



# Dyspnea, chest pain, acute abdomen, allergies

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# Dyspnoea



# Dyspnoea

- = shortness of breath
- a **subjective experience of breathing discomfort** that consists of qualitatively distinct sensations that vary in intensity
- **non-specific symptom of many diseases**



# Symptoms of dyspnoea

- ***what does the person look like..***
  - color of skin – **cyanosis** – bluish color of lips, ears or fingertips
  - frequency of breathing – **tachypnoea** (***rapid breathing*** up to 30 and more breaths per minute),
  - shallow breathing
  - pathological sounds – **stridor** (inspiratory or expiratory), wheezing, coughing



# Symptoms of dyspnea

- **effortful breathing** with using additional respiratory muscles
- **in-drawing** of spaces between the ribs and collarbones
- inability to tell whole sentence because of breath shortness
- flaring nostrils , **ortopnoic position, exhaustion, anxiety, sweating, tachycardia**, disorders of consciousness



# Causes of dyspnoea

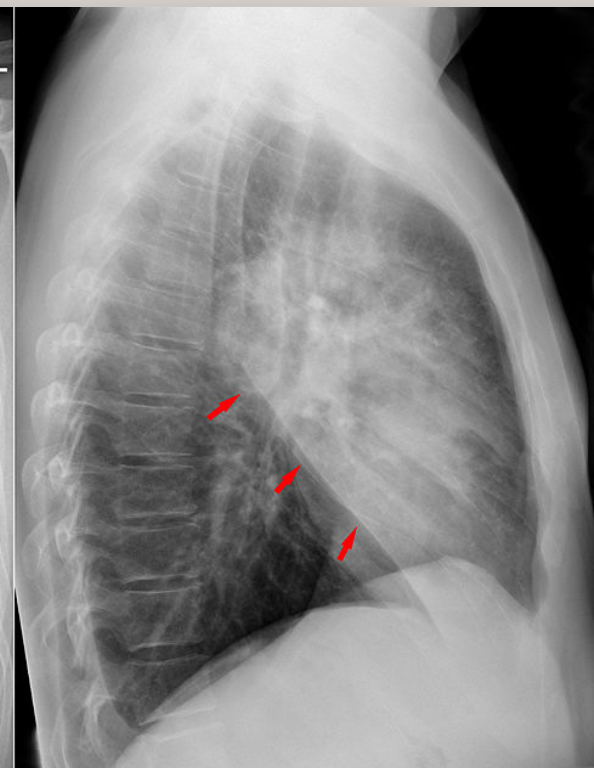
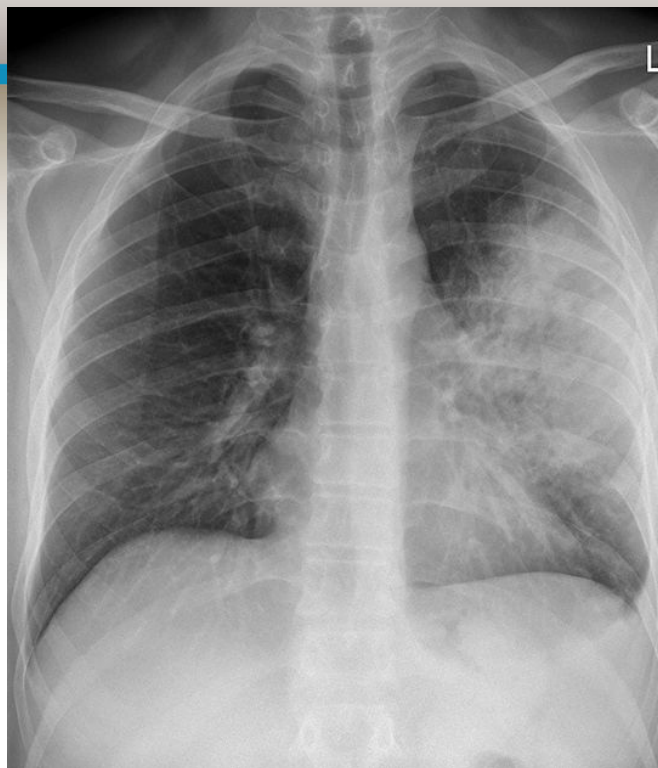
- lungs – COPD, **asthma**, pneumonia (inflammatory disease of the lungs), pneumothorax
- cardiac – heart failure with development of pulmonary edema, heart valves disorders, myocardial infarction





pulmonary edema

lobar pneumonia



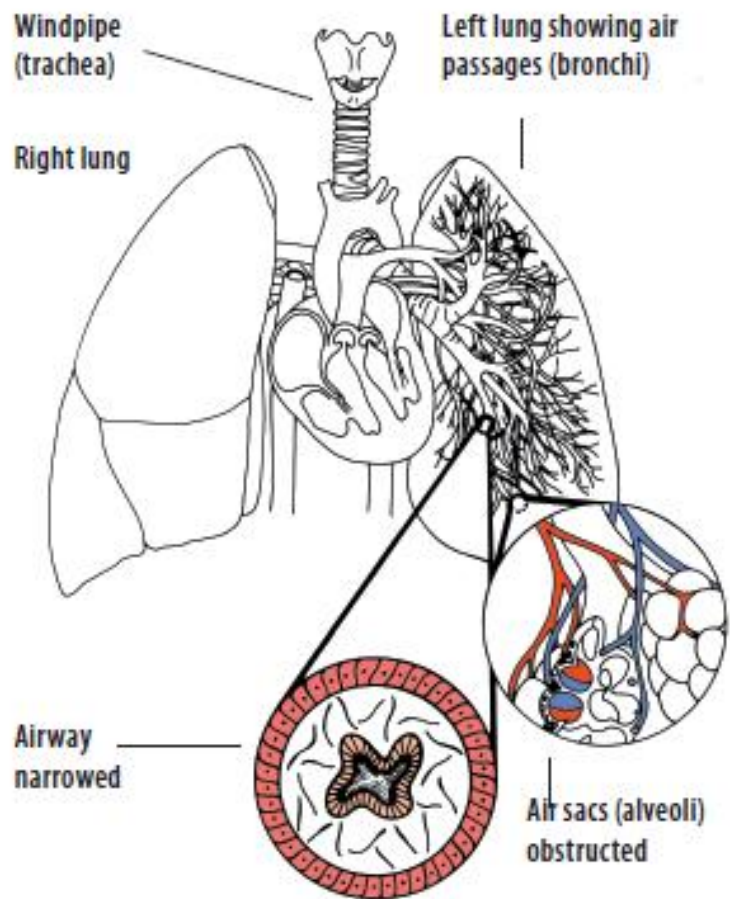


# Asthma

- common condition in which ***breathing becomes difficult due to inflammation of the airways***
- **asthma attack** – condition with **acute narrowing of the airways by bronchoconstriction, increased mucus production and swelling**; resulting in „air trapping“ inside the lungs and difficulties with breathing out







# Asthma

- **common triggers of an asthma attack**
  - pollens
  - dust
  - smoke
  - cold air
  - exercise
- **signs** – shortness of breath, wheezing, coughing, obvious difficult breathing, anxiety



# Asthma

- **first aid**

- help the person **to rest, to take a position of greatest comfort** (usually sitting upright)
- assist with relieving medication
  - asthma patients usually have their medication, assist them with **application of inhalatory drugs** (bronchodilators) which can have rapid effect on improvement of their condition
- if the problem persists, call an ambulance



# Medications for Asthma Management

## Relievers

- Inhaled short acting  $\beta_2$ -agonists
- Short acting anticholinergics
- Methylxanthines



## Controllers

- Inhaled corticosteroids
- Inhaled long-acting  $\beta_2$ -agonists
- leukotrienes modifiers
- Sustained release theophylline
- Systemic glucocorticosteroids
- Anti-IgE (Omalizumab)

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# First Aid for Asthma

**1**

## Sit the person comfortably upright.

Be calm and reassuring.  
Don't leave the person alone.

**2**

## Give 4 puffs of a blue/grey reliever

(e.g. Ventolin, Asmol or Alromir)

Use a spacer, if available.

Give 1 puff at a time with 4 breaths after each puff

Use the person's own inhaler if possible.

If not, use first aid kit inhaler or borrow one.

**OR**

## Give 2 separate doses of a Bricanyl or Symbicort inhaler

If a puffer is not available, you can use Symbicort (people over 12) or Bricanyl, even if the person does not normally use these.

**3**

## Wait 4 minutes.

If the person still cannot breathe normally, **give 4 more puffs.**

Wait 4 minutes.

If the person still cannot breathe normally, **give 1 more dose.**

**4**

If the person still cannot breathe normally,

## CALL AN AMBULANCE IMMEDIATELY (DIAL 000)

Say that someone is having an asthma attack.

## Keep giving reliever.

Give 4 puffs every 4 minutes until the ambulance arrives.

Children: 4 puffs each time is a safe dose.

Adults: For a severe attack you can give up to 6-8 puffs every 4 minutes

If the person still cannot breathe normally, **CALL AN AMBULANCE IMMEDIATELY (DIAL 000)** Say that someone is having an asthma attack.

## Keep giving reliever while waiting for the ambulance:

For Bricanyl, give 1 dose every 4 minutes

For Symbicort, give 1 dose every 4 minutes (up to 3 more doses)

## HOW TO USE INHALER

### WITH SPACER



- Assemble spacer
- Remove puffer cap and shake well
- Insert puffer upright into spacer
- Place mouthpiece between teeth and seal lips around it
- Press once firmly on puffer to fire one puff into spacer
- Take 4 breaths in and out of spacer
- Slip spacer out of mouth
- Repeat 1 puff at a time until 4 puffs taken – remember to shake the puffer before each puff
- Replace cap

### WITHOUT SPACER



- Remove cap and shake well
- Breathe out away from puffer
- Place mouthpiece between teeth and seal lips around it
- Press once firmly on puffer while breathing in slowly and deeply
- Slip puffer out of mouth
- Hold breath for 4 seconds or as long as comfortable
- Breathe out slowly away from puffer
- Repeat 1 puff at a time until 4 puffs taken – remember to shake the puffer before each puff
- Replace cap

### BRICANYL OR SYMBICORT



- Unscrew cover and remove
- Hold inhaler upright and twist grip around and then back
- Breathe out away from inhaler
- Place mouthpiece between teeth and seal lips around it
- Breathe in forcefully and deeply
- Slip inhaler out of mouth
- Breathe out slowly away from inhaler
- Repeat to take a second dose – remember to twist the grip both ways to reload before each dose
- Replace cover



# Airway obstruction

- **partial airway obstruction**
  - breathing laboured, gasping or noisy
  - **stridor** – sound created by air flowing along the object which causes airways obstruction
  - coughing or making crowing noise
  - extreme **anxiety or agitation**



# Airway obstruction

- **total airway obstruction**

- inability to effectively cough, breathe or speak
- obvious efforts to breathe with in-drawing of spaces between the ribs and collarbones
- clutching the throat with both hands (universal sign of choking)





# Airway obstruction

- **first aid**

- ask the patient „are you choking?“

- if they can answer or breathe – **partial obstruction** – encourage the patient to cough and expel the foreign body - **1. cough it out**
- if coughing doesn't work, help them bend forward and give up to 5 sharp back blows between their shoulder blades - **2. slap it out**
- if back blows doesn't work, give up to five abdominal thrusts (Heimlich maneuver) – **3. squeeze it out**



# Airway obstruction

- **first aid**

- ask the patient „are you choking?“

- if squeeze it out doesn't work, call immediately for help
    - if they become unresponsive and they are not breathing normally , **start CPR immediately**



# Hyperventilation

- **excessive breathing, normally caused by extreme anxiety (can often happen at the same time as a panic attack)**
- breathing is unnaturally fast or deep, this makes the blood lose more CO<sub>2</sub> than usual, which can make them feel dizzy and weak, tingling in the hands and muscle cramps in the hands and feet
- first aid – **calm them down and „force them breathe normally** – this usually doesn't work



# Chest pain



# Chest pain

- nowadays, in connection with chest pain, everybody thinks of heart attack, but chest pain has many causes and many of them are not life threatening conditions...
- = any kind of pain, which is ***located in the area of chest, can radiate into some areas, can change with movement, can change with positioning or deep breathing***



# Chest pain

- **causes**

- thoracic spine disorders
- neuromuscular etiology – disorders of intercostal muscles or other muscles in the area of chest, irritation of the intercostal nerves
- heartburn
- shingles (herpes zoster)
- inflammatory diseases of the airways



# Chest pain

- **causes**

- pleurisy (pleuritis)
- pulmonary embolism
- thoracic aortal dissection
- pericarditis or myocarditis
- **coronary artery diseases (CAD)**
  - angina pectoris
  - heart attack





# Chest pain of cardiac etiology

- **pain or uncomfortable pressure** in the middle of the chest that can **radiate into the jaw and teeth or shoulder or arms**
- can feel as if **crushing weight is resting on the patient's chest** or as if a steel band around the chest is being tightened
- can be accompanied by **shortness of breath, sweating, nausea, vomiting, anxiety**



# Chest pain of cardiac etiology

- **angina attack**

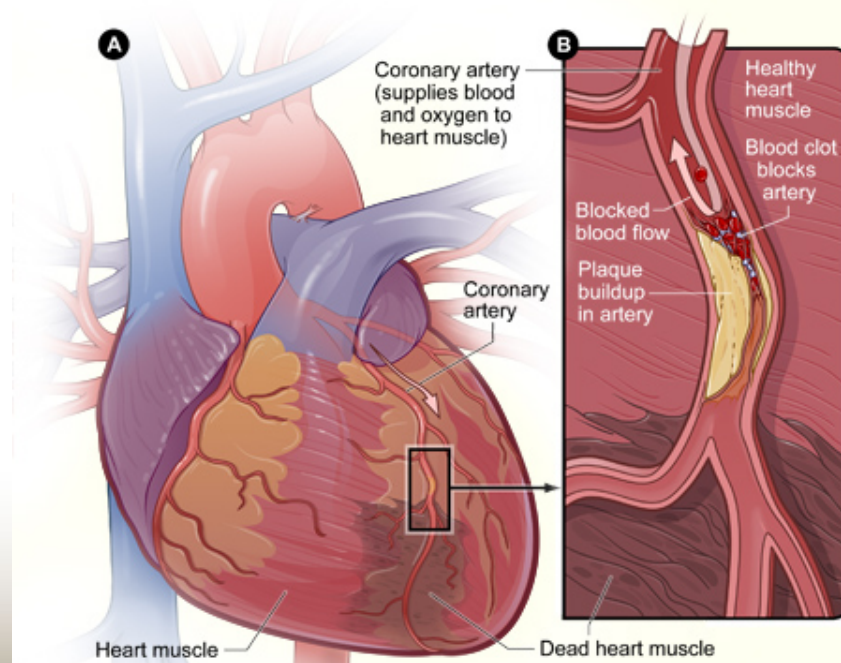
- should be *relieved when the patient is at rest*
- may lead to a heart attack later
- insufficient oxygen delivery into myocardium, usually occurs during **exercise or some activities**



# Chest pain of cardiac etiology

- **heart attack**

- occurs when heart (coronary) artery, which supplies heart muscle with oxygen, is blocked



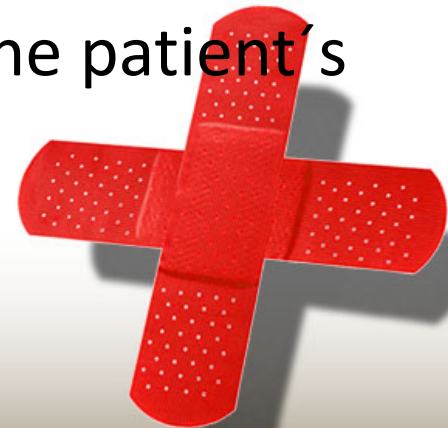
# Chest pain of cardiac etiology

- **first aid – conscious person**
  - ask about ***character, localization and radiation*** of the chest pain
  - consider ***risk factors*** – smoking, obesity, age, lifestyle, similar problems in the past
  - if ***suspicious of heart attack, call ambulance immediately***
  - calm (yourself and the patient), let him sit into the most comfortable position



# Chest pain of cardiac etiology

- help them take their relieving medications
  - Nitrates 1-3 tbl. underneath the tongue (Nitroglycerin, Nitro Mack) or 1-2 spray injections underneath the tongue (Isoket, Nitromint, Nitrospray)
- if available , let them ***chew Anopyrin or Aspirin in doses up to 500mg*** (1tbl. = 100mg)
- prepare for ***possible deterioration*** of the patient's condition
- ***bring AED*** in advance, if available



# Chest pain of cardiac etiology

- **first aid – if unresponsive**
  - if the person is unresponsive and not breathing normally, immediately **start CPR with use of AED**



# Chest pain of non-cardiac etiology

- **pulmonary embolism**

- obstruction of pulmonary artery or it's branches
- chest pain, dyspnea, tachypnea, tachycardia, hypotension, cyanosis
- can be discreet – without any symptoms or ***massive with immediate death of the patient***





# Chest pain of non-cardiac etiology

- **thoracic spine disorders**

- sharp pain irradiating from the spine
- ***changes according to the movements or positioning of the person***
- can be localized into some spot
- can be ***worsen with deep breathing***

- **heartburn**

- caused by ***gastro-esophageal reflux disorder***
- can worsen when laying, bending forward or after meal



# Chest pain of non-cardiac etiology

- **broken ribs**

- often connected with *chest trauma, worsens with deep breathing*

- **Shingles**

- caused by **Varicella zoster virus**
- blisters, accompanied by sings of upper airways viral infection, localized in the course of affected nerve

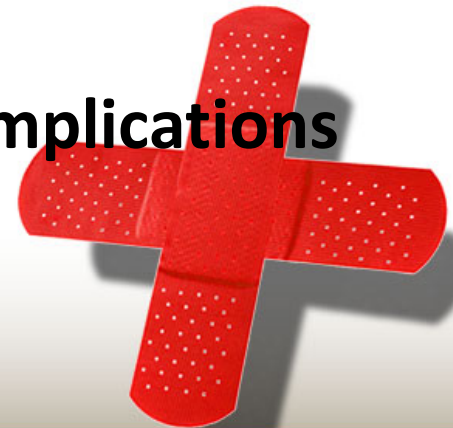


# Acute abdomen



# Acute abdomen

- intraabdominal process, which
  - causes **severe pain**
  - has **acute (fast) development** of symptoms
  - requires a **fairly immediate judgement or decision about management**, often requiring surgical intervention
  - **untreated** can cause **sever medical complications and death**



# Acute abdomen

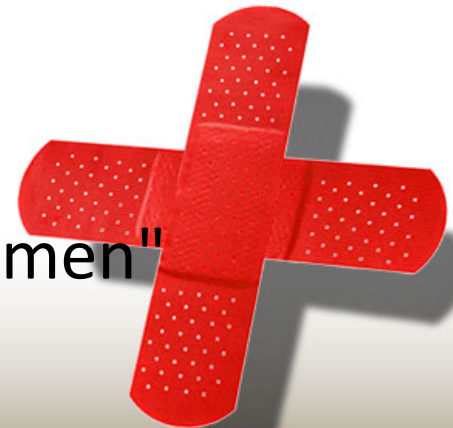
- causes

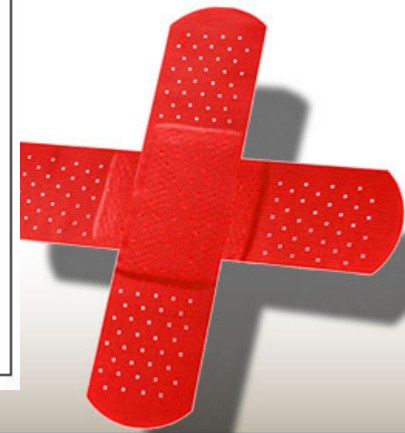
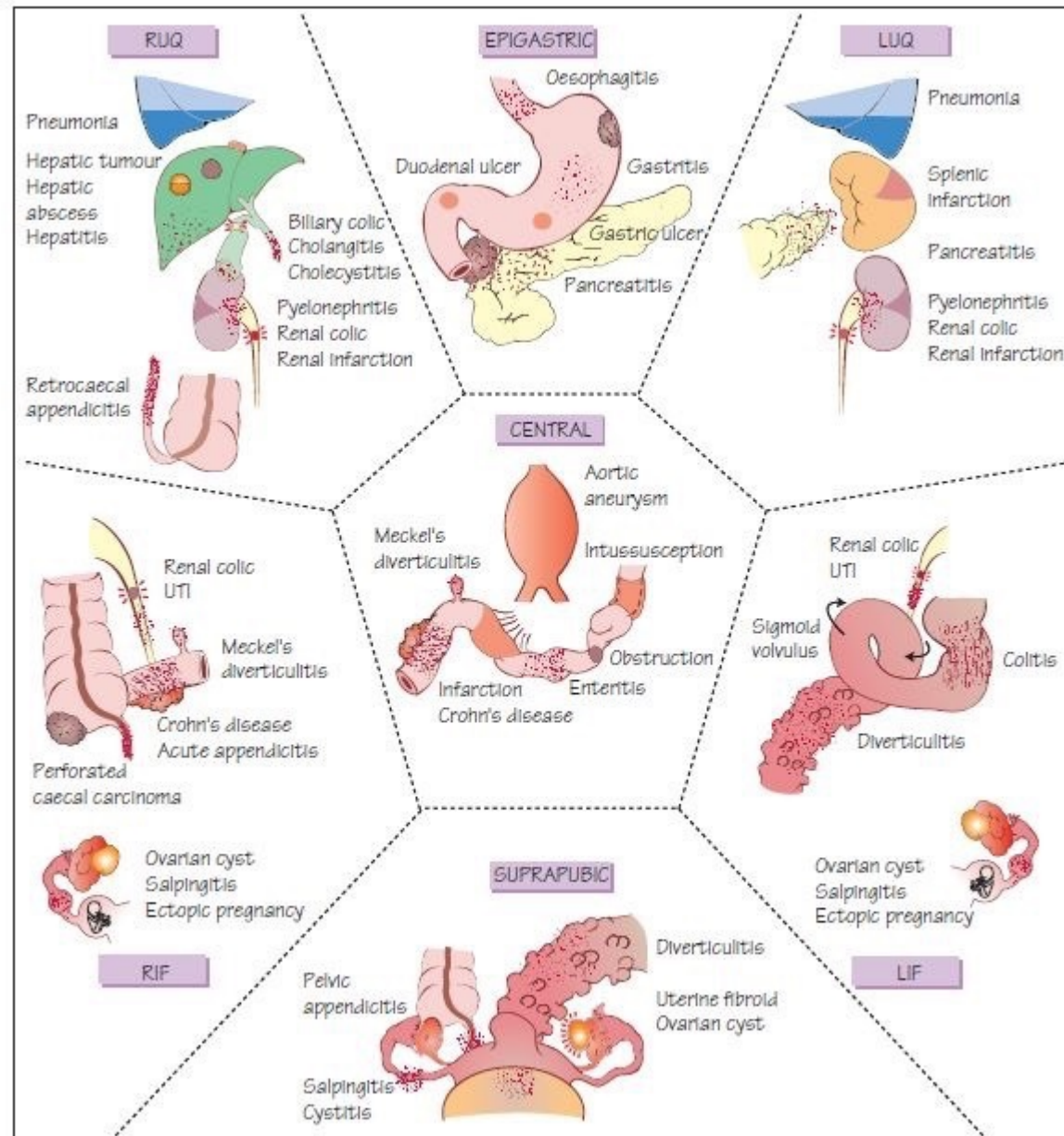
- **inflammatory** – acute appendicitis, diverticulitis, gastric ulcer perforation, cholecystitis, pancreatitis
- **obstructive (ileus)** – obstruction of the bowels and stagnation of the bowel content – incarcerated hernia, carcinoma of the bowel, bowel ischemia
- **bleeding** – e.g. from perforated ulcer or cancer
- **traumatic**
- **gynecological diseases** in women



# Acute abdomen

- in the first aid, isn't important to find an exact cause of this condition, but to **discover this condition and secure professional help**
- signs
  - pain (according to it's localization we can think of an exact cause),
  - vomiting (gastric or bowel content),
  - loss of bowel movements, "silent abdomen"
  - Hiccup
  - diarrhea







# Acute abdomen

- acute pain located in the **epigastrium (area of the stomach)**, combined with nausea or **vomiting**, can be the **only signs of heart attack which is located in the inferior wall of the left ventricle !!!**



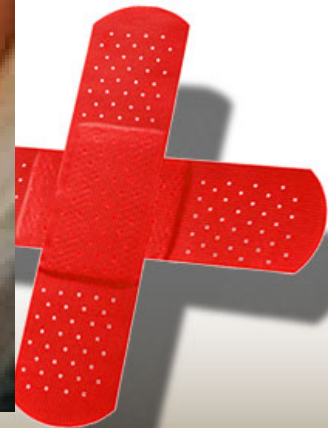
# Acute abdomen

- **first aid**

- recognise that there is acute abdominal problem – ***if you have any suspicion, treat the person as if it was an acute abdomen!***
- transpor to the **hospital** or call an ambulance
- **give nothing to drink and eat**
- let the person take the **relieving position**
- monitor the person until EMS arrives

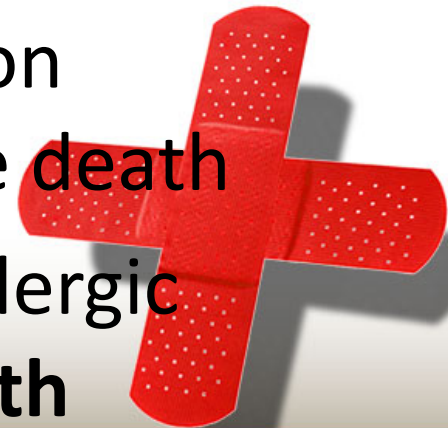


# Allergies



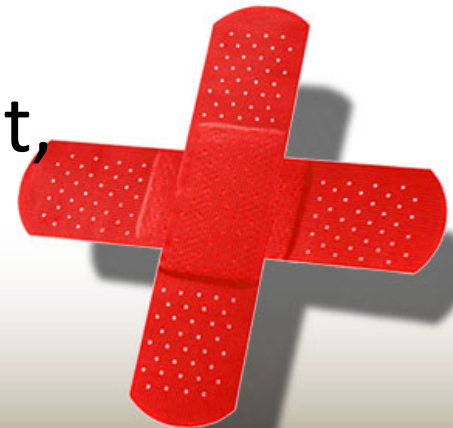
# Allergies

- *hypersensitive reaction of human immune system to typically harmless substances in the environment*
- development of the signs is fast, in connection with exposition to the allergens
- **anaphylaxis** – serious allergic reaction with rapid onset , untreated may cause death
- **anaphylactic shock** – most severe allergic reaction with **risk of immediate death**



# Allergens

- pollen
- dust
- insects
- animals – cats, dogs, birds
- medications
- food – cow's milk, eggs, fish, wheat, peanuts, soya
- latex



# Allergies

- **signs**

- skin

- Swelling, itching, rashes, oedemas (angioedema...)

- respiratory

- coughing, shortness of breath, wheezing, stridor, runny nose, swelling of the conjunctiva

- gastrointestinal

- tongue swelling, abdominal pain, diarrhea, vomiting

- cardiovascular

- tachycardia, vasodilation, distributive shock



# Allergies

- **sings**

- can be **mild** – allergic rhinitis, conjunctivitis, urticary, through more severe conditions – swelling of an eye lids, lips and tongue **up to life treatening condition as are airway obstruction and cardiovascular failure**







# Allergies

- **first aid**

- recognize and start treating **as fast as possible**
- **remove allergens**, if possible
- people who were diagnosed with allergies may have **„allergic first aid kit“**:
  - **antihistaminic drugs** – Dithiaden, Alerid, Analergin, Claritine, Fenistil, Zodac, Zyrtec
  - **corticosteroids** – Hydrocortizon, Prednisone
  - **inhalational drugs** – Ventolin, Berodual



# Allergies

- **first aid**

- people with **history of severe anaphylactic reactions** should always carry with them an **EpiPen (epinephrine, adrenalin)**, which has defined dose of adrenalin (0,5mg) and should be used for **„one shot“ intramuscular injection, reapplication after 10-15 minutes may be necessary**, if symptoms persist
- when severe symptoms, always call EMS





**1**  
Form FIST around EpiPen® and PULL OFF BLUE SAFETY RELEASE

**2**  
Place orange end HARD into outer thigh so it 'CLICKS' and HOLD for 10 seconds.

*eDrugSearch*  
Spend less. Save more.

# Prehospital Care in Czech Republic Mass Disaster



# Prehospital Emergency Care

## is acute medical care provided

- on site of accident
- during transport and hand over

## For who?

- life-threatening situations
- pain, suffering
- risk of permanent consequences (death)



# Organisation

## Medical Operating Centres

- toll-free number 155
- operators - skilled nurses

## Stations (Prague – 18)

- staff – paramedics, physicians, drivers-rescuers
- vehicles

**Response time – less than 15 min (usually 7-8 min)**

= from call receiving till arrival



# Prehospital Emergency Care

## Prague:

- **ALSV ( advanced life support vehicles)**

large ambulance vehicles – paramedic, driver/rescue person

## **RRV ( rapid response vehicles)**

emergency vehicles carrying a physician

operate together in **RENDEZ-VOUS system**

- physicians only in life-threatening situations
- aim: time and staff saving, **80% calls ALSV only**



- ALS vehicle

RR vehicles





# Air ambulance transport

- ***emergent transport over distance***
- from ***remote places***
- ***terrain impractical*** for conventional ground ambulance



# Air Ambulance



# ALS/V equipment

## **Diagnostic:**

ECG, blood pressure monitors, blood oxygen saturation, glucose level monitors

## **Therapeutic:**

Airway management devices, ventilator, venous cannulas, bandage, childbirth pack drugs, oxygen cylinder

**Transport devices** – stretcher, wheelchair



# Calling an ambulance

- dial **155 or (112)**
- introduce yourself, describe
  - what happened
  - where, how to get there, orientation points, GPS
  - who/how many involved, age, vital functions
  - their medical history
  - need for police, firemen help ?
- wait for questions

**Telephone-assisted first aid/CPR**



# Integrated Rescue System

- ***increasing number of mass accidents***

- traffic, industry, terrorism

- need of **coordination between**

1. Emergency Medical Service 155

2. Police 158

3. Firemen 150

1+2+3= **Integrated Rescue System**

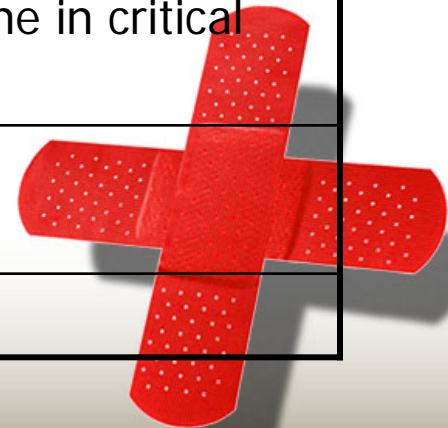
Phone No.: 112



# Mass disaster

- **Disaster** – sudden and unforeseen event
- *disproportion between number of victims and capacity of Emergency Medical Aid and other parts of IRS*
- definition not fixed

Accident	2-5 persons	
Mass disaster – restricted	to 10 persons	and at least one in critical state
Mass disaster – extensive	to 50 persons	
Catastrophe	over 50 persons	



# Principles of Help in Mass Disaster

- **Organisation** - triage, transport, assembly
- **Coordination** – IRS, army, Red Cross, ...
- **Safety** – both rescuers and victims
- **Improvisation**





# Triage



**Triage comes from war-time medicine: don't bother with the healthy; let the sickest die; and focus on those on the brink of death.**



# Triage

- = sorting, from *trier* (fr., to sort)
- no possibility to give help for all ...
- ***aim is to give help to those with real chance to survive***

Lay: dead x heavily injured x walking

Professional: **START system**



# START system

- **S**imple **T**riage **A**nd **R**apid **T**reatment system
- rapid casualty assesment according to severity of injuries
- 4 groups
  - Minor
  - Delayed
  - Immediate
  - Dying and dead



# START system – KNOW HOW

- 1. BREATHING:** spontaneous / head tilt
  - Respiratory rate
- 2. PERFUSION**
  - Capillary refill
  - Arteria radialis
- 3. MENTAL STATE**



# START system

## **IMMEDIATE HELP 20%**

- Arterial bleeding
- Airway obstruction
- Tension pneumothorax

## **DELAYED HELP 20%**

- Long bone open fractures
- Burns up to 70% body surface
- Pelvic fractures
- Arterial bleeding – treated



# START system

## MINOR INJURIES

- can wait
- can help - first aid to others including psychical support

## DYING

- unable of transport
- burns over 70% BSA
- penetrating wounds of chest and abdomen with developed shock
- penetrating craniocerebral injury with loss of tissue



All walking Wounded

**MINOR**

### RESPIRATIONS

NO

YES

Position Airway

NO Respirations

Respirations

**DECEASED**

**IMMEDIATE**

Under 30/min.

Over 30/min.

**IMMEDIATE**

### PERFUSION

Radial Pulse Absent

Radial Pulse Present

OR

Over 2 Seconds ← Capillary Refill → Under 2 Seconds

Control Bleeding

**IMMEDIATE**

### MENTAL STATUS

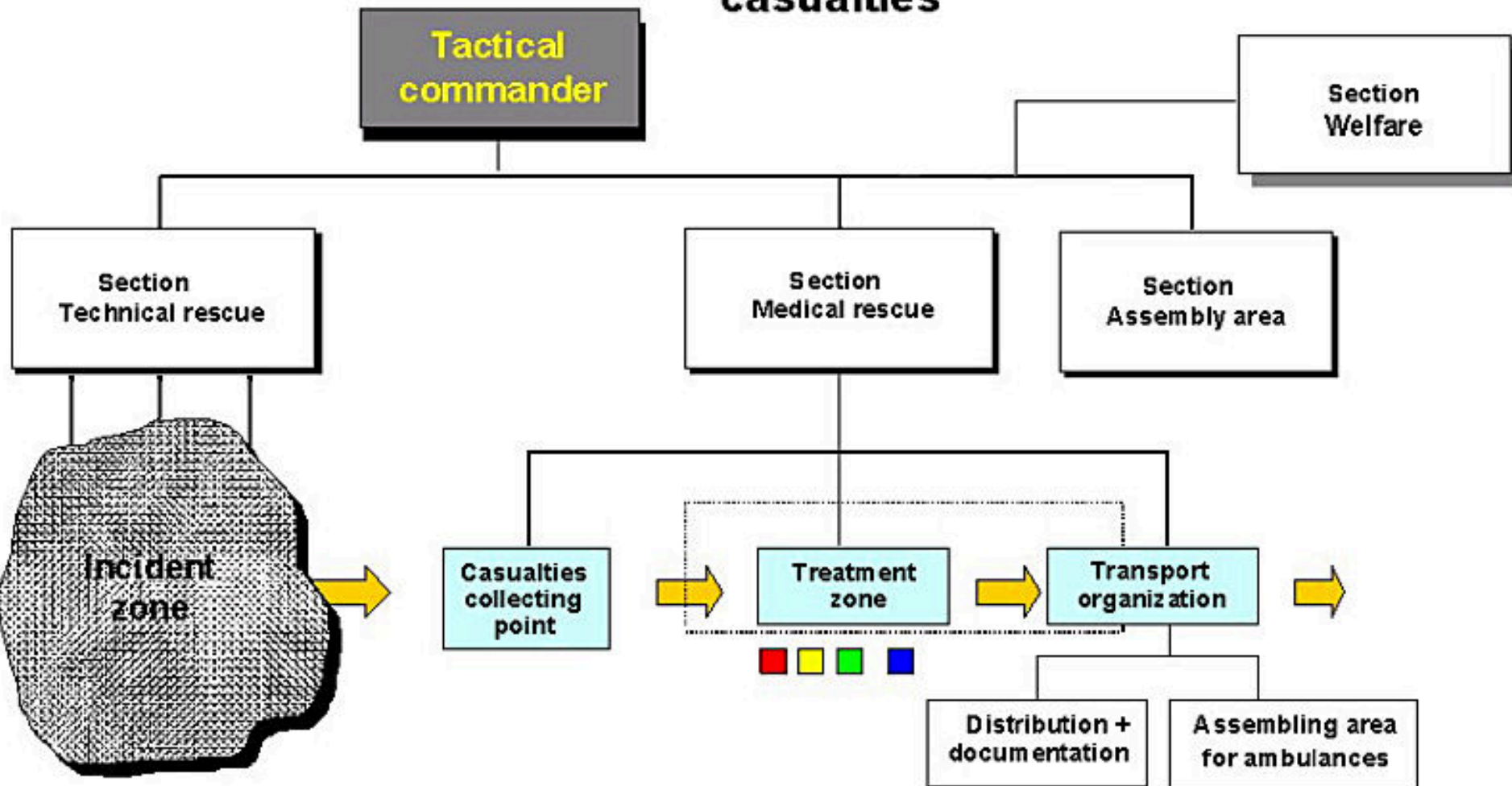
CAN'T Follow Simple Commands

CAN Follow Simple Commands

**IMMEDIATE**

**DELAYED**

# Management organisation in case of mass casualties



Source: AG ÜMANY





# ***OK, but what to do, if you become the first witness?***

Call **112**.

Call and wait for response.

Ask ***those who are able to walk to you*** (unhurt or mildly unjured can help- sometimes).

Walk ***through the rest, mind own safety, start triage.***

Only therapy to do is ***head tilt when doing triage.***

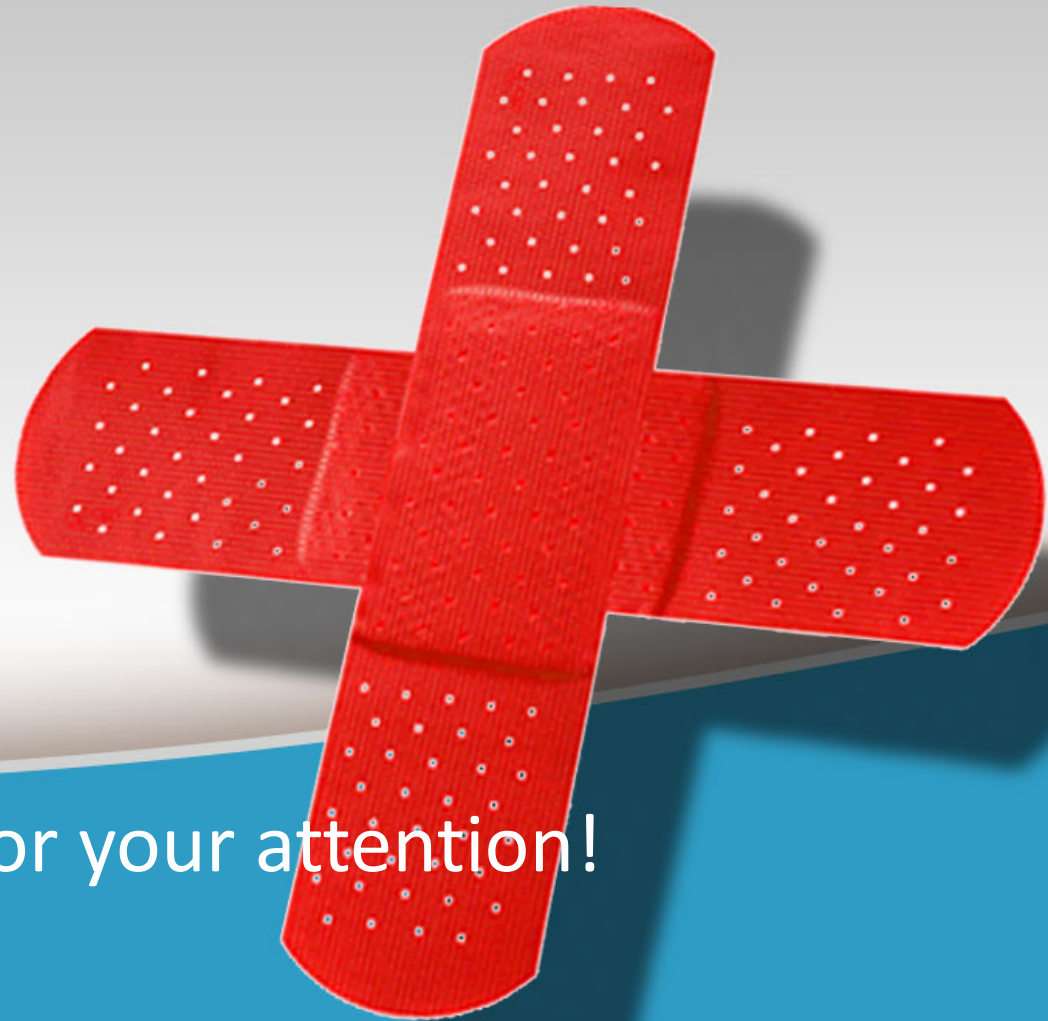
***First aid takes place after triage.***



# METHANE

- **My call**
- **Exact location**
- **Type of incident**
- **Hazards, presents and potencial**
- **Acces to scene and agresroute**
- **Number and severity of casualties**
- **Emergency services, present and required**





Thank you for your attention!

Department of Anesthesiology and  
intensive care medicine, 2nd medical  
faculty and Motol University hospital