

# Unit 6

## EMERGENCY MEDICATIONS

### Vocabulary

administer a drug podawać lek  
administration of medication  
podawanie leku  
endanger patient's life narażać  
życie pacjenta

### A. Warm-up

Administration of an appropriate fast-acting medication may save the patient's life, preventing further spread of the underlying or potential problem or even maintaining the patient alive till specialist in-hospital care becomes available.

**Working in pairs or threes discuss possible answers to the questions given below:**

1. What cases may require administration of medication on the site or on the way to hospital?
2. What knowledge should the paramedic have to administer medications without endangering the patient's life?
3. What medications can paramedics administer to patients under Polish regulations?
4. How may these medications be given to the patient? By injection or in any other ways?

**Compare your answers and collect the information.**

### B. Reading

#### Task 1

**Read the text and decide whether the statements which follow are true (T), false (F) or disputable (D). Justify your position.**

The widespread belief among patients that administration of a drug is the fastest and most effective way of approaching a health-related problem may not be fully shared by the medical profession, yet, in emergency situations, the right medication given to a patient in the pre-hospital setting may be the approach of choice either to prevent the problem from aggravating or to accompany and support other procedures or even to save the patient's life.

In most countries, under most jurisdictions, paramedics are allowed to administer a variety of emergency medications. Lists of specific medications may vary depending on the standards and rules adopted by individual countries and even regions. As a rule they include drugs to be administered to relieve pain, to decrease nausea and vomiting, to control blood pressure, to treat conditions such as hypoglycaemia, asthma, acute bronchitis, angina, heart attacks or arrhythmias, to sedate combative patients or reduce patients' irritability or agitation.

The mode of administration may also vary. While some drugs are given orally, others may be administered through an intravenous infusion (IV), intraosseous infusion (IO) or down a breathing tube. The choice of the mode depends not only on what the case requires but also on the patient's condition. Most of the emergency drugs are obviously fast-acting. The fastest and most common ways of the provision of fluids and/or medicines in emergency situations include:

- intravenous infusion (IV),
- intraosseous infusion (IO),
- endotracheal infusion (ET).

### Vocabulary

mode/route of administration  
sposób podawania  
intravenous infusion wlew  
dożylny  
intraosseous infusion  
wlew śródkostny  
endotracheal infusion  
wlew dotchawiczny

The choice of the route of drug administration depends on the condition of the patient, the medicine to be administered and the purpose of its administration.

1. Pharmacological treatment is always the treatment of choice for both patients and medical professionals.
2. In the pre-hospital setting there is no place for drug administration.
3. A patient's life may depend on the use of medication in some emergency situations.
4. Paramedics are not allowed to administer drugs.
5. There is a universally approved list of drugs to be administered by paramedics.
6. Some of the drugs administered in the pre-hospital settings merely alleviate symptoms while others save life.
7. There are two routes of administering drugs in the pre-hospital setting.
8. Most of the medications given in emergency situations are slow-acting.
9. The choice of the route of administration is not accidental.
10. Intravenous, intraosseous and endotracheal routes all involve delivering the medication directly into the bloodstream.

## C. Vocabulary Building

### Task 2

Use the verbs listed below to complete the sentences.

prevent • reduce • allow • approach • depend • sedate • give • save • vary • administer • choose • support • decrease • alleviate

1. Polish rules do not ..... paramedics to give some drugs to patients.
2. Lists of emergency medications ..... from country to country.
3. Paramedics are taught how to ..... a victim and what drugs to ..... in what cases.
4. They are well aware that the administration of the right drug may ..... a victim's life or ..... the function of the organ or organism.
5. There are drugs which ..... infection, drugs which ..... pain, drugs which ..... blood pressure or sugar level and others.
6. The paramedic may use a drug to ..... a combative patient or to ..... a patient's anxiety.
7. The paramedic ..... the drug, the route of its administration and ..... it to the patient.
8. The choice ..... on the patient's condition as well as other factors but also on the paramedic's knowledge, skills and experience.

### Follow-up

Give a mini-presentation on the general principles of the administration of emergency drugs by paramedics, recapping the contents of the passage and complementing them with your own knowledge.

## Vocabulary

make the vein apparent  
uwidocznic żyły  
intravenous line wkłucie dożylnie  
solution roztwór  
iliac crest grzebień biodrowy  
establish vascular access ustalić  
dostęp do naczyń  
establish IV line wkłuć się  
peripheral vasculature obwodowy  
układ naczyniowy  
drilling motion ruch drylujący

### Task 3

Read the text and complete it with the words and phrases given below.

#### PART ONE

aspect (2) • bone marrow • marrow cavity • infusion • venous access • amount • venous return • intravenous line • insertion site • tourniquet • infusion needle • the cortex of the bone • position • equipment • arterial flow • blood stream

An intravenous ..... is an injection of fluids and/or medication directly into the vein and thus into the ..... While veins of various areas may be used, it is the veins of the arm that are first approached. A ..... may be applied above the needle ..... to make the vein apparent as well as to prevent ..... while not blocking ..... An establishment of an intravenous line allows also for a slow, drop by drop, ..... of a suitable solution or medicine.

An intraosseous infusion is an injection of fluids, drugs and blood products directly into the ..... in emergency situations as well as for resuscitation when it is difficult or impossible to establish an ..... It is advocated for use in life-threatening situations in babies, infants and children under ..... of six years but can also be applied in older children or adult patients when repeated attempts at ..... fail. It should be performed under sterile conditions. The ..... needed includes skin disinfectant, local anaesthetic, a 5 ml syringe, a 50 ml syringe and an intraosseous ..... Intraosseous infusions are usually performed on the flat anteromedial ..... of the tibia, the anterior ..... of the femur or the superior iliac crest. Following an injection of a small ..... of local anaesthetic in the skin, an intraosseous needle is inserted at 90 degrees to the skin and then advanced with a drilling motion until ..... is reached. The trochar is removed and the correct ..... confirmed by aspirating blood

with the 5 ml syringe. Absence of swelling of the subcutaneous tissue or changed resistance on entering the ..... are evidence of free fluid flow.

#### PART TWO

action • advantage • burn • administration • access (2) • compromise • placement • route • difficulties • lung tissue • use • arrest • vasculature

Intraosseous infusion has a definite ..... over endotracheal infusion as any medication that can be injected intravenously can also be introduced intraosseously while the endotracheal ..... allows only specific drugs which will not affect adversely the ..... In addition, the IO absorption rate is similar to that in the IV ..... Advances in intraosseous access technology have made it the preferred method of establishing vascular ..... for patients presenting ..... in traditional access. The latter range from patients experiencing cardiac ....., major trauma, airway ....., severe dehydration and shock to people with poor peripheral ..... or challenging vascular access such as diabetics, ..... victims, obese patients, dehydrated patients, and others. Interestingly, the IO route is recommended for ..... in a cardiac arrest setting for the ..... of high-volume drugs such as sodium bicarbonate. The IO administration enables fast administration and ensures fast ..... of life-saving drugs where peripheral IV ..... proves hard or impossible.

### Task 4

Answer the following questions referring to the text above.

1. What is an intraosseous infusion?
2. When is IO the method of choice in the administration of fluid and medication?
3. What is needed to give an IO infusion?
4. What are the usual sites of IO infusions?

5. What must be confirmed and how can it be done?
6. Can all fluids and medications be administered via IO?
7. Why can't some drugs be administered via the endotracheal route?
8. In what patients can peripheral vasculature be expected to be poor and challenging in terms of IV infusion?

### Task 5

Use the proper form of verbs given below to complete the sentences.

administer • advance • apply (2) • choose • make • establish • reach • fail • insert (2) • confirm • disinfect

1. To ..... a drug or a fluid in an emergency situation the paramedic tries to ..... an intravenous line.
2. Poor peripheral vasculature or severe injuries may ..... access to a vein difficult.
3. When three attempts at accessing a vein ....., the rescuer can ..... IO infusion.
4. To do this the paramedic must ..... the needle insertion site, ..... it, ..... a local anaesthetic and ..... the needle.
5. The needle must be ..... at a special angle to the skin and ..... with a drilling motion until it ..... the marrow cavity.
6. The proper positioning of the needle must ..... before medications or fluids .....

### Follow-up

Give a mini-presentation on intraosseous infusion.

## D. Reading and Listening

### Task 6

Read the dialogue between two paramedics talking about changes in the routes of drug administration. Decide whether the statements underneath are true (T) or false (F). Justify your position. What do these things look like in Poland?

- P1: I'd like to ask you about intraosseous infusion. It seems to become more and more common in my country. Is it but a temporary fashion or a trend that is here to stay. Is it frequently used in your country?
- P2: I wouldn't say so. Intravenous access is still the preferred method for medication administration. Yet things are changing with technological advances in IO access, also in the treatment of adults. Even in resuscitation procedures or cardiac arrest.
- P1: I've heard endotracheal drug administration is being abandoned in favour of IO.
- P2: Abandoned? Well ... perhaps to some extent ... ET efficacy is not clear, at least in the administration of resuscitation drugs so it's no longer recommended. Actually, when I think of it ... it may be a trend.
- P1: ET does have its limitations. Not every drug can be given via this route. Administration must be restricted to relatively low volumes. IO is more versatile so to say and not only when vascular access is poor or impossible.
- P2: Yes, not only. It used to be recommended for use in babies and infants but this has changed. Many EMS systems all over the world apply it as an alternative route in adult patients with poor peripheral vasculature or severe injuries.
- P1: Our paramedics are trained in IO. Also, more and more ambulances are equipped with IO needles and syringes.

### Vocabulary

efficacy skuteczność,  
efektywność

P2: So it is in my country. It has become part of standard training and standard equipment.

1. In both countries IO infusion is rarely used.
2. Both speakers believe IO infusion to be a temporary trend.
3. IO has always been and is still used only in babies and infants.
4. ET cannot always be used.
5. Studies have confirmed that ET is most efficacious in the administration of resuscitation.
6. When access to veins is difficult or impossible, IO is a solution.
7. IO training should be included in standard paramedic education.
8. IO equipment constitutes part of standard ambulance equipment.

### Task 7

27 

Listen and complete the dialogue between the two paramedics.

P1: I think we'll have to make the .....

P2: Were you able to establish an .....

P1: I tried ..... times and I couldn't.

P2: There's no time to lose. Let's do it. The child's .....

P1: First the ....., just a small amount.

P2: I'll put a ..... behind the knee for support.

P1: And hold the limb firmly.

P2: Like this?

P1: Yes. Here we are. The ..... in place. The limb looks all right. We can begin the .....

P2: You've done it. I can see the fluid is flowing freely.

P1: Let's ..... the needle in place. Can you give me ..... and strapping?

P1: Here you are.

P2: Now let's take care of .....

Report on what the paramedics did and why.

## E. Vocabulary Practice

### Task 8

One of the many devices which serve to provide intraosseous infusions is a bone injection gun (BIG). Arrange the steps of the intraosseous infusion procedure in the correct order:

- A.  remove the safety latch
- B.  slowly pull up the device
- C.  find and mark the location of the infusion
- D.  flush 10–20 cm of the infusion fluid
- E.  if needed use a pressure bag
- F.  use the safety latch for additional fixation
- G.  position the device
- H.  take out the trocar needle
- I.  administrate fluids and/or medication as required
- J.  hold firmly and trigger
- K.  try aspirating the bone marrow

### Task 9

Match the type of drug with its action.

- |                      |   |
|----------------------|---|
| 1. analgesics        | a. relieve convulsions  |
| 2. narcotics         | b. sedate combative patients  |
| 3. sedatives         | c. used to treat cardiac arrhythmias such as ventricular tachycardia and ventricular fibrillation |
| 4. paralytics        | d. make the airway lumina wider, facilitate breathing   |
| 5. sympathomimetics  | e. relieve very severe pain, such as with burns or fractures                                      |
| 6. antipsychotics    | f. used for severe hypotension and cardiogenic shock  |
| 7. antiarrhythmics   | g. restorative in regaining strength and health   |
| 8. vasodilators      | h. relieve pain, also decrease nausea and vomiting  |
| 9. antiemetics       | i. reduce the irritability or agitation of patients   |
| 10. bronchodilators  | j. used when an emergency procedure such as rapid sequence induction (RSI) is required            |
| 11. anticonvulsants  | k. cause dilation of blood vessels  |
| 12. analeptic agents | l. increase urination   |
| 13 diuretics         | m. alleviate nausea and vomiting  |
| 14. NSAIDs           | n. reduce fever   |
| 15. antipyretics     | o. are used in treatment of pain associated with inflammation                                     |

### Task 10

Medications can be administered via different routes. Match the route with the definition. Explain why a given route is chosen and in what emergency situations. If possible, give examples of medications administered in this way.

- |                  |   |
|------------------|---|
| 1. buccal        | a. delivered directly into the trachea                                    |
| 2. intramuscular | b. placed under the tongue  |
| 3. intranasal    | c. administered locally to the place of injury                            |
| 4. intravenous   | d. administered through the mouth   |
| 5. inhalation    | e. applied to the eye   |
| 6. intraosseous  | f. placed in the mouth under the cheek                                    |
| 7. endotracheal  | g. inhaled through the mouth so as to pass to the lungs                   |
| 8. ocular        | h. administered so as to be absorbed through nasal mucosa                 |
| 9. oral          | i. injected into the vein   |
| 10. subcutaneous | j. injected into the bone   |
| 11. sublingual   | k. injected into the muscle   |
| 12. topical      | l. injected under the skin  |
| 13. parenteral   | m. given via gastric tube   |
| 14. transdermal  | n. given via any route other than GI tract                                |
| 15. enteral      | o. applied to the skin in the form of patches or injected across the skin |

### Vocabulary

buccal policzkowy  
ocular oczny  
safety latch zatrzask  
bezpieczeństwa  
analgesics środki przeciwbólowe  
przeciwwymiotne  
vasodilators środki rozszerzające naczynia  
antiemetics środki przeciwwymiotne  
bronchodilators środki rozszerzające oskrzela  
anticonvulsants środki przeciwdrgawkowe  
analeptic środek pobudzający