

# Study on Influencing Factors of Clinical Laboratory Specimen Collection

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**Abstract:** With the development of modern medicine, people's health awareness is constantly improving, and people pay more attention to their physical health. With the continuous progress of medical technology, the level of clinical examination has also been significantly improved. As an important part of medical work, clinical examination plays an important role in the diagnosis of patients' condition. However, there are many factors that will affect the test results in the collection of clinical test specimens, so how to improve the quality of test specimen collection has become a common concern of medical staff. This paper starts with the main problems and reasons in the process of specimen collection, and puts forward corresponding solutions according to these problems. The purpose of this paper is to provide effective reference for improving the collection quality of clinical laboratory specimens, so as to make the clinical laboratory work more standardized and standardized.

**Keywords:** clinical examination; Specimen collection; influencing factor

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## 1 The main problems and reasons in the process of specimen collection

The main problems in the process of clinical specimen collection are as follows: (1) Patients cannot collect specimens by themselves and need the help of medical staff; (2) The amount of samples collected is insufficient, which causes the time of sample collection to be prolonged; (3) Some patients can't cooperate well with medical staff to collect specimens, which leads to the failure of specimen collection. Among them, the first problem is mainly because patients can't take blood by themselves. Because most patients don't take the initiative to inform the medical staff when they are unwell or painful, they don't take the initiative to ask patients if they have discomfort symptoms when collecting samples. As a result, most patients do not know their physical condition before taking blood, but only know that they have some kind of disease. But I don't know how to collect specimens, which leads to the failure of specimen collection. The second problem is caused by the working attitude of medical staff. Many medical staff can't answer patients' questions in time and communicate with patients patiently at work, which leads to patients' nervousness, thus affecting the effect of specimen collection. The third problem is that some patients are not familiar with the blood collection process. Many patients have misunderstandings or difficulties about the blood collection process because of their older age or mobility difficulties. In order to avoid these problems, medical staff should explain the blood collection process and

precautions to patients in detail, so that patients can cooperate with medical staff to collect samples.

### 1.1 Effective communication between medical staff and patients

Some patients can't take the initiative to inform the medical staff before taking blood because of their own health problems or physical pain. Many medical staff will not take the initiative to ask patients whether they have discomfort symptoms when taking blood, but collect samples directly. As a result, some patients don't know their own physical condition, and there are misunderstandings about the location and amount of blood collected during blood collection. Some patients will have dizziness, nausea, vomiting and other symptoms, but they don't know the blood collection site. Therefore, when collecting specimens, medical staff should ask patients whether they have discomfort symptoms, so they need to inform patients of the uncomfortable parts, relevant blood collection points and blood collection amount.

Many patients didn't know the location and amount of blood before collecting samples, which led to the failure of sample collection. In addition, some patients will be nervous, resulting in increased heart rate, increased blood pressure, muscle contraction and other phenomena. When these phenomena appear, medical staff should explain the information such as blood collection location and blood collection amount to patients in detail, so that patients can collect samples correctly. There are also some patients who ask the medical staff whether they have pain symptoms before collecting samples because of

physical pain, and then take blood samples. However, some medical staff did not understand the causes of patients' pain, which led to the failure of blood collection. In addition, some medical staff are not serious or impatient when collecting specimens, which leads to some patients' misunderstanding or difficulty in collecting specimens, thus affecting the effect of specimen collection.

### 1.2 The working attitude of medical staff

In the process of clinical laboratory specimen collection, the working attitude of medical staff has a great influence on the specimen collection effect. For example, when collecting blood routine, some patients will have dizziness, palpitation, nausea and other symptoms. If the medical staff can't answer the questions raised by the patients in time during the blood routine test, it will lead to the patients' nervousness before taking blood, which will affect the accuracy of the blood routine test results. In addition, some medical staff can't explain the blood collection process and precautions to patients in detail before blood collection, which will lead to patients' nervousness. Therefore, in order to avoid these problems, medical staff should do the following things at work: (1) Answer patients' questions in time; (2) Carefully explain the blood collection process and precautions to patients; (3) Explain the blood collection process and precautions to patients in detail; (4) Strengthen communication with patients to improve work efficiency; (5) Continuously improve their own quality and professional level<sup>[1]</sup>.

## 2 Methods of collecting specimens correctly

### 2.1 General methods of collecting specimens

(1) Preparation before blood collection: Pay attention to rest before blood collection, don't be too tired, and ensure adequate sleep time; It is not advisable to eat before blood drawing, so as not to affect the test results; The bladder should be emptied before blood collection to avoid holding urine.

(2) Collection method: It is generally recommended to take venous blood for inspection at 6-8 am. Taking blood on an empty stomach in the morning is beneficial to reduce the influence on liver function, blood sugar and other test items, but it is generally recommended to be on an empty stomach for more than 6 hours when carrying out biochemical and immune test items. It is usually suggested that blood should be sent for inspection immediately after blood drawing, and it does not need to be placed for a long time. However, in order to avoid hypoglycemia in patients, the samples can be placed in the refrigerator at 2-4°C for several hours before being sent for inspection. If the patient is tested in the hospital, the medical staff can directly collect samples for inspection and make relevant records.

(3) Blood collection method: During blood collection, attention should be paid to avoid disinfection with alcohol at the blood vessel puncture site; In the process of blood collection, blood vessel rupture caused by excessive force should be avoided; When taking blood, it is necessary to ensure that the needle is perpendicular to the skin surface and penetrates under the skin; Avoid using tourniquet or applying pressure at puncture point to stop bleeding, so as not to affect the normal morphological changes of red blood cells in blood, thus affecting the test results. At the same time, different blood collection methods should be adopted for special groups such as children, pregnant women and the elderly.

### 2.2 Special methods of collecting specimens

For long-term bedridden patients, attention should be paid to taking the correct posture to collect specimens. Usually, patients are advised to take blood collection in a sitting or semi-lying position; For patients with urination, samples can be collected in time after urination; For patients taking hypoglycemic drugs for a long time, blood samples should be taken within 2 hours after taking hypoglycemic drugs; For patients with a history of diabetes or hypertension, blood should be collected within 2 hours after taking the medicine; For patients who are taking anticoagulants or antiplatelet drugs, blood samples should be taken within 1 hour after taking them; Blood samples should be taken on an empty stomach for patients with obesity or who need insulin therapy. In addition, it should be noted that in order to avoid the influence of samples mixed with blood on the test results, it is necessary to strictly check the anticoagulants used when collecting samples.

### 2.3 Precautions

(1) Different specimen collection methods will affect the test results. It is suggested that patients should be trained before collecting specimens, so that they can understand the correct methods of collecting specimens and strictly implement them. At the same time, medical staff should communicate with patients in time to let them know the changes of their condition.

(2) Before collecting specimens, patients should be informed of laboratory tests in advance, so that patients can go to the hospital in time; At the same time, it is necessary to inform the patient's family members of the test items and results in advance; In addition, it is necessary to explain the specimen collection method and matters needing attention to patients.

(3) should avoid the use of irritating or special smell items such as cotton swabs, gauze, etc.

(4) In the process of collecting specimens, actions that may cause skin damage, such as excessive force or repeated rubbing, should be avoided.

(5) When collecting specimens, operate according to the requirements of medical staff, and operate in strict accordance with regulations; At the same time, the blood collection site or blood collection tool should be replaced in time according to the patient's condition change.

### 3 Measures to improve the accuracy of inspection results

(1) Before specimen collection, the purpose, process and matters needing attention of specimen collection should be explained to the patient, so as to ensure that the patient clearly understands the relevant contents before specimen collection, and at the same time, various influencing factors that may occur during specimen collection should be explained to the patient.

(2) Do a good job in the management of test specimens. It is necessary to strengthen the management of test specimens to ensure the accuracy of the number of test specimens. At the same time, establish a good communication channel between the laboratory and the clinical departments to avoid unnecessary disputes caused by the inconsistency between the test results and the clinic.

(3) Improve the professional level and professional quality of clinical laboratory personnel, cultivate their good professional ethics and improve their sense of responsibility in their work.

(4) To establish a sound management system and rules and regulations, and strengthen the training of nursing knowledge and skills for medical staff. At the same time, it is necessary to strengthen the professional ethics education for medical staff, so that they can strictly implement relevant regulations in their work and be serious, responsible and standardized.

(5) For some special circumstances, such as pregnant women, children, the elderly and other people, the restrictions on the collection of test specimens should be appropriately relaxed. At the same time, the test specimens should be inspected and processed in time to avoid variation due to too long time and ensure the authenticity and reliability of the test results.

(6) Through the above measures, we can improve the collection quality of clinical test specimens, ensure the accuracy of test results, and provide reliable basis for clinical treatment.

#### 3.1 Importance of Clinical Examination

With the continuous development of science and technology, the methods of diagnosis and treatment in hospitals are becoming more and more advanced. Doctors diagnose patients through instruments and equipment, determine the types and causes of patients' diseases, and then formulate reasonable and effective treatment plans according to patients' conditions. The

test results are one of the important reference for doctors to formulate treatment plans. The process of clinical examination is to detect various physiological indexes and biochemical indexes of patients, and finally present the test results. This process will involve the detection of various physiological and biochemical indexes, so clinical examination plays a very important role in medical diagnosis.

Clinical examination can help doctors to understand the patient's condition and its changes, so as to formulate effective treatment plans and help doctors treat patients in time. At the same time, clinical examination can also help doctors to understand the patient's physical condition and living habits, and provide accurate and reliable data for doctors. In addition, clinical examination can also help doctors to judge whether patients have potential diseases, whether there are complications and the severity of complications. If the clinical test results are abnormal, doctors can take corresponding treatment measures for patients according to the test results, such as whether surgery and drug adjustment are needed, so as to avoid unnecessary medical disputes caused by misdiagnosis.

#### 3.2 Analysis of Factors Affecting the Quality of Specimen Collection

(1) The collection time mainly refers to the process from the preparation of patients to the collection of test specimens. Under normal circumstances, patients should ensure adequate rest time when preparing for the collection of test specimens, and collect specimens in a good mental state. At the same time, we should also ensure that patients can't be in a state of fatigue before starting to collect samples, so as to avoid dizziness, nausea and other symptoms in the process of blood collection. In addition, patients should avoid taking drugs containing anticoagulants, such as aspirin, before the examination, so as not to affect the test results.

(2) Blood collection site refers to the samples collected from the patient's skin or oral mucosa, subcutaneous fat, joint space and retroperitoneal tissue. The clinical test results have certain uncertainty and repeatability, so when collecting test specimens, we should choose hard and not easy to be damaged parts as much as possible. In general, patients should maintain emotional stability before blood collection.

(3) Blood collection method refers to the method adopted after the specimen is put into the container. For the general healthy population, direct blood collection can usually be used. For some special people, such as pregnant women, the elderly, children and other people, the test tube method or aspiration method should be used. In addition, we should also pay attention to the correct way of blood collection needle in clinical examination to ensure the accuracy of the test results. Before collecting

specimens, the purpose, process and matters needing attention of specimen collection should be explained to patients in detail to avoid the influence of patients' wrong understanding on the accuracy of test results <sup>[2]</sup>.

### 3.3 Summary

To sum up, in clinical examination, the accuracy of test results is very important, which directly affects the treatment effect of patients' illness and is a link that must be paid attention to in clinical medical work. The accuracy of test results is influenced by many factors, such as patients' own factors and laboratory factors. In the process of specimen collection, in order to improve the accuracy of test results, the following points should be done well: ① Fully inform patients. ② Fully understand the patients' diet, exercise and other living habits. When collecting specimens, we should explain to patients the purpose of collecting specimens, matters needing attention and the influence of diet, exercise and other living habits on the test results. ③ Strengthen the training of inspectors. When collecting specimens, we should strictly implement the relevant regulations and operating procedures, and strengthen the professional ethics education for inspectors. ④ Establish perfect management system and rules and regulations. Strengthen the supervision and management of all links in the collection of clinical laboratory specimens, and find problems in time and deal with them. ⑤ When collecting specimens, the specimens should be inspected and processed in time.

## 4 training inspectors to improve their professional quality

In order to make inspectors competent for their work, hospitals should regularly train inspectors to master more professional knowledge and improve their professional quality. When training inspectors, we should consider their actual situation and pay attention to the combination of theory and practice. Through training, they can master more professional knowledge, thus improving their professional quality. Attention should be paid to the following points during training:

(1) Select professional inspectors. Professional inspectors not only have rich theoretical knowledge, but also have rich practical experience. Therefore, selecting professional inspectors for training can improve the efficiency of inspectors and shorten the inspection time.

(2) Pay attention to the combination of theory and practice. When training inspectors, we should pay attention to the combination of theory and practice, which can not only improve the efficiency of inspectors, but also effectively improve their professional quality. Only by combining theoretical knowledge with practice

can we better understand what we have learned, thus improving work efficiency. In the study of practical experience, we should pay attention to the combination of theoretical knowledge and actual situation, and sum up the correct inspection methods and standards through continuous practical experience, so as to improve the inspection efficiency.

(3) Training in various forms. When training inspectors, it is necessary to formulate corresponding training programs according to their own actual conditions and adopt various forms of training, such as: ① training in the form of lectures: this training is mainly aimed at inspectors with less experience or without professional training, and experts can be invited to give lectures to teach them some knowledge and skills about inspection; ② Training in the form of group discussion: in this form, people from different majors can participate together to discuss their own problems, which will not only deepen their understanding, but also enable them to learn more useful knowledge; ③ Training in the form of individual self-study: People from different professional fields can be involved in individual self-study, which will not only enable them to exchange learning experiences with each other, but also promote mutual progress <sup>[3]</sup>.

(4) Pay attention to mental health education for inspectors. Only when inspectors have a good attitude can the work be carried out more smoothly. In the work, if the inspectors encounter difficulties, they should communicate with them in time to solve the problems in time, and at the same time, they should be psychologically counseled in time so that they can maintain a good and optimistic attitude to face the difficulties and setbacks encountered in their work.

## 5 Conclusion

To sum up, there are many factors that will affect the test results in the process of collecting clinical test specimens. In order to improve the quality of collecting clinical test specimens, medical personnel need to analyze the problems and reasons in the process of collecting clinical test specimens, and put forward corresponding solutions according to these problems. First of all, medical staff should strengthen their understanding of the importance of clinical laboratory specimen collection and fully understand the influence of specimen collection on clinical laboratory results. Secondly, medical staff should make full preparations before collecting clinical test specimens, including improving instruments and equipment, testing items, quality control and so on. Finally, medical staff should operate in strict accordance with the requirements of relevant specifications when collecting clinical test specimens, strengthen the

understanding of patients' condition and master the changing law of patients' condition. To sum up, only medical staff can fully realize the problems and reasons in the process of collecting clinical laboratory specimens and take reasonable and effective measures to solve them, can we improve the quality of collecting clinical laboratory specimens and provide patients with more accurate and reliable test results.

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