

Application of Nursing Risk Management Program in the Management of Hematology Department

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Abstract: The application of nursing risk management program in the nursing management of hematology department was introduced. This study emphasizes the risk identification, coping and tracking. Finally, the effects of risk management were evaluated.

Key words: Risk management program; Risk management; Hematology; ward

Nursing risk identification is the basis of nursing risk management¹. Nursing risk identification enables the nurses to take preventive measures, so that the nurses understand their risk at work and reduce the occurrence of risk. The nursing risk management is the process of assessing the potential risks to the patients, planning, implementing and performing the outcome evaluation.

Hematology patients are mostly hematology-oncology patients who require long term chemotherapy, poor prognosis and complex. Hematology patients are mostly associated with reduced red blood cells, white blood cells and platelet, coagulation dysfunction, low immune function, local or potentially organ bleeding and the risk of infection that may threaten the lives of patients at any time. The application of nursing risk management procedures includes the following aspects: treatment management, instrument management, disease symptoms management, personnel management and other aspects. The application of nursing management has achieved satisfactory results as shown below.

1. Treatment management

Hematology department has heavy workload. Blood transfusion and intravenous chemotherapy are the main treatment approaches, but there is a high risk for the nurses as they are the personnel who implement the blood transfusion and

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doi: 10.18686/jn.v6i1.89

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chemotherapy². Blood transfusion is an important treatment approach for the hematology patients which save the lives of millions of people every year. However, transfusions bring certain risks to the patients.

1.1 Risk identification of blood transfusion

Risks of blood transfusion include specimen collection error, mismatched blood transfusion, damaged transfusion bag that caused by non-standard operation, risk of infectious diseases, and transfusion reaction.

1.2 Management of transfusion

Blood transfusion management includes (1) Blood specimen collection: Complete inspection must be conducted by a qualified nurse. It is strictly prohibited to collect blood samples from two patients simultaneously. (2) Blood transfusion must be confirmed by two nurses to make sure consistent blood type and matching in the report. Complete inspection must be conducted with responsibility. The blood transfusion process must be recorded and monitored closely. Blood transfusion must be stopped immediately if found abnormal, and the doctor must be notified in time. (3)Time limit: The blood will be in the risk of bacterial reproduction or loss of function if the blood is not in the correct storage conditions. Thus, the transfusion time should be limited. Lack of relevant knowledge or disregard to blood transfusion time will cause a decrease in blood transfusion effect or cause adverse reactions. The infusion rate should be adjusted according to the degree of anemia and cardiopulmonary function, so as not to cause heart failure.

1.3 Safety management of intravenous chemotherapy

Chemotherapy is an important treatment of hematological disease. Chemotherapy for hematology patients are complex and with long cycle. Some of the available drugs are very expensive yet the new drugs update very quickly. Chemotherapy drug extravasation can cause local tissue ulceration. In recent years, the legal awareness of patients are increasing. These problems raise a higher demand on the management of nurses, while the technical risks in the nursing works are also increased.

1.3.1 Chemotherapy risk identification

The risks of chemotherapy include errors in executive of chemotherapy medication, errors in chemotherapy drug infusion, chemotherapy drug extravasation risk, and chemotherapy drug toxicity reaction.

1.3.2 Management of the chemotherapy risk

(1)Every nurse must master the relevant knowledge of chemotherapy. Our department designed a form and pocket book of the common chemotherapy programs for nurses to learn and master the relevant knowledge. (2) Strictly implementation of the checking system. (3) Checking of high-risk warning label for chemotherapy drugs. (4) Strictly double checking system before the infusion of chemotherapy drugs. (5) Regulatory use of chemotherapeutic drugs. (6)Close observation of adverse drug reactions. (7) Prevention of chemotherapy extravasation.

2. Instrument management

The commonly used equipment in the hematology department are including infusion pumps and laminar flow bed.

2.1 Risk identification of the usage of equipment

(1)Instrument operation is not standardized, (2)Late maintenance of the instrument.

2.2 Management to risk of the usage of equipment

(1)Infusion pump Infusion pump is one of the most commonly

used instruments in the hematology department. Infusion pump improves the efficiency and flexibility of clinical dosing operations, reduce nursing workload and improve quality of care. However, the infusion pumps can also cause a lot of troubles if administered poorly. Ensure good performance of infusion

pump prior using, and make sure can use the infusion pump correctly.

- ①Speed of infusion must be checked by two nurses.
- ②Inspect on time and check the infusion pump is in normal working condition.
- ③Often change the position of infusion pressure (≤ 4 hours).
- ④ Establish registration form for the use of infusion pump and class shift.
- ⑤ Do regular maintenance to the infusion pump to ensure its accuracy and normal use.

(2)Laminar flow bed:

Before admission: ①Use 84 disinfectant to wipe the laminar flow bed. ② Sterilize patient's clothing, bed sheets and quilt. ③Disinfect the laminar flow by UV disinfection for 60 minutes. ④Keep the laminar flow bed with high-speed ventilation for at least half an hour before admission. If the bed is occupied by an infected patient before, the best high-speed ventilation period is more than 4 hours.

(3) After stop using: ①Close the laminar flow bed. Remove, clean and dry up the filter. ②Clean, disinfect and dry up the plastic sheeting

3. Clinical Symptoms

3.1 Bleeding

3.1.1 Bleeding risk identification

Bleeding is mainly due to abnormal platelet or coagulation dysfunction caused by the skin, mouth, nasal mucosa, internal organs and other parts. Cerebral hemorrhage is the most serious and may be life-threatening

3.1.2 Management of bleeding risk

Prevention of bleeding: ① Quiet and comfortable resting environment to maintain emotional stability. ② Observe the presence of bleeding, ecchymosis, bleeding visceral in patient. ③ Patient should consume soft food. ④ Patient should maintain smooth excrement. ⑤ When platelet is $<50 \times 10^9/L$, patient should reduce his activity; when platelet is $<20 \times 10^9/L$, it may easily lead to spontaneous bleeding, patient should rest on bed. ⑥ Medical staff should be gentle and should avoid excessive invasive operation. ⑦ Medical staff should teach patients to self-monitor the bleeding symptoms and signs.

3.1.3 Cerebral hemorrhage is one of the main causes of death in patients with blood diseases.

The clinical manifestations of intracranial hemorrhage are sudden blurred vision, dizziness, headache, vomiting, irritability, incontinence, convulsions, verbal confusion, quadriplegia, ataxia, high blood pressure, disturbance of consciousness, and then enter coma state and death. A small number of patients enter rapid coma and death without a sign. Management of the intracranial hemorrhage emergency is including: ① Put patient's head to one side and remain in supine position. ② Timely aspiration of vomit or oral secretions to prevent suffocation. ③ Provide high flow of

oxyg④ Prescribe intravenous infusion, 20% mannitol, 50% glucose solution, dexamethasone and furosemide to reduce pressure. ⑤ Observe and record the patient’s vital signs, state of consciousness and pupil size.

3.2.1 The identification of the risk of blood disease infection is mainly included:

① Abnormalities in myelosuppressive or disease-induced granulocytosis or volume after chemotherapy. ② Poor ward environment. ③ Poor personal hygiene.

④ Medical personnel operation is not standardized. ⑤ Laminar bed management is not standardized.

3.2.2 Management of the risk of infection

Infection is one of the most common causes of death in hematology patients. It is very important to prevent and control infection as co-infection often aggravates the primary disease. ① Ensure regular disinfection, clean and tidy environment in the ward. ② Strict implementation of hand hygiene system. Hand hygiene is the most simple and effective way to control nosocomial infection, and it is the most active way to prevent cross-infection. The family and companion should be guided in hand hygiene. ③ Pay attention to patient’s oral and perianal hygiene. ④ Professional personnel should enhance the management of laminar flow bed, which includes regular testing, cleaning, maintenance and records. ⑤ Cleaning staff should receive training and supervision of disinfection and isolation. ⑥Quality control personnel should carry out regular supervision and monitoring of infection.

3.2.3 When the patient showed $WBC \leq 0.5 \times 10^9/L$, medical staff should give protective isolation and admit patient to laminar flow bed.

Laminar flow bed is the main device to prevent environmental pollution during infection. High efficiency filter is the basic structure of laminar flow bed. The filter provides a sterile and clean environment for patients to reduce the occurrence of infection.

3.3.1 Risk identification of anemia

Grade	Hemoglobin (g/L)	Clinical manifestations
Mild	120~91 (12~9.1 g/dl)	Mild symptoms
Intermediate	90~61 (9~6.1 g/dl)	Feel flustered and shortness of breath after exercise
Severe	60~31 (6~3.1 g/dl)	Feel flustered and shortness of breath during bed rest
Extreme	<30 (<3.0 g/dl)	Associated with anemic heart disease

3.3.2 Risk assessment of anemia

Patients with severe anemia are susceptible to fatigue, palpitations, shortness of breath and falling from bed.

3.3.3 Prevention of falling

Patients should rest on bed. Warning signs should be used to maintain the quiet room. Patients should be accompanied by a staff, who can closely observe the condition of patients including consciousness, vital signs and anemia. Medical staff should pay attention on patient’s skin, mucous membrane, urine, urine volume changes, patients’

complain, headache, dizziness, nausea, vomiting, limb pain and others. Medical staff should ensure detailed records and provide timely help.

4. Management of PICC Catheter

4.1 Identification of catheter-related infection

As PICC catheter stays long in the patients, any not standardized procedure in any part of the process may lead to bacterial infection into the catheter and cause severe sepsis.

4.2 Precautions

① Strictly follow the aseptic technique when placing and preparing liquid. ② Take care of the catheter connector. ③ Ensure clean skin puncture point. ④ Maintain catheter patency during catheter placement. ⑤ Pay attention to hand hygiene. ⑥ Note the retention time of the catheter. ⑦ Provide health education. When treatment is not needed, the catheter should be removed as soon as possible to reduce the risk.

4.3 Phlebitis

Phlebitis is a common complication of PICC catheter application. Treatment of phlebitis is hirudoid gel and prescribed Chinese herbs (Ru-yi-jin-huang-san and long-xue-jie capsule) can be selected according to the degree of phlebitis.

4.4 Venous thrombosis

Venous thrombosis is one of the most serious complications of PICC catheter application. Intervention for the high-risk groups: ① Obesity. ② Repeated adjustment of catheter. Low molecular weight heparin calcium 5000 u (one time per day) should be injected subcutaneously for 14 days. Coagulation should be monitored during medication.

5. Medical Personnel

5.1 Risk identification of nursing works

Nursing staff with less than three years of nursing experience should be provided training of business ability, professional theoretical knowledge, clinical experience, cautious, team awareness, self-protection awareness, nursing risk prevention, and communication skills. Training and management can help them to adapt to clinical practice more quickly, so as to stabilize the nursing team, reduce nursing disputes and improve nursing quality.

5.2 Management of nursing staff

① Implementation of pre-service training. ② Provide help ③ Provide training of specialist knowledge. ④ Head nurses should explain and discuss on the typical cases or events in the morning. ⑤ Carry out a series of training for management of critical patients, health education and other aspects of patients.

6. Risk Tracking

In the morning meeting, the main risks to the current situation should be discussed to sum up the improvement measures and deployment. Before the end of the day, the head nurses should summarize the situation and handover the important information during work shift exchange. Every afternoon on Friday, a short session should be conducted between the head nurse and the responsibility staffs to summarize the situation in one week, including ward scheduling, critical care, critical patients, areas for improvement, and improvement measures

7. Effect Evaluation

Medical personnel should analyze, check, evaluate and revise the known or possible risks to provide better decisions for the next week³. By applying the risk management procedure in the nursing management in the past year, nursing quality and patient satisfaction were increased. In addition, occurrence of adverse events was effectively reduced and received good results. However, nursing care risk management is a long-term and persistent work for nursing administrators. Only by dynamically and continuously managing of the nursing care, effectively preventing and coping with unfavorable conditions, and improving of quality can ensure the safety of patients⁴.

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