worker. Refer to Chapter 15 in your textbook.

Scenarios

1. A building maintenance technician is found lying on some cartons of paper products in the stockroom. There is a strong odour of alcohol in the immediate area.
2. An office worker is slurring their words and seems unsteady on their feet. The worker's skin is pale and they are confused. There is no smell of alcohol or signs of drug use.
3. A worker who came to you a few days ago with a minor wound is feeling faint. You recognize the worker. You take their temperature and see that they have a fever. The wound is tender, hot, and red.
4. A carpenter fell 5 m (16.4 ft.) from a scaffold, striking their head on a stack of lumber. The worker is lying on their side, not moving and with their eyes closed. When you assess their level of consciousness, the worker does not respond to verbal or pain stimuli.

Answers

Answers

Summary

1. If you know a worker is intoxicated, do you need to look for other causes of the altered level of consciousness?
2. What is the transport decision for all workers with an altered level of consciousness?

Lesson 20.3: Seizure

Learning outcomes

1. Describe what a seizure is.
2. Describe the types of seizures.
3. Describe the signs and symptoms of a seizure.
4. Manage a worker who is having a seizure.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 16: Injuries to the head and brain

Theory

What a seizure is

A seizure is a sudden surge of electrical activity in the brain. As a first aid attendant, you may encounter tonic-clonic seizures or simple partial seizures. The primary objective of first aid treatment for a worker who is having any kind of seizure is to maintain a clear airway.

Tonic-clonic seizures

With tonic-clonic (grand mal) seizures, the worker convulses, loses consciousness, and drops to the ground. All of their muscles contract and their body becomes rigid. Their extremities begin to jerk rapidly, their jaw tightens and their teeth clench. The worker appears to be in danger of respiratory arrest. Loss of bladder control is common. The convulsion is followed by a period of decreased consciousness, which typically lasts 10 to 30 minutes. During this period, the worker gradually improves.

Simple partial seizures

A simple partial seizure may go unnoticed, as they are often very brief. Only the part of the brain that controls motor activity is affected. Typically, only one part of the body begins to twitch or shake. A simple partial seizure may progress into a tonic-clonic seizure.

Skill practice

Goal
Manage a worker who is having a seizure.

Goal
Scenario
A worker was at their desk when they began to have a seizure. The worker slid out of their chair and landed on the floor without hitting their head or neck. When you arrive, the seizure has stopped and the worker is lying on their side with a pool of saliva around their head.

Steps		
1.	Conduct a scene assessment.	No hazards. One injured. Spinal motion restriction is not required.
2.	Activate the workplace emergency response procedures: Ask someone to call an ambulance or have an ETV prepared. If calling an ambulance, tell them there is an unconscious adult who has had a seizure.	First aid attendant
3.	Assess the worker's level of consciousness. a. Approach the worker from the front, identify yourself, and attempt to communicate. b. Apply a painful stimulus by squeezing the nail bed on the worker's hand or another appropriate means.	The worker does not respond to verbal stimuli. The worker does not respond to pain either. Based on AVPU, the worker is unresponsive.
4.	Place the worker supine.	

Steps		
5.	Assess the airway and breathing and pulse: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for the movement of air for 5 seconds. c. Slide your fingers to the carotid pulse for 5 seconds. d. If possible, get a helper to maintain the head-tilt chin-lift.	You hear and feel regular, quiet breathing. You see the worker's chest rise and fall. A carotid pulse is present.
6.	Measure and insert an oral airway. Assess to ensure that the worker is still breathing quietly and effectively.	The worker accepts the oral airway and is still breathing normally.
7.	Assess circulation: • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	The worker's skin is normal, warm, and dry. No other injuries are found.
8.	Place the worker in the ¾-prone position.	
9.	Apply a blanket for warmth.	
10.	Transport decision: rapid transport category.	
11.	Package and load the worker in the ¾-prone position.	The oral airway may be left partially in place to keep the mouth open.
12.	Complete a secondary survey while waiting for transport or en route.	
13.	Check ABCs every 5 minutes and vital signs every 10 minutes.	
14.	Complete a first aid record.	

Summary

1. What are the signs and symptoms of a seizure?
2. What critical interventions should be given to a worker who has had a seizure?
3. What is the transport decision for workers who have had a seizure?

Lesson 20.4: Stroke

Learning outcomes

1. Describe what a stroke is.
2. Describe the types of strokes.
3. Describe the signs and symptoms of a stroke.
4. Manage a worker who is having a stroke.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 16: Injuries to the head and brain

Theory

Types of stroke

A stroke is a cerebrovascular accident in which a cerebral artery becomes blocked or ruptures.

There are two main types of strokes:

- Ischemic strokes caused by blockage or narrowing of a cerebral artery
- Hemorrhagic strokes caused by rupture of a cerebral artery

Signs and symptoms of a stroke

Signs and symptoms of a stroke include:

- Weakness in one or more limb
- Numbness in one side of the body
- Severe headache
- Nausea
- Amnesia
- Visual difficulty
- Decreased level of consciousness and confusion
- Trouble speaking
- Dizziness
- Seizures
- Sudden clumsiness
- Difficulty swallowing

A quick screen for stroke is to use the acronym FAST (face, arms, speech, time):

- **F**ace — Look for facial droop or asymmetry.
- **A**rms — Ask the worker to hold both arms out straight in front of them with their palms up. Then ask the worker to close their eyes for 10 seconds. If one of their arms drop, it may be a sign of stroke.
- **S**peech — Is the worker speaking normally? Are they oriented in time and place? Can they understand you? Can you understand them?
- **T**ime — To call 911. If you think the worker may have had a stroke, get them to the hospital as fast as possible.

Skill practice

Goal
Manage a worker who is having a stroke.
Scenario
During a meeting, a worker began to behave strangely. The worker's face drooped and their speech became garbled. They seemed confused and said they felt dizzy. Then, the worker became unconscious and slid to the floor without hitting their head or neck. When you arrive, the worker is lying supine.

Steps		
1.	Conduct a scene assessment.	No hazards. One person is injured. Spinal motion restriction is not required.
2.	Assess the worker's level of consciousness. Approach the worker from the front, identify yourself, and attempt to communicate.	The worker seems to hear you talking but is confused. They respond in garbled speech.

Steps		
3.	Activate the workplace emergency response procedures: • Ask someone to call an ambulance or have an ETV prepared. • If calling an ambulance, tell them there is a conscious adult who may be having a stroke.	
4.	Open the airway: a. Perform a head-tilt chin-lift. b. Look, listen, and feel for air movement for 5 seconds. c. Place ¾-prone to facilitate drainage	Breathing is noisy (gurgling). The airway drains fluids effectively in the ¾-prone position.
5.	Assess breathing in ¾-prone position: • Look, listen, and feel. • Approximate rate (slow, normal, fast) • Rhythm and quality (effective, even, deep, shallow, distressed, laboured, gasping) • Chest wall movement (both sides should expand equally)	After placing ¾-prone, you hear and feel regular, quiet breathing. You see and feel the worker's chest rise and fall regularly.
6.	Assess circulation: • Radial pulse • Signs of shock (cool, pale, clammy skin) • Rapid body survey (bleeding, fractures)	Radial pulse is present. Skin is warm and dry. No injuries or medical alert devices are found during rapid body survey.
7.	Apply low-flow oxygen.	Use nasal cannula
8.	Apply a blanket for warmth.	
9.	Transport decision: rapid transport category.	Package ¾-prone to allow the airway to drain.

Steps		
10.	Package the worker.	
11.	Complete a secondary survey while waiting for transport or en route.	
12.	Complete a first aid record.	

Summary

1. What are the signs and symptoms of a stroke?
2. What is a quick way to screen for stroke?
3. What critical interventions should you give to a worker who is having a stroke?

Module 21

Multiple Workers

21. Multiple Workers

21.1. START system

Lesson 21.1: START system

Learning outcomes

1. Describe the START system for triage and management of multiple injured or ill workers.

Required reading

Advanced First Aid: A Reference and Training Manual
Chapter 49: Multiple casualties, disaster, and triage

Theory

Triage

The first rule of triage is to do the greatest good for the greatest number. Sorting and prioritizing injuries and allocating limited resources requires skill, judgment, and experience. The first aid attendant must initiate a triage process, but responsibility for triage should be handed over to a more experienced person as soon as possible.

The following rules of triage apply:

1. Only immediately life-threatening conditions are identified and treated in the initial triage round.
2. Salvage of life takes precedence over salvage of limbs.

Sorting

START stands for Simple Triage And Rapid Treatment. Tag the workers using the following colour codes:

- Green — minor injury, walking wounded
- Yellow — delay, can wait
- Red — immediate
- Black — expectant or deceased

You need to sort the workers as quickly as possible. Ask anyone who can hear you and walk to come forward. Tag these people as green and get them to wait nearby. Some of these people may be able to help you assess and provide lifesaving interventions to the other workers.

Assessment

Using the primary survey and rapid transport criteria, move rapidly from one worker to another, identifying those who require immediate treatment and prioritizing workers for transport to hospital. Pause only to treat life-threatening conditions.

Use the acronym RPM when assessing triage workers:

- Respiratory
- Perfusion
- Mental status

Class-based scenario exercise (20 minutes)

Using the START system, triage the following group of workers. Refer to the START triage flow chart in your textbook.

1. Ninety percent second-degree burns, lying on floor, respiratory rate greater than 30, radial pulse absent, unconscious
2. Sudden onset of chest pain with shortness of breath, able to walk, breathing spontaneously, respiratory rate less than 30, no radial pulse
3. Abrasion on face, able to walk, respiratory rate less than 30, radial pulse present, obeys commands
4. Worker who is six months pregnant, broken left-lower leg, not able to walk, respiratory rate less than 30, radial pulse present, obeys commands
5. Unresponsive, not breathing, positioning airway does not restore breathing
6. Blood in right eye, walking, breathing spontaneously, respiratory rate less than 30, radial pulse present, obeys commands

Answers

Answers

Summary

1. What are the four categories used to triage workers?
2. What sort of critical interventions would you provide during triage?

Appendix A

Certification of first aid attendants

Certification of first aid attendants

Certification requirements

To qualify for an initial WorkSafeBC advanced first aid certificate, you must successfully complete this WorkSafeBC advanced first aid training course. You must also achieve a grade of at least 70% on the final written test and each part of the summative skills assessment.

The course must be taught and evaluated by a person authorized by WorkSafeBC. If you fail to complete any part of the course, you will have to complete the components you missed before you can be tested. This must be done without undue delay and at the discretion of the approved training agency.

Remediation

If you fail any one part of the written test or summative skills assessment, you may be allowed a second attempt, subject to approval from the training agency. If you do not pass on your second attempt, you will have to repeat the entire course before becoming eligible for another assessment.

On the second attempt, you must retake the failed portion of the assessment in its entirety. Depending on the results of the first assessment, passing grades that were obtained on other parts of the assessment during your first attempt will be carried forward to the second assessment. Your second attempt can be no sooner than 24 hours after the first failed assessment. If you don't make a second attempt within 60 days of the first examination, you will have to repeat the entire course before being assessed again.

Challenging the assessment

The advanced assessment consists of the last 2 days (the final 14 hours) of the course. You can ask to take the assessments without completing the course if you have both of the following:

- A current valid advanced first aid certificate (a current first aid or pre-hospital emergency care course consisting of approximately 70 hours)
- A current valid CPR/AED certificate (a CPR/AED course certificate that included adult resuscitation, issued not more than six months prior to the examination).

However, consider this choice carefully. Depending on the nature of the course you completed, there may be equipment, protocol, and procedural differences that could impact your ability to pass the WorkSafeBC advanced first aid course.

Duration of certificates

Advanced first aid certificates are valid for three years from the date of completion of the examination. Extensions of the duration of certificates are not permitted.

Renewal of certificates

To renew a certificate or certificate endorsement, you must meet the same training and assessment requirements you underwent for your initial certificate, unless you choose to challenge the assessments.

You can only take the advanced first aid assessments without repeating the course if you have both of the following:

- A valid (not expired) OFA 3 certificate or WorkSafeBC advanced certificate
- A CPR/AED certificate that included adult resuscitation that was issued not more than six months prior to the examination date.

The advanced first aid assessment consists of the last two days (the final 14 hours) of the course.

Terms and conditions of certification

To keep your WorkSafeBC advanced certificate, you must continue to do all of the following:

- Follow the principles of first aid treatment as outlined in this WorkSafeBC advanced first aid training program.
- Comply with the Occupational Health and Safety Regulation and the other responsibilities of attendants in this training program.
- Comply with any other terms and conditions provided to you by the training agency when you were granted certification or provided to you by WorkSafeBC at any other time.

Inappropriate conduct

OHS Policy item P2-96-1 states that a first aid certificate may be suspended, cancelled, or have conditions placed upon its use if the first aid attendant engages in inappropriate conduct, including any of the following:

- Smoking while assessing or treating an injured or ill worker, and/or while handling oxygen therapy equipment, or permitting others to do so
- Failure to use the assessment and injury treatment techniques outlined in first aid training courses unless conditions precluded them
- Conduct that poses an unreasonable threat to the safety and well-being of other workers or the public
- Removing themselves from being able to see or hear any summons for first aid at a workplace
- Abandonment of an injured worker after beginning assessment or treatment
- Refusal to treat an injured worker when acting as the designated attendant
- Treating or transporting an injured worker while impaired or under the influence of drugs or alcohol

Failure to comply with requirements

If WorkSafeBC has reasonable grounds for believing that a person who holds a first aid certificate has breached a term or condition of the certificate, or has otherwise contravened a provision of the *Workers Compensation Act* or the OHS Regulation, WorkSafeBC may, under section 96 of

the *Workers Compensation Act:*

a. Cancel or suspend the certificate, or
b. Place a condition on the use of that certificate that WorkSafeBC considers is necessary in the circumstances.

WorkSafeBC will consider the nature of the violation, the circumstances surrounding the incident, and the past history of the attendant in determining the action to be taken.

In order of severity, the possible actions that may be taken are:

a. A warning is issued.
b. A condition is placed on the use of the certificate.
c. The certificate is suspended for a period that ends before the normal expiry of the certificate, or
d. The certificate is cancelled.

In addition to or instead of these actions, WorkSafeBC may do any of the following:

- Require the attendant to renew their existing certificate or obtain a different certificate.
- Place conditions on the attendant's certificate.
- Disallow the attendant from having a certificate for a period of time.

Reviews and appeals

An order to cancel or suspend a certificate may be appealed. Section 268 of the *Workers Compensation Act* provides that a person may request a review officer to review a Board order.

Within 90 calendar days of the order issue date, an attendant may request in writing that the Review Division of WorkSafeBC conduct a review of the order.

A final decision made by a review officer in a review under section 268, pertaining to an order made under section 96 to cancel or suspend a certificate, may be appealed to the Workers' Compensation Appeal Tribunal.

Within 30 calendar days of the final decision of the Review Division, an attendant may request in writing that the Workers' Compensation Appeal Tribunal conduct a review.

Appendix B

Rapid Transport Criteria

Rapid Transport Criteria

To ensure that seriously injured patients are transported to hospital as soon as possible, the Rapid Transport Criteria have been developed. Trauma specialists have developed this list of criteria and it is used throughout North America. These criteria help the First Aid attendant determine which patients must be transported with great haste. The following criteria must be memorized and carried with the First Aid attendant at all times for handy reference.

Whether a patient meets the criteria can be established by considering:

- Mechanism of Injury
- Anatomical Criteria
- Physiological Criteria

If the patient meets any of the following criteria, rapid transport is required. Any treatment prior to packaging should be limited to critical interventions.

Mechanism of Injury

- Free fall from a height greater than 6.5 m (approx. 20 ft.) (one story is equal to approx. 3.2 meters/10 ft.)
- Severe deceleration in a motor vehicle accident characterized by:
- high-speed accident and/or major vehicular damage
- broken windshield, bent steering wheel, or significant damage to the passenger compartment
- occupant thrown from vehicle (i.e., ejection), partial or complete
- one or more vehicle occupants killed
- roll-over type of accident — e.g., with a forklift
- Pedestrian, motorcyclist, or bicyclist struck at greater than 30 km/h (20 mph)
- Severe crush injuries
- Smoke or toxic-gas inhalation, or carbon monoxide poisoning
- Decompression illness
- Drowning
- Electrical injuries

Anatomical Criteria

- Severe brain injury, defined as one or more of the following:
- Glasgow Coma Score of 13 or less
- Pupillary inequality greater than 1 mm and sluggish response to light with altered level of consciousness
- Depressed skull fracture
- New paralysis or neurological deficit
- Facial injury with potential for airway compromise
- Penetrating injury to the head, neck, chest, abdomen, groin, or extremities proximal to (above) elbow or knee
- Pelvic fracture
- Two or more proximal long-bone fractures — e.g., femur, humerus
- De-gloved or pulseless extremity
- Chest wall instability or deformity e.g. Flail chest
- Pregnant woman with significant trauma — e.g., a limb fracture, or chest or abdominal trauma
- Major burns:
    - Facial burns with or without inhalation injury
    - Extensive facial burns
    - Electrical burns
    - Second-degree (partial thickness) burns to more than 10% of the body surface third-degree (full thickness) burns to more than 2% of the body surface
    - Burns encircling a limb
    - Major burns to the eyes, neck, hands, feet, or groin
    - Chemical burns
- Amputation of an extremity other than a toe or finger
- Spinal cord injury, paraplegia or quadriplegia
- Penetrating eye injuries

Physiological Criteria

- Decreased level of consciousness (does not respond with clear speech, or GCS < 13)
- Pupillary inequality greater than 1 mm and sluggish response to light with altered level of consciousness
- Partial or complete airway obstruction
- Respiratory distress or ineffective breathing (Respiratory rate < 10 or > 30)
- Any condition requiring assisted ventilation
- Cardiac arrest
- Suspected heart attack
- Obvious shock
- Bleeding requiring the application of a tourniquet
- Acute poisoning, if directed by Poison Control Centre
- Seizures (involving shaking of the body) or Status epilepticcus
- Stroke
- Anaphylactic reaction
- Moderate or severe hypothermia
- Heatstroke

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