

**PRINCIPLES OF NURSING DIAGNOSIS AND TREATMENT IN BLEEDING AND BLOOD LOSS SYNDROME**

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**Abstract:** This article aims to make nurses working in preventive treatment institutions and family polyclinics mature in all respects, to acquire sufficient knowledge, skills and abilities in specialized disciplines, to further improve medical assistance in self-management and counseling, to acquire new theoretical knowledge through practical skills. aimed at acquiring strengthening, psychological care skills

**Key words:** medical field, emergency medical care, surgical departments, biological test result, erosion.

The purpose of this article is to develop nursing pedagogy by giving advice and developing the type of activity.

Generally, regardless of the field of work, every nurse should know the principles of assessing the patient's condition and providing first aid in emergency and emergency situations, and in such cases, they should be able to help patients independently until the ambulance arrives. This manual can provide basic knowledge and skills to the medical worker

Today, in the field of medicine, special attention is paid to improving the level of knowledge and skills of secondary medical workers. This methodical guide also helps to form the basic knowledge of the medical staff in order to assess the patient's condition in acute cases and to provide emergency medical care.

This methodical guide contains the latest information on what is a mine loss, what are its types, and how to distinguish between types of mine loss, methods of temporary and permanent stoppage of mine loss, rules for preventing complications of mine loss.

The training manual provides materials aimed at adequately mastering the necessary new knowledge and skills in accordance with the qualification description and job instructions of all nurses of treatment and prevention institutions and nurses of QVP/QOP/OP and district/city KTPPs. In this regard, prevention of dangerous complications for patients, implementation of care aimed at formation of a proper lifestyle, and improvement of independently conducted training activities will be achieved.

This methodical guide is intended for the training of intensive care and intensive care unit nurses, surgical unit nurses, obstetrics and gynecology unit nurses, family nurses working in QVP/QOP/OP and district/city KTPPs. Nurses should be able to provide competent first aid when necessary. Based on this, giving advice to the population on " Rendering first aid in acute mining accidents" . The main tasks of the educational manual are to provide students with qualified knowledge, to comprehensively teach them theoretical and practical aspects.

**What is called mining?**

Bleeding is the leakage of blood from a blood vessel into the external environment, tissues and body cavities (pleura, abdominal cavity). Bleeding is more or less observed in any injury. Many medical professionals are faced with the problem of bleeding, but in no field is bleeding more important than in surgery.

If we look at the history of the development of surgery, we see that this same problem has limited the possibilities of surgical treatment for a very long time. Therefore, we ask that you pay attention to the section below. There are 2 main causes of bleeding:

1. Violation of the integrity of the vascular wall (injury, purulent inflammation, increased blood pressure, sudden decrease in atmospheric pressure, etc.)

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2. Violation of vascular wall permeability (change in chemical composition of blood, effects of poisoning, violation of vitamin balance in the body).

**Classification of bleeding.** Classification of bleeding is based on several signs: arterial, venous, arteriovenous (mixed), capillary and parenchymatous bleeding are distinguished according to the source of bleeding, that is, depending on the type of blood vessel.

**Arterial bleeding** is observed in the injury of the arterial blood vessel wall. In this type of bleeding, the blood is light red in color, the blood flow is under strong pressure, and it is wavy in accordance with the heartbeat. The risk and severity of arterial bleeding depends on the size of the injured blood vessel. If the aorta, the largest artery in the body, is injured, death will occur quickly. Bleeding from other, smaller arteries can also cause severe, fatal blood loss.



**Venous bleeding** is observed in wounds of the vein wall. In this type of bleeding, the blood is dark red in color, and the blood flow is uniform under low pressure. In the case of injury of large veins, a large amount of blood can be lost in a short period of time, and this condition can lead to hemodynamic disturbances and even death. When the central veins are injured, air drawn into the blood vessels can lead to the development of air embolism, which can eventually end in cardiac arrest or ventricular fibrillation. The gradual entry of air into the venous blood vessel can lead to air embolism of the lungs, brain and blood vessels.

**Capillary bleeding** - blood begins to leak from the wound surface. Capillary bleeding is usually not severe and stops on its own.

**Parenchymatous bleeding is observed when** lungs, spleen and kidneys are injured . In this case, blood is lost in large quantities due to the fact that the organ has a very good vascularization . In relation to the external environment, external and internal bleeding are distinguished.



**In external bleeding**, blood flows into the external environment or the cavity of an organ connected to the external environment. **In internal bleeding**, blood is poured into a body cavity (abdomen, pleura, joint, etc.). **Occult bleeding** does not have obvious external symptoms, and this type of bleeding is detected using special methods. In occult bleeding, the bleeding vessel cannot be visually observed, it is small, constant, and it is very difficult to diagnose it . For example, persistent minor bleeding from a gastric or duodenal ulcer can be classified as internal occult bleeding.

Depending on the time of onset of bleeding, it is classified as follows:

1. **Primary bleeding** - bleeding that begins at the time of injury:
2. **Secondary bleeding** - occurs after the primary bleeding has stopped and is divided into 2 types:

a) **Secondary early bleeding** - bleeding during the first hours and days after the injury (in the period before the infection develops in the wound). This type of bleeding is observed when a thrombus

in an injured blood vessel is ejected by a stroke due to increased blood pressure or loss of spasm in the vessel;

b) **Secondary late bleeding** can begin at any time after infection develops in the wound. The reason for this is dissolution of the thrombus as a result of suppuration, erosion of the vascular wall, purulent erosion or inflammatory process.

Depending on the duration of bleeding, its **acute** and **chronic** types are distinguished. In acute bleeding, a large amount of blood is lost in a short period of time, while in chronic bleeding, a small amount of blood is lost intermittently over a long period of time. Chronic bleeding is more often observed in hemorrhoids, uterine fibroids, malignant tumors of the gastrointestinal system.

Bleeding is also classified based on the amount of blood loss. The cause of the bleeding, the severity, and the amount of blood lost will depend on the rate of blood loss. A short-term loss of 40% of circulating blood volume (RBV) can be fatal. In some patients with chronic blood loss, we see that they are in a satisfactory condition and are walking independently, even if the AUC is missing by 60-70%. Therefore, not only the amount of bleeding, but also the following factors, that is, the development of surgical shock or not, the condition of the patient before injury, insufficient weight, the state of the cardiovascular system, gender and age, whether the blood parameters are normal or not, and the external environment are important . is important. There are different classifications according to the severity of bleeding.

**One of the most common classifications is the 4-level classification:**

1. Mild - 10 - 12% loss of AUC (500 - 700 ml)
2. Moderate level - 12-20% loss of AYUQH (1000 - 1400 ml)
3. Severe – 20-30% loss of uric acid ( 1500-2000 ml)
4. Very severe level - loss of uric acid more than 30% (more than 2000 ml).

**BLEEDING DIAGNOSIS AND BLOOD LOSS LEVEL DETERMINATION.**

Diagnosis and type of external bleeding are usually not difficult. The color of the blood, the bruise, the location of the injury will help to make an accurate diagnosis. Diagnosis of internal bleeding is more difficult. This type of bleeding can be manifested by symptoms such as a decrease in blood pressure, a decrease in the amount of hemoglobin in the blood, dizziness, fainting, an increase in pulse and a decrease in fullness. Local symptoms of internal bleeding are different. Bleeding into the skull cavity causes signs of pressure on the brain , and bleeding into the pleural cavity causes lung compression and difficulty breathing. Excursion of the chest is limited, a muffled sound is heard on percussion, and a dull breath is heard on auscultation. A pleural puncture for diagnostic purposes solves the problem. Blood enters the abdominal cavity (hemoperitoneum) parenchymatous organs (liver, spleen, etc.), fallopian tube (fallopian tube in pregnancy), injured abdominal organs (bullet, shrapnel fragment, stabbing cut, etc.). In this case, pain in the abdomen, muscle tension, nausea, vomiting, i.e., symptoms of inflammation of the peritoneum are observed. Bleeding into the pericardial cavity (hemopericardium) is characterized by slowing of heart activity, cyanosis, and increased venous pressure. Symptoms of acute anemia are usually not observed. When percussing, it can be determined that the border of the heart is enlarged in a triangular shape. This causes cardiac tamponade.

When blood is injected into the joints, the amount of blood is not high. It is related to the anatomical features of the joint and does not cause anemia. Local symptoms include joint enlargement, severe pain when moving or palpating, limitation of movement, detection of the symptom of fluctuation, if there is bleeding in the knee joint, the symptom of patella is observed. The final diagnosis is made after a joint puncture.

The clinical picture of an interstitial hematoma depends on its location, the condition of the transfused blood (liquid, frozen) and the preservation of the connection with the injured blood vessel. Anemia can also be observed when interstitial bleeding (retroperitoneal hematoma, which is common in mixed surgery). In most cases, interstitial hematoma is noted in injuries of trunk arteries of limbs. The resulting

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hematoma can crush veins, squeeze arteries, and cause ischemic gangrene. In such a case, timely surgical assistance will save the life of the member and the patient.

**Complications of bleeding and blood loss**

Bleeding of the 3rd - 4th degree can lead to the development of hemorrhagic shock. Hemorrhagic shock is a type of hypovolemic shock, and its development depends on the previous condition of the patient. Hemorrhagic shock occurs in three stages:

- 1) compensated;
- 2) decompensated;
- 3) irreversible process.

The blood lost in the first stage is easily replaced by compensatory mechanisms in the body.

In the second stage, deep changes in blood circulation occur, the spasm in the arteries is not enough to maintain central hemodynamics, and as a result, blood pressure begins to fall. This situation leads to the accumulation of metabolites in the tissues, capillary blood circulation disorders, and blood flow decentralization.

The third stage lasts up to 12 hours. Uncontrollable hypotonia, polyorgan failure develops at this stage. Transfusion therapy is usually ineffective.

One of the complications of internal bleeding is the sudden disruption of the functioning of vital organs as a result of compression. This condition poses a direct threat to the patient's life .

An interstitial hematoma can compress arterial and venous blood vessels and lead to limb gangrene. If the hematoma cavity is connected to the blood vessel of a large artery , a false surgical aneurysm may develop. When large venous blood vessels in the neck area or scar tissue are injured, these blood vessels cannot contract, resulting in air being drawn into the vein and an air embolism. If the blood inside the blood vessels has bactericidal properties, the blood poured into the tissues and cavities is food for bacteria and creates a ground for suppuration.

**Methods to stop bleeding**

When bleeding occurs, medical personnel are required to take immediate measures. It is necessary to temporarily stop the bleeding so that it does not end with serious consequences. In addition, it is necessary to replace the lost blood and restore the functioning of the lost organs.

There are temporary and intermittent (permanent) methods of stopping bleeding. Physical (mechanical, thermal), biological, chemical means are used for this. The main method of stopping bleeding is mechanical means, other means are also useful and can be used in addition to the main method. Sometimes, temporary hemostasis methods can cause a blood clot to form in the injured blood vessel and stop the bleeding completely.

**Methods to temporarily stop bleeding.**

We found it necessary to highlight several types of temporary methods of stopping bleeding:

1. **Bend the injured limb as much as possible at the joint.** When bleeding from the axillary, subspinal arteries, the hand is raised up, then maximally pressed on the back of the body, so that the palm is placed between the two shoulder blades, and the bleeding stops, because the artery is compressed between the vertebral bone and the I rib . The wrist is maximally flexed at the elbow joint to stop bleeding from the palm and wrist. When the leg is maximally bent at the knee joint, the blood from the calf and heel stops.

2. **Pressing the large vessels with a finger on the bone** also allows to temporarily stop bleeding from some large: carotid, subspinal, shoulder, femoral arteries. This method is usually used during the preparation or reinsertion of the tourniquet, and in some cases during the transport of the patient to the department. Although the method of stopping bleeding with a finger is considered to be one of the most reliable methods, it is very tiring for the person performing it. It is advisable to press the blood vessel

from the place where it passes close to the skin and in the area where the conditions are favorable for pressing on the bone.

**3. Put a harness .** Usually rubber or cloth harnesses are used. When the tourniquet is applied, blood vessels and soft tissues are squeezed and crushed. In this case, it is necessary not to stop the blood and not to damage other tissues, especially nerve fibers. When the tourniquet is placed, it should not be held for more than 2 hours. Otherwise, irreversible changes may occur in the tissues located in the area distal to the tourniquet, and the condition of "tourniquet shock" may develop, leading to the death of the patient. This complication is observed due to the fact that the poisons in the tissues that appear in hypoxia get into the blood and poison the body. A tourniquet is usually recommended for arterial bleeding and as close to the wound as possible. Correct placement of the tourniquet is indicated by the cessation of bleeding. If the tourniquet is left loose and only the veins are constricted, the bleeding continues, and the skin becomes cyanotic. It is impossible to place the tourniquet in the middle of the shoulder and lower thigh, because in case 1, the nerve of the shoulder is damaged, in case 2, a lot of tissue has to be crushed to compress the artery.

**4. Put a pressure bandage .** A tourniquet is placed only if it is known that the major artery is not damaged, as the tourniquet cannot stop the flow of blood from the great artery. This method is considered to be one of the most effective and harmless methods of temporary hemostasis. A sterile napkin in an individual package is placed on the wound, and it is tightly tied with a bandage. If a limb is injured, it is raised up .

**5. Tamponing the wound.** When bleeding from the nose and vagina, such a method is used, that is, the method of intermittent bleeding. Usually, the wound is covered with a few sterile pads and closed with a pressure bandage or a few stitches in the skin. It is also possible to soak tampons with hemocoagulants: thrombin, calcium chloride. When the trunk arteries of the limbs are injured, tamponade is not performed, as this method can lead to gangrene.

**Methods of intermittent and permanent stoppage of mining**

After the temporary cessation of bleeding, the patient must be provided with medical care by a doctor or a nurse with higher education in outpatient and inpatient settings. Such medical care includes intermittent and complete cessation of bleeding, primary surgical treatment of the wound, and specific infection prevention procedures. In this chapter, we will only look at ways to stop bleeding intermittently.

They are divided into several types:

- 1) Mechanical ;
- 2) Physics ;
- 3) Chemical ;
- 4) Biological ;

**To mechanical methods:**

- a) put a stitch on the bleeding vein and restore its integrity ;
- b) both ends of the bleeding vein are clamped and tied with silk and kapron threads ;
- c) if it is not possible to find the bleeding vessel in the wound itself, find it from a distance and tie it. This method is used when the cut artery blood vessel is shortened and pulled to a long distance from the injury ;
- g) during some operations (gastric, intestinal resection), it is possible to stop the bleeding intermittently by placing a mechanical suture, that is, tantalum sutures.
- d) During urgent operations, the blood flowing from the abdominal wall (from small arterioles, venules, capillaries) can be stopped not only by clamping, tying or using a coagulator, but also by dense sutures placed on the layers of the abdominal wall ;
- e) In the last 10-15 years, the laparoscopic technique, which has entered the practice of medicine, has completely changed our outlook on the technique of surgical operations. During these types of operations,

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special devices - "clips" have been developed, and these "clips" are being used to intermittently stop bleeding from a blood vessel.

**To physical methods:**

a) the method of stopping blood using an electrocoagulator is very common. This method is mainly used during surgery and allows to stop blood flowing from capillaries, small and medium arterioles and venules. Negative side: can cause necrosis of burned tissue;

b) the method of stopping blood intermittently with the help of a high-voltage laser light is not widespread due to the lack of special equipment in all clinics. This method is also used during operative treatment. The laser scalpel cuts the tissues at the same time, and with the help of the laser light, the blood vessels that are cut are coagulated at high temperature, stopping the blood flow intermittently and completely;

c) the method of stopping blood intermittently with "gauze soaked in warm physiological solution" is also used during surgery . This method is also based on the fact that it has the property of increasing hemocoagulation and narrowing blood vessels under high temperature . For example: after a cholecystectomy, there is a lot of capillary bleeding from its place. If an electrocoagulator is used, a lot of necrosis and tissue burns are noted in the liver. If a mechanical method is used, it will not be enough to sew all the capillaries in the liver wall. Therefore, the surgeon asks the nurse for a "napkin soaked in warm physiological solution" and presses this napkin on the gallbladder and easily stops the bleeding;

g) Bleeding can also be stopped by applying an ice pack locally.

**To chemical methods:**

a) if a 3% solution of hydrogen peroxide is applied to the wound with a damp napkin, capillary bleeding will quickly stop;

b) if 100-200 ml of 1% solution of calcium chloride is dripped into a vein, erosions in the walls of the stomach, duodenum, cracks (Mallory-Weiss syndrome), blood coming from the wounds forms a clot and stops intermittently;

100 ml of 5% solution of E-aminocaproic acid , vikasol, dizinon also stop external hidden bleeding intermittently;

g) if special biological glues are sprayed on the bleeding stomach and duodenal ulcer by endoscopic method, they form a crust and cover the wound and the bleeding stops.

**Biological methods:**

a) Freshly prepared blood, plasma, cryoprecipitate, fibrinogen, thrombocytic mass are also important in stopping external hidden bleeding.

b) after a cholecystectomy operation, the bleeding from the gallbladder can be stopped intermittently by pressing a hemostatic sponge on this area.

The above-mentioned methods of intermittent and complete stopping of bleeding are not used separately, but all methods are used comprehensively, so that the actions taken to stop the bleeding are not wasted, and the surgeon and assistant nurses together achieve a positive result during the operation.

**Organization of the nursing process during the stoppage of bleeding.**

From the moment the patient is admitted to the hospital, he is under the care of a nurse. The nurse immediately tries to find where the bleeding is coming from. Talks with the patient and asks about the medical history. Having an idea of the injury tool, what kind of help is provided is interested in the amount of help. Determines how much time has passed if a jgut is set. Removes the dressing, examines the wound, and makes a nursing diagnosis and treatment plan. Prepares the operating room for operative procedures. If the wound is superficial, in the limbs, the main artery and vein, nerves are not damaged, under the supervision of the surgeon, he can perform primary surgical treatment of the wound. If the injury is so complicated that the patient's life is in danger, then the nurse assists the surgeon during the operation.

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**Transfusion of blood and blood substitutes.**

Transfusion is the science that studies transfusion of blood, its components, and blood substitute fluids. The main means for transfusion are: blood, separate components of blood (erythrocyte mass, leukocyte mass, thrombocyte mass, blood plasma). Transfusion of blood and its components is called hemotransfusion.

Blood substitute solutions are considered healing liquids, they are used to restore and normalize the damaged and lost blood activity. Modern transfusiology now also studies myelotransplantation, that is, bone marrow transplantation. This method of treatment brings good results in the treatment of hemoblastosis (malignant tumor of blood-forming organs).

**METHODS OF BLOOD TRANSFUSION.**

The main methods of blood transfusion in modern surgery are blood transfusions into a vein or an artery. There is almost no blood flow to the bone. Basically, blood is dripped into a vein. Blood is sent under pressure to the artery when too much blood is lost, when the heart's activity slows down.

According to the source of the blood, the method of blood transfusion is divided into two

- **Autohemotransfusion** (transfusion of own blood)
- **Transfusion of donor blood**

Autohemotransfusion can be performed in two different ways:

- a) pre-prepared blood transfusion;
- b) Reinfusion of blood.

Blood reinfusion is the return of the patient's own blood poured into the patient's cavities (abdominal, pleural) and blood collected in the surgical wound. When blood is transfused with this method, blood is collected under aseptic conditions, glutitsir, sodium citrate, heparin are added, it is filtered through 4-6 layers of gauze, and it is dripped into a vein. Reinfusion is a contraindication for blood remaining in cavities for more than 12 hours, contamination of blood collected as a result of rupture of empty organs such as stomach, intestines. The reinfusion method is widely used in the case of ovarian cysts, spleen, liver rupture, ectopic pregnancy, intrapleural bleeding, pelvic, hip bone, and spine surgeries.

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