

Pharmaceutical Care in Oncology treatment

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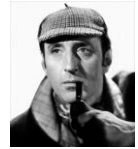
What can we read from the prescription? What can we learn about the patient?

Prescription:

- Stamp of physician
- Drugs written on the prescription

Patient:

- You cannot **recognize wig**
- Typical exanthema after Mabs?



The main thing is to listen the patient (and ask)

- Do you take drugs **for the first time**?
- Do you know the **correct dosage** and use?
- Do you know the **regime measures** related to illness and treatment?
- Information resources, **educational materials**

Recommendations for patients

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Not only the body but also the soul needs treatment

- What if the illness returns and especially if it is **associated with pain**? Your pain can be minimized in each case, each time!!
- Do not forget to **treat your mind** not only your body
- How can I handle the demanding treatment?
- Should I share or suppress my fears and feelings with my loved ones and children?
- Even if my cancer is a good prognosis, how will I be able to live from control to control?
- What if the cancer returns?
- What should I do to strengthen my body and soul to fight cancer?

Communication with oncology patient

- Avoid foreign words** – patient should understand you!!!
- Quiet, intimate environment** - **discreet zone, consulting room**
- Clear, slow speech** - remember important information
- Focus on the interview** - contact with the patient
- The presence of close relatives** - in serious interviews they should be invited
- Written information, instructions** - a manual that basically describes the doctor's information.
- Repeat, repeat, repeat** - patient is **STRESSED**, he doesn't pay attention - memory fails
- The patient is a partner**



Adverse effects of oncology therapy

Surgery
Radiotherapy
Chemotherapy
Biologic drugs
Hormone therapy
Immunotherapy
Radiopharmacy
Transplantation....
... and their combinations

Adverse drug reactions in cancer treatment

- Tumor cells are rapidly dividing and growing, anticancer chemotherapy must destroy **rapidly growing cells**
- However, **cytotoxic drugs** can not detect the tumor cell from normal, and thus **damage the rapidly growing cells of our body**
- Blood cells formed in the bone marrow**, cells in the **GIT mucosa**, including the oral cavity, in the **reproductive organs and hair follicles**
- Anticancer medicines can also damage **heart, kidney, bladder, lungs and nervous system** cells in some cases.

Biologics

monoclonal antibodies

- Focusing on the target structure (**high specificity for tumor antigens**)
- structurally specific
- non-genotoxic
- proapoptotic (tumor cells)
- **It does not damage healthy surrounding tissues**
- **Treatment is not accompanied by haematological and gastrointestinal toxicity**
- Other (less) side effects
- High molecules. weight 150kDa

Cytotoxic drugs

- Small molecules
- stop cell growth, dividing or causing death
- **also damages healthy surrounding tissues**
- common side effects
- "Rough hammer"

Duration of adverse effects

- **Most cells recover quickly after chemotherapy is terminated**
- It depends on the **overall health status** and **type of cytotoxics used**
- some AD may **take months or even years**
 - heart, lung, kidney or reproductive organ damage
- some types of chemotherapy may have exceptionally **distant side effects** such as the **occurrence of secondary tumors** that may occur after many years
- Only few patients have long-term chemotherapy problems
- **preventing and treating** the undesirable effects of chemotherapy
 - = **SUPPORTIVE CARE IN ONCOLOGY (BSC)**
- ADRs – prevent!!!

Side effects of oncology therapy

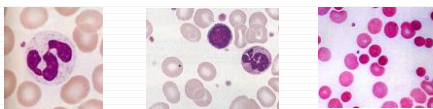
- | | |
|---|--|
| <ul style="list-style-type: none"> □ Hematotoxicity □ Skin □ alopecia □ additional skin toxicity □ GIT □ mucositis, xerostomia □ anorexia □ nausea, vomiting □ diarrhea, constipation □ Immunosuppression, fatigue □ Side effects of radiotherapy □ cardiotoxicity | <ul style="list-style-type: none"> □ nephrotoxicity, urotoxicity □ vascular toxicity □ hepatotoxicity □ neurotoxicity □ pulmonary toxicity □ eye toxicity □ gonadotoxicity □ tumor lysis syndrome □ mutagenic and cancerogenic effects □ paravasation □ pain <p style="text-align: right; color: red;">... depression, anxiety</p> |
|---|--|

Side effects of oncology treatment - Patient's view

1. Nausea
2. Vomiting
3. Hair Loss
4. Fear of treatment
5. Fear of hospital stay
6. Fear of the procedures
7. Shortness of breath
8. Persistent fatigue

A. Hematotoxicity - myelosuppression

1. Granulocytopenia, neutropenia (6-10 hours, recovery after 10 days)
2. Thrombocytopenia (5-7 days, recovery after 30 days)
3. Anemia (120 days, recovery after 30 days)



Hematotoxicity

- **the most common unwanted manifestation of CHT**
- changes in the **number of blood cells** in peripheral blood
- Examination of exact **bone marrow biopsies and detailed laboratory examinations**
- granulocytes, thrombocytes and the **most common is anemia.**
- **Neutropenia** is often a limiting effect. Severe neutropenia may result in a condition called "**febrile neutropenia**" (body temperature above 38 °C...) leading to the development of **serious and life-threatening infections**

Hematotoxicity is caused by:

- **antitumor treatment** (iatrogenic action) - myelosuppression
- **own tumor** - changes in the coagulation system: solid tumors - towards hypercoagulation, blood vessels - towards hypocoagulation
- inadequate hematopoiesis due to pulp **infiltration by the tumor process**
- **blood loss**
- **malnutrition**
- **hemolysis**
- chronic **renal failure**
- patient **immobilization**

1. Granulocytopenia, neutropenia

□ **Decrease in neutrophils**



Therapy:

- **Leukocyte concentrates** - risk of recipient immunization and CMV transmission
- **G-CSF** (original **filgrastim** and biosimilars, **pegfilgrastim**) Neupogen, Neulasta
- **corticosteroides** (prednisone)

Neutropenia - Recommendations for Patients



- Patient: at the **time between applications chemotherapy becomes the most sensitive to infection**
- **Avoid contact with infectious diseases**
- Dg: fever, blood count
 - After application of the first cycle - checking the hematological tolerance, ie performing the blood count about once a week
 - dose adjustment
- the deepest decrease in granulocyte counts is about **10 to 20 days after the administration of the cytostatics**
- Lack of granulocytes significantly **reduces immunity to infections**

Neutropenia - recommendations for Patients



prevent infections

- **Wash your hands** during the day very often
- **Wash the area of the rectum** gently
- Avoid **raw food** for possible bacteria and molds such as raw fruits, vegetables, and mold cheeses.
- Be careful not to **injure the skin** when **cutting nails**.
- To shave, use only **electric shaver** to prevent skin damage.
- Use a **soft toothbrush** to keep your gums off.
- **Shower by lukewarm (not hot) water**. Do not rub the skin with a towel, lightly massage it with a tap.
- Use cream or oil to soften and **soften the skin** if it is dry

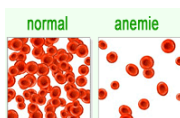
2. Anemia

- **iron, folic acid, blood derivatives – erythrocytes concentrate**
- use of **erythropoietine** - ???
 - erythropoietin alfa, darbepoetin alfa XXX
 - ↑ risk of tumor progression, thromboembolism, shorter survival
 - EMA recommendations - **blood transfusion is preferred**



OTC

- **pyridoxine (B6)** - improves white and red blood cell count
- juice from **beetroot**



Anemia – recommendations for patients



Symptoms:

- **weak and tired**, inefficient, non-concentrating.
- **sexual disorders**, diminished sexual activity and activity.
- dizziness, **cold feeling and shortness of breath**, angina pectoris may worsen.
- **Rest a lot**. Sleep a lot, ...some time during the day.
- **Restrict your activities**. Do only the things that are most important
- If you need it, do not be afraid to **ask for help from family or friends**, such as childcare, shopping, homework...
- Eat a lot of **meal** if possible, including meat, fruit and vegetables.
- From the bed or chair stand up slowly to **prevent dizziness**.

3. Trombocytopenia

- **visible bleeding** (bruising, nose bleeds, bleeding from gums)
- **hidden bleeding** (into GIT, brain, hematuria - red or pink urine, black or bloody stools)
- The possibilities of intervention are limited
- administration of **thromboconcentrates**
- **glucocorticoids**
- **hemostatics** - etamsylate
- **antifibrinolytics** - tranexamic acid
- aminomethylbenzoic acid



Trombocytopenia - recommendations for patients

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- Do not take any **medication** (OTC), ASA !!! painkillers, without prior consultation with a doctor.
- **Avoid alcohol** altogether unless your doctor explicitly authorizes it.
- Use a very **soft toothbrush**.
- **Clean your nose** very **carefully**, do not use your fingers.
- To shave, use only an **electric shaver** to prevent skin damage.
- Be careful when working with **sharp things** (knife, tools).
- Be careful **not to burn** when **cooking or ironing**, use protective gloves when removing containers from the oven.
- Avoid such activities where there is a **risk of injury**, including sports.
- When working in the garden, use **thick gloves**.

B. Nausea and vomiting

Nausea (nausea) - subjective **unpleasant feeling** accompanied by vegetative symptoms (sweating, salivation, tachycardia, paleness)

Vomiting (emesis) - **Reflex evacuation of the stomach content** by mouth caused by persistent contraction of the abdomen and defensive muscles

- disorders of fluids, dehydration
- mineral disruption, negative psychological stress refuse treatment

Nausea and vomiting

- After chemotherapy and radiotherapy
- **Acute nausea** - well removed
- **Long-term nausea** and **anorexia** after chemotherapy is a worse problem.
- usually nausea and vomiting **only in a limited time at and after chemotherapy**.
- Difficulties may begin with chemotherapy and may **persist for 8 to 24 hours after it is over**.
- With repeated chemotherapy, - nausea or even vomiting begins before cytotoxic therapy, it is a so-called **anticipatory nausea**.

Physiology of vomiting

- **center for vomiting** – **medulla oblongata** - integration of stimuli
 - from the periphery - the upper part of the GIT, peritoneum, mesenterium
 - CNS:
 - from the **chemoreceptor trigger zone**
 - from **flavor, equilibrium center**
 - from **higher levels of the brain**, including the cerebral **cortex**
- serotonin, dopamine, acetylcholine and histamine **receptors**
- chemoreceptor trigger zone: D2, 5-HT3 receptors
- intestine: 5-HT3 receptors

Types of vomiting in oncology patients

acute

- within 24 hours of treatment (CHT or RT)
- early (1-2 hours after treatment) and late
- most affected - serotonin and dopamine receptors

delayed

- for 24 hours. and later, a **maximum of 2-3 days**, up to a week
- the pathogenesis of this type of vomiting is unclear - more mechanisms

anticipatory

- conditioned psychologically, most often **after previous bad experiences**
- difficult to influence, always use anti-emetics prophylactically

breakthrough vomiting

- an attack of nausea or vomiting in otherwise entirely controlled emese

refractory vomiting

- does not respond to therapy - treatment complicated
- insufficient anti-emetic therapy in previous CHT cycles

Potential for vomiting after cytotoxic use

Table 1
Emetogenic potential for intravenous agents

High risk	Moderate risk	Low risk	Minimal risk
>90% frequency	30%-90% frequency	10%-30% frequency	<10% frequency
Cisplatin Dacarbazine Methchlorothamine Streptozocin	Azacitidine Bendamustine Carboplatin Daunorubicin Irinotecan Melphalan Oxaliplatin	Cabazitaxel Docetaxel Etoposide 5-FU Gemcitabine Mitomycin Mitoxantrone Paclitaxel Pemetrexed Thiotepa	Alemtuzumab Bleomycin Cetuximab Pegaspargase Pertuzumab Rituximab Trastuzumab Vincristine

Therapy of nausea and vomiting

- **5-HT₃ receptor antagonists** - peripheral and central MA, inj, p.o., supp
 - **ondansetron** (Zofran, Ondemet) ZYDIS!
 - **granisetron** (Kytril)
 - **palonosetron** (Aloxi)
 - **tropisetron** (Navoban)
- ADR: slow gut transit and increase reabsorption of water - **constipation**
- **Antagonists of dopamine receptors** - **not combined with thiethylperazine** xxxxx extrapyramidal symptoms ...
 - **metoclopramide** (Degan)
 - **Neuroleptics**
 - **thiethylperazine** (Torecan)
 - **haloperidol** (Haloperidol)
 - **Neurokinin receptor antagonists**
 - **aprepitant** - a selective high affinity antagonist for neurokinin 1 receptor (NK1) **substance P** (neuropeptide of 11AMK that induces vomiting)
 - The recommended dose is 125 mg on Day 1, 1 hour before chemotherapy, and 80 mg on Day 2 and Day 3.



Therapy of nausea and vomiting

- **Histamine receptor antagonists**
 - centrally acting, to treat mild radiotherapy sickness
 - **emramine** (Medrin XXXX)
 - **moxastine** (Theadryl XXXX)
- **Glucocorticoids**
 - **dexamethasone** (Dexamed, Dexona), **prednisone**, **methylprednisolone**
 - in a higher dose, a distinct antiemetic effect, whose mechanism is not known - inhibition of prostaglandins
 - **synergistic effect with setrons**
- **Benzodiazepines**
 - **diazepam** (Seduxen, Apaurin)
 - **alprazolam** (Xanax, Neurorol)
 - **lorazepam** (Tavor)
 - they restrict the patient's **unpleasant psychological reaction to vomiting**
 - **Anticipatory vomiting**

Treatment of anticipatory vomiting

- based on **conditioned reflex**, eg when looking at a prepared cytostatic infusion, looking at the hospital
- based on the poor experience of a patient with nausea and vomiting at the beginning of chemotherapy, it can occur in **up to 30% of patients** ...
- **Educating the patient about the possibilities of supportive therapy**
- **Effective prophylaxis and therapy from the first cycle of treatment**
- **Early indication of setrons based on emetogenic potential of cytostatics in CHT schedule**
- **Benzodiazepines** before and during CHT



Nausea - Recommendations for patients (1):



- Eat **smaller portions** a day, avoid large meals and a full stomach.
- Drink liquids an **hour before or after a meal**, do not drink during the meal.
- Eat and drink **slowly**.
- **Avoid sweets**, fried and fatty foods.
- **Eat cold food**, it suits better than warm.
- **Chaw food** to make it easier to digest.
- If you have nausea in the morning, eat a bit of **dry food, such as biscuits, toast or cereals, before eating**
- Drink cold, unsweetened fruit **juices** without bubbles
- **Suck ice cubes**, mint, or acid fruit candies (sour candies are not suitable for inflammation in the mouth or throat).

Nausea - Recommendations for patients (2):



- Avoid **intense smell** (smell when cooking, smoke, perfume).
- After a meal **rest in a chair**, do not lie at least two hours after a meal.
- Wear **free not tight clothing** (for example, better braces than a belt).
- In case of nausea, **breathe slowly**.
- Turn your attention away from your difficulties by **talking to co-workers, family members or friends**, do not mess up with your health problems.
- **Listen to your favorite music**, watch unpretentious entertainment shows on TV.
- Avoid eating a few hours **before taking chemotherapy** if you feel it sick or have a nausea.
- After consulting with a psychologist, you can try **relaxation techniques** to prevent premature nausea.

Skin – Recommendations for patients



- **skin** - redness, itching, or drying of the skin and the appearance of acne (small purulent blisters)
- **nails** – brittle (fragile), and white strips may form on them
- Keep your skin **dry and clean**
- A **non-irritating cream** is appropriate for pruritus, and drugs are exceptionally needed
- If you have dry skin, shower only briefly and **do not use a hot long bath**
- Treat your skin with a greasy cream and **do not use perfumes, colognes, shaving water**, and alcohol-containing deodorants
- Protect your fingernails with **gloves** especially when washing dishes, working in the garden.

Skin – recommendations for patients



- **darkening of the skin after injection along the vein**
- Wear **long sleeves**, creams to **cover darker skin**, most patients do not mind this little cosmetic defect. The darkening of these skin areas usually **disappears within a few months after chemotherapy is over**.
- Skin **exposure to sun** may intensify the darkening of the skin around the veins used for chemotherapy. Check with your doctor if you want sunbathing. If there is no objection, use **sunscreen with a protective factor of at least 30**.
- Immediately call a doctor or sister a sudden or **severe itchy skin, sudden rash, shaking or breathing difficulties** during chemotherapy. It can be an **allergic reaction** that requires immediate treatment.

Hair Loss (alopecia)

- **negative effect of CHT on hair follicle cells**
- sometimes also eyebrows, lashes, hairs affected, depigmentation
- **not immediately** after applying CHT
- psychological and social impacts
- preparations to promote growth and quality of hair - **ineffective**
- growing hair - gentle care
- changes in **hair quality**



- **doxorubicin, mitomycin, bleomycin, mitoxantrone, taxanes, etoposide, cyclophosphamide and cisplatin.**

Alopecia – Recommendations for patients



- they are **growing again**, often in **significantly better quality** than they were original
- exceptionally, **eyebrows, eyelashes** fall out
- especially women feel better in the **wig** that they should get before the first signs and which their doctor can prescribe
- eyebrow pencil and artificial eyelashes.

Recommended hair care during chemotherapy:

- Use non-irritating shampoos
- Use **soft hair brushes**
- Do not use high temperature when drying hair
- Do not use hair color
- Do not use thermal or chemical hair treatments

Keep your hair short

Adverse effects in the treatment of biology



- **cetuximab (Erbixux), panitumumab (Vectibix)**
- targeted therapy, limited effect on healthy tissue
- **Skin (acneiform) exanthema** - face, throat, fuselage - 72-90%
- **Xerodermia, Trichomegalia, Paronychia** (Nail bed inflammation) - Skin ADR explained by the **presence of EGFR in the skin and hair follicles** - inhibition of reparative mechanisms
- periorbital epithelial skin involvement, conjunctivitis
- Diarrhea - less severe, in combination with irinotecan, more severe gastrotoxicity
- **INFUSION REACTIONS**



Exanthema - Patient recommendations



- Use **bath oils** instead of gels / soap
- Wash with **not warm water**
- Emulsions, ointments with salicylic acid and urea
- Restriction of the sunbathing, creams with a protective factor
- Avoid tight footwear, gentle manicure = prevention of paronychia



!!! Explain to the patient the relationship between the presence of EGFR in the skin and hair follicles and the effectiveness of therapy



E. Caring for the oral cavity

- o inflammation of the oral cavity (**mucositis**)
- o **dry mouth**
- o mucosal ulceration
- o **bleeding**
- o settlement of microorganisms (mycosis)
- o **pain**
- o **anorexia, malnutrition**

- o **It may lead to discontinuation of treatment !!!!!**

Mucositis

- o inflammation of mucous membranes **throughout the body**
- o After RT, CHT, drugs (opioids, TCA, diuretics, spasmolytics)
- o complications include **ulceration** (less in the area of gastroduoden) and **mycosis**, eventually other infection
- o **antimetabolites (methotrexate, fluorouracil, cytarabine), intercalators, etoposide, bleomycine and cisplatin.**

Oral cavity

- o ulcerative **stomatitis**
- o **xerostomy**
- o the complication is **Candida albicans infection (soor)**



Mucositis - recommendations



- o treatment of **teeth and periodontitis – BEFORE chemotherapy !!!**
- o oral hygiene - **soft toothbrush** (change after each infection)
- o Toothpastes and gels with **anti-inflammatory effect**, higher content of fluorine
- o **do not eat irritating and drying foods**, avoid alcohol-containing products
- o **oral mucosal cryotherapy** (sucking **ice cubes** at CHT - 5 minutes before, continue for 30 minutes)
- o preparations with a **protective, moisturizing and healing effect**, rinses with **anti-inflammatory substances** (mouthwashes)
- o **electrolytes** (including calcium and phosphates), **local anesthetics** (**Mundisal gel, Solcoseryl**, antiseptic lozenges) and **analgesics**
- o in mycosis (soor) locally **nystatin or clotrimazole**
- o rinses with antiseptics (**Chlorhexidine, benzydamine**), **borglycerin**
- o bleeding - **clean the teeth with a sterile gauze square** (n. soaked in water)

Oral gels

Mundisal gel

- o 87.1 mg of **choline salicylas** in 1 g of gel.
- o The analgesic effect takes 2-3 minutes and lasts for 2-3 hours
- o antibacterial effect on microorganisms of oral microflora

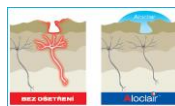
Solcoseryl orm pst.

- o Vitruvine sanguinis fractio deproteinata 2,125 mg
- o deproteinated cell **hemodialysate and blood serum**
- o stimulation of oxygen utilization, glucose transfer, regeneration support
- o improves the repair and regeneration processes of damaged ti:
- o increases collagen synthesis in vitro
- o protects tissues at risk of hypoxia and / or substance deficiency

Gelclair



Aloclair (gel, mouthwash)



helps with healing of the aft - **Aloe vera** - moisturizes mouth mucosa
 - **Sodium hyaluronate** - relieves burning and redness -
Glycyrrhetic acid

Caphosol (Ca, phosphates)



- **Solution for mouthwash rinsing.** Aqueous solution. Caphosol® is a preparation consisting of two separately packaged aqueous solutions, a **phosphate solution (Caphosol A)** and a **calcium solution (Caphosol B)**
- Mixing the same volumes of both solutions produces a **solution of calcium and phosphate ions.**
- Sodium phosphate 0.032 Sodium dihydrogen phosphate 0.009
- calcium chloride 0.052
- Sodium chloride 0.569
- purified water q.s. (% by volume).

Mucositis - recommendations



- Avoid **hot meals and drinks** that irritate mucous membranes
- Prefer **soft foods** such as sauces, mash, creams, compotes, bananas, ice cream, soft eggs, cottage cheese, pudding, minced meat, minced meat, macaroni, spaghetti, noodles, dumplings.
- Avoid **raw food** for possible bacteria and mold content, such as raw paddy fruits, vegetables, mold cheeses
- Bananas or cooked apple compotes are suitable.
- Avoid **irritating and acidic foods**, such as tomatoes, citrus fruits, juices, spicy or a lot of salty food, and do not eat dry food that **could scratch the mucosa, for example, toasts.**

Xerostomia (dryness in the mouth)



- RT, CHT, drugs (opioids, TCA, diuretics, spasmolytics) → ↓ Saliva produ

Patient recommendations:

- Drink **lots of fluids**
- **Suck ice cubes**, hard candy without sugar
- **chewing gum** without sugar
- Breathe through your nose
- Humidify the dry meal **with butter, margarine, meat juice, sauce or vegetable juice.**
- Use balsam or deer to dry lips
- **Replace saliva** - BioXtra, Xerosotom
- Stimulation of saliva production (pilocarpine, off label)



prolonged-action moisturizing ingredients, enzymes, proteins and peptides such as natural saliva, aloe vera, vitamins and calcium, fluoride-free



Diarrhea - recommendations



- If it lasts longer than 24 hours or is accompanied by spasms and pain – consult physician

- **CHT (FU, irinotecan, capecitabine), RT, ATB. infection, stress**

Recommendation:

- Eat **small amounts of food**, more often, 6-8 times a day.
- **Not foods with fiber** such as whole grain bread, cereals, raw vegetables, beans, nuts, fresh or dried fruit.
- On the other hand, low-fiber foods such as white bread, rice, noodles, bananas, compotes, curd, eggs, potatoes, poultry without skin, fish are suitable.
- **Avoid coffee, tea, alcohol and sweets, fried, oily and crisp foods.**
- eat **high potassium foods** such as bananas, potatoes, peaches and apricots
- **Drink as much water** as possible - water, apple juice, weak Russian tea, spicy vegetable soup. **Drink slowly, after small doses** and often,
- If diarrhea is serious, a doctor should be consulted
- Leave out **milk and dairy products** if your diarrhea gets worse.

Constipation - recommendations

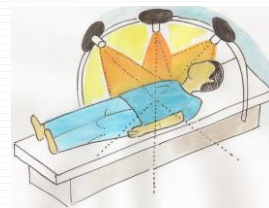


- **CHT (vincristine, vinblastine), lack of movement, opioids**
- reduced physical activity or change of diet
- no laxatives, or over-the-counter drugs without consulting a physician

Action:

- Drink **plenty of fluids**, cool or hot drinks are good.
- Eat lots of **foods with fiber** such as whole grain bread, cereals, raw vegetables, beans, nuts, fresh fruits (currants, gooseberries, raspberries, strawberries, cherries, apples, pears) or compotes i dried fruit.
- If your health permits, **move and practice**, go for a walk.

F. Adverse effects of radiotherapy



Recommendations for patients



- **plenty of rest and sleep**
- balanced and sufficiently **nutritious food**
- **Take care of the skin at the irradiation site** - the skin becomes more sensitive or looks sunburned after irradiation.
- **Do not wear tight clothing** - especially in the place of radiation, avoid straps, stockings or tight collars. Prefer free, soft cotton clothing.
- **Do not stick the patch at the radiation site** - if it is necessary to wrap or cover the skin at the radiation site, use a patch for sensitive skin.
- At the site of radiation, **avoid the effects of cold or heat** - do not place iced or warm tiles, warming bottles and the like on the irradiated area.
- **Protect sunburned skin from sun** - sensitive to sun - dark clothing - protective sunscreen. In sunscreen, it is advisable to continue for at least one year after the end of the irradiation treatment.

Treatment of acute skin reactions

- **pork unsalted lard, olive or sunflower oil**
- Not tight clothing, air access o skin
- **Bepanthen cream or Calcium pantothenicum**
- Further, depending on the degree of dermatitis, locally applied **Infadolon, Betadine or Inadine**, or a combination
- **analgesics (Tramal gtt.)** and, if indicated, **antibiotics** according to the sensitivity

Dermatologics after radiotherapy:

- **Calcium pantothenicum ointment 5%** - is also suitable for dry skin
- **Panthenol spray** is applied 2-3 times a day, shake
- **Panthenol gel** - pleasantly cools and absorbs itself.
- **Panthenol body lotion** - is easy to spread, it is suitable for larger areas.
- **Bepanthen cream, ointment (greasy)**
- **Panthenol forte cream** - also contains vitamins, prevents moisture loss.
- **Dermazulen ointment** - contains chamomile extract
- **Infadolon ointment** - only for mild burns
- **Pork lard** - has excellent **protective effect**, improves elasticity and refreshes. Olive oil - suitable for lubrication, softening of the skin
- **Apipanten 135ml foam** containing propolis and panthenol

Oedema, swelling

- More than **60% of patients with advanced cancer** suffer from swelling.
- Causes of:
 1. Hypoalbuminemia - decreased oncotic pressure
 2. Heart failure, renal failure
 3. NSAIDs / steroids (cause fluid retention)
 4. Common venous and lymphatic obstruction
- **Treatment** - diuretics, elevation of the limbs, bandages
- ! Swelling **increases the fragility of the skin** - more often develop skin defects!

Therapy of pain in oncology

- Which tumors hurt?
- Treatment?
- WHO ladder Update
- Opioid treatment rules
- Retarded tablets
- TTS
- new drugs
- new forms of medicine
- breakthrough pain



Pain in oncology

Tabulka 1. Výskyt bolestí v závislosti na typu a lokalizaci nádoru

kosti	85–100 %
slinivka břišní	70–100 %
vaječníky a děložní čípek	40–100 %
tlusté střevo a konečník	50–95 %
plicé	45–85 %
dutiná ústní	60–80 %
žaludek	60–75 %
prostata	40–75 %
prsní žláza	35–65 %
lymfomy	15–20 %

Nutrition of oncology patient

Malnutrition: 60-85% of cancer patients

- negative prognostic factor
- fatigue, loss of muscle mass
- complications after operations and CHT
- impaired wound healing, ↓ muscular strength
- bedsores (dekubitus)
- ↓ immunity, infections and thrombosis, ↓ quality of life, depression, ↑ mortality and morbidity,
- **prolonged hospital stay**

Malnutrition in oncology



- reduced food intake → malnutrition → worse treatment
- **recommendations for loss of appetite:**
- **small portions**, slowly, anytime, well-groomed food
- a meal **rich in protein and energy**
- lack of appetite for meat - replacement proteins
- **do not drink during the meal**
- motion in fresh air, **relaxation**
- **sipping**
- **megestrol acetate, (corticosteroids)**

Outpatient nutritional support

- Hospitalization itself presents **a risk of deterioration in the nutritional status**
- More than half of the malnutrition patients **present at the time of their admission** (to the hospital) are released from the hospital with **further weight loss**
- **Hospitalization time - mostly short to make nutritional status significantly improved - continuation of nutritional support even after hospital discharge**
- A long-term nutritional support strategy - simple way of taking oral supplements - **sipping**

Preparations for sipping

Characteristics:

- flavored preparations for direct consumption, similar to standard, energy, immunonutric, for diabetics
- **a complete blend of macronutrients and micronutrients**
- **large amounts of energy and nutrients in a small volume**
- preparations are **additive to diet** (use between meals, in addition to the diet)

Dosage:

- Supplemental nutrition: 1-3 packs (200 ml) day, full nutrition 6 - 7 packs / day



Sipping - effect on malnutrition

- **by frequent siphoning of small volumes** partial or total daily intake of nutrients and fluids can be achieved
- increase protein and energy intake and maintain or improve nutritional status parameters for many patient and hospital populations
- **Reduction:**
 - the occurrence of wound and joint infections
 - serious anemia
 - decubitus
 - inflammation of wounds
 - infection of the uropoetic system

.... compared to patients who did not receive the products

Sipping - advantages

- possibility of **immediate use** (preferably refrigerated)
- **Wide choice of blends** and types of preparations
- **high energy** and protein content
- **defined nutrient content**, including **vitamins and trace elements**
- **high bioavailability**
- most of the preparations are free of lactose or gluten
- **shake before use**
- use by small sips
- after opening **in the refrigerator within 24 hours**
- serving chilled
- preparations for adults - childer aged 6 years, (3-6 years after consulting a physician)

Tomáška, Remedia 2009

Adverse effects of sipping

- insignificant, does not affect the overall treatment outcome
- most studies systematically do not evaluate the NF
- especially in the GIT area and in most cases not long-lasting
- diarrhea is often not the cause of diet itself, but it can be antibiotic dysmicrobosis, cytostatic mucositis or irradiation, or adverse drug reactions
- in disputed cases, reduce the sipping dose or discontinue it for a short time
- stomach pain or flatulence - rarely
- oncology patients - on days of chemotherapy
 - to reserve one or two flavors to avoid creating
 - aversion to a discomfort when treated



PREPARATIONS OF ENTERAL NUTRITION:



Producers - Nomenclature

- Nutricia – Nutridrink, Diasip, Fortimel, Cubitan
- Fresenius – Fresubin, Diben, Supportan
- BBRAUN – Nutricomp
- Nestlé – Resource, Isosource, Impact
- Abbvie – Ensure, Prosure, Glucerna
- Bohušovická mlékárna – Nutrilac



Recommendations for patients (1)

- the product is a nutritional supplement with a complete nutrient composition, but the diet remains the basis
- let me explain the reason for this nutritional supplement and its benefits
- ask for information about the composition and nutritional value of the product
- most preparations have a high amount of energy, protein and vitamins in a small volume
- take the medicine regularly every day, try to keep the recommended dose
- drink the product in small single doses (50 ml = ¼ the usual size pack)
- at the beginning or after intolerance, take a sip of tablespoons or tablespoons (15 ml)



Recommendations for patients (2)

- in most cases it is inappropriate to drink whole packs at once (risk of gastrointestinal disorders)
- take between meals and meals, in addition to diet as a supplement and enrichment of the diet
- drink liquid nutrition so as not to reduce the intake of natural food
- you can also use evening and even night time to receive this nutrition
- alternate flavor preparations
- ask the pharmacy to release the various flavors of the prescribed (recommended) product
- Also use neutral flavors (without flavor) that you can taste for yourself
- use fat-free juice forms (these have a low protein content)
- if you are able to drink a small amount, ask for a concentrated product

Recommendations for patients (3)

- for diversion it may sometimes be advantageous to add liquid food to foods (according to recipes)
- the liquid preparation may be thickened by a thickener
- newly developed ready-to-use creams
- well-compensated diabetics can be non-diabetic
- most patients are satisfied with the refrigerated product (from the fridge)
- record the amount of product you have actually used
 - (per day, per week)
- You can expect the effect only with regular use every day
- if you hate one type of product, try to try another type
- if you really hate sipping, talk to your doctor or nutritional therapist



Reduced appetite therapy always along with nutritional support

- anorexia, reduced appetite
- **corticosteroids, gestagens** (**megestrol acetate**, medroxyprogesterone acetate), cannabinoids, anabolics, thalidomide, metoclopramide, nonsteroidal antiphlogistics, melatonin, or pentoxifylline.

Corticosteroides

- increase in appetite, but only for a transient period (about 4 weeks), usually without significant weight gain.

Megestrol acetate (Megace, Megaplex)

- gestagen - an increase in appetite followed by weight gain
- mild antiemetic effect
- ADE: peripheral edema, fluid retention, thromboembolism, cushingoid changes, potency disorders in men, and menses irregularities in women



Cannabinoids !!!!!

Pharmacist in oncology

- **Chemotherapy infusions preparation**
- Psychological approach
- Proper use of medicines
(p.o., cytostatics, analgesics)
- **Side effects**
- **Nutrition, sipping**
- Knowledge of **food supplements**, alternative medicine

