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Application of Continuous Quality Improvement in Microbiological Testing

Tao Qu*, Maila. Abudu Hot Clothes, Nan Dang

Laboratory Department of the Second People's Hospital of Kashgar, Kashgar, Xinjiang, China.

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***Corresponding author:** Tao Qu, Laboratory Department of the Second People's Hospital of Kashgar, Kashgar, Xinjiang, China.

Abstract

Objective: To explore the application value of continuous quality improvement in the quality management of the inspection department. **Methods:** The inspection department of our college is the research site, January-December 2020 as the pre-implementation stage of continuous quality improvement, and January-December 2021 as the post-quality improvement stage, comparing the quality management effect of the two stages. **Results:** After the implementation of continuous quality improvement, the quality score of inspection work and the satisfaction score of staff increased (P<0.05). **Conclusion:** The application of continuous quality improvement mode in the inspection department can effectively improve the effect of quality management, and it is recommended to promote it.

Keywords

Continuous Quality Improvement, Inspection Section, Quality Management

The laboratory department is an indispensable department for modern hospitals. The laboratory department is responsible for testing pathogens and microorganisms to clarify the responsibility of patients' symptoms, which is of great guiding significance for the formulation of patients' clinical disease plans [1]. In order to match the modern strategic development goals of the hospital's sustainability, the quality management model of the hospital laboratory department needs to keep pace with the times and make scientific planning to achieve the sustainable development goals. The continuous quality improvement management model can be applied to the quality management of the hospital inspection department. Through continuous quality improvement, the management quality of the inspection department is regarded as the goal of work improvement, various management resources are continuously invested, and the inspection work process is improved to continuously produce good management results [2]. Based on this article, we will explore the application effect of continuous quality improvement in the quality management of the inspection department, as follows:

1. Information and methods

1.1 General information

From January 2020 to January 2021, as the research time, 2020.1-12 and 2021.1-12, respectively, before the implementation of continuous quality improvement and after the implementation of continuous quality improvement, there are a total of 6 staff in the inspection section of the group, including 5 women and 1 male. The age is (25-49) years old, and the average age is (31.75±5.17).

1.2 Method

The content of continuous quality improvement mainly includes: (1) Personnel improvement: In order to obtain accurate microbiological test results, it is necessary to pay more attention to the quality of specimen collection. The

professional quality and professional level of specimen collectors and inspectors have a direct impact on the clinical microbiological test results. The relevant staff continues to learn by consulting relevant literature materials and centralized training in the department group, improve their understanding of the relevant knowledge of microbial testing, and master the standardized operation process. The hospital regularly trains the collection of specimens and medical care in various clinical departments. After the training, it conducts questionnaires and assessments to understand the level of relevant staff and correct wrong behaviors in a timely manner. Formulate training rules. For staff whose work skills do not meet the standards of the post, they need to receive on-the-job training. After the training, they need to undergo professional assessment. If they pass the assessment, they can continue to retain their positions. If they are excellent in the assessment, they will be given priority to participate in the evaluation of the post level.

(2) Work improvement: carry out quality improvement for the daily work of the inspection department, set improvement targets for the management of inspection instruments and the standard operation documents of the inspection department, arrange special personnel management of the instruments of the inspection department, and improve the use records. Each use needs to be clearly marked. The input time and stop-use time of the inspection instruments need to be done well. Annotation. The test reagent reserve and the entry and exit of the warehouse are carefully recorded in the warehouse management system of the department. The standard operation documents of the inspection department need to be optimized. All staff needs to receive on-the-job training and learn the relevant knowledge of quality control. All personnel participate in the formulation and revision of the standard operation documents of the inspection department to contribute to the wisdom of the group. After strictly following the collection principle and completing the specimen collection, the staff shall strictly follow and preservation according to the characteristics of the specimen, so as to ensure that the specimen is not contaminated. In addition, for specimens that need to be transported, the staff needs to control the environment in advance to ensure the quality of specimens during transportation after understanding the characteristics of the specimens, the transportation process and precautions.

(3) Management improvement: improve the quality of the post management mode of the inspection department, and implement the post responsibility system to urge the staff to do a good job in daily work. In the case of quality control of the medium, the medium needs to choose the products of a well-known microbial medium production company, and a more comprehensive evaluation of the purchased finished medium needs to be carried out. For example, for the sensitivity, sterility and other technical indicators of the finished medium, the staff needs to enter. Analyze accordingly. In addition, in the actual inspection process, all operations also need to be implemented in strict accordance with the procedures and standards in the instructions one by one, and be scientifically and reasonably preserved according to the requirements of the culture medium. Moreover, the use of the culture medium must be carried out within its validity period, so as to avoid the impact of the quality of the culture medium on the testing of If the self-contained culture medium is used, the staff needs to add a clear identification, such as the name of the culture medium, the validity period, the specific sterilization time, the configuration of the staff name and other relevant information. For the bacterial culture medium after use, it is necessary to adopt the correct autoclaving behavior for intervention in time before the follow-up treatment can be continued. In addition to the post responsibility system, it provides staff with career planning, provides staff with a clear and visible job promotion path, and provides opportunities for external communication and training for outstanding staff.

1.3 Observation indicators

(1) Record the quality score of inspection work; (2) Record the staff satisfaction score.

1.4 Statistical methods

When carrying out the statistical operation of this experiment, select the statistical software spss 21.00 for windows for data evaluation. The final data is tested with the card square and T value, and the P value of the test result is judged. <0.05 indicates that the statistical significance of the index is significant, and >0.05 indicates that There is no statistical significance.

2. The result

2.1 Quality score of inspection work

After the implementation of continuous quality improvement, the work quality score of the inspection department has increased, ($P<0.05$) (Table 1).

Table 1. Inspection work quality score ($\overline{x} \pm s$)

Group	Quality inspection results	Security management	Working environment
Before implementation	89.23±3.27	88.67±3.12	89.09±3.37
After implementation	95.79±2.15	96.35±2.46	96.23±2.65
T value	9.0842	9.1895	9.3721
P value	<0.05	<0.05	<0.05

2.2 Staff Satisfaction Score

The staff satisfaction score is improved after the implementation of continuous quality improvement, (P<0.05) (Table 2).

Table 2. Staff satisfaction score ($\overline{x} \pm s$)

Group	Satisfaction rating
Before implementation	90.24±2.63
After implementation	96.71±2.12
T value	9.0479
P value	<0.05

3. Discussion

With the acceleration of China's economic development, people's living standards are gradually improving, and there are new requirements for hospitals and drug quality, which have become stricter.

Previous studies have shown that the current clinical microbiological testing problems mainly include: 1) irregular collection of microbial specimens. At this stage, the actual specimen collection work is mainly carried out by medical staff. However, because the communication between the clinic and the laboratory is not very close, some problems have arisen. For example, medical staff does not have a good understanding of the specific requirements and precautions for specimen collection, and it is very likely that irregular operation behaviors occur during collection, such as improper use of collection tools and non-conformity of storage specimen utensils. Requirements, etc., resulting in the unqualified specimens collected. 2) Non-standard preservation and transportation of microbial specimens. The most basic principle for the preservation and transportation of microbial specimens in clinical practice is to ensure the vitality of pathogens and avoid pollution by other bacteria or excessive reproduction. In addition, the different number of pathogens will also have an impact on the delivery method. However, in the actual preservation and transportation of pathogens, there will be various problems, which will have an impact on the quality of specimens. For example, Neisseria meningitis is very strict with temperature conditions. Therefore, after collecting the microbial specimens, it is necessary to ensure room temperature during transportation, and the specimens are sent to the laboratory for testing. Especially in the case of cold weather in winter, it is more necessary to pay more attention to the impact of temperature on the quality of pathogens to avoid a decline in detection rate. 3) The quality of the medium is not ideal. At this stage, in most cases of microbiological testing in clinical practice, dry powder or finished medium is used in the laboratory. However, this finished medium may not be in line with the standards of the microorganisms that need to be cultured, which will affect the quality of the inspection. In addition, there are also cases of using the wrong medium due to the unclear labeling of the medium. 4) The influence of test reagents and instruments. Microbiological testing requires the use of various reagents, and differences in the nature of reagents will affect the test results. Some specimen tests require the use of corresponding instruments. Although this reduces the influence of human factors to a certain extent, factors such as irregular instrument use and insufficient instrument accuracy will also lead to the impact of microbiological test results.

In this continuous quality improvement work, the three-step method is implemented for the continuous quality intervention of the staff of the inspection department. The first step is to start with daily work measures. According to the daily work content most familiar to the staff of the inspection department, the staff of the inspection department can accept the new type under the condition of minimal work impact. In the department management mode, the advantage of starting from the daily work content is that the staff of the inspection department can give full play

to their individual wisdom and apply past work experience and work results to continuous quality improvement. For example, when formulating the standard operation documents of the inspection department, all the staff can work together to give them full development. The right to make suggestions can effectively meet the goal of achieving the personal value of the staff of the inspection department, and promote them to actively participate in the work of the inspection department under the new management mode [4]. The second step is to carry out continuous quality improvement for the post management of the inspection department. The post responsibility system is not implemented under the conventional management mode. The staff of the inspection department is affected by occupational burnout and personal responsibility. It is difficult to maintain a high sense of professional responsibility sustainably, which is prone to work negligence. At the same time, due to the imperfect reward and it is easy to lead to the intensification of internal conflicts among the staff of the inspection department. For the continuous quality improvement of the post management of the inspection department, the implementation of the post responsibility system, cooperate with the perfect reward and punishment mechanism, can clarify the personal post intelligence, for the staff who have post work mistakes, accept the corresponding treatment, can weaken the internal work contradictions of the inspection department, and is conducive to the internal unity of the inspection department [5]. The last step is to set up a department training system and apply a standardized training system, which can help departments to reserve talents, select potential inspection department managers, and help inspection departments to continuously improve management quality [6].

In the study of this article, after the implementation of continuous quality improvement, the work quality score and staff satisfaction score of the inspection department have increased ($P<0.05$). It can be seen that after the implementation of continuous quality improvement, the work quality score of the inspection department has been greatly improved, which is related to the continuous improvement of the work measures of the inspection department, the satisfaction score of the staff of the inspection department has also been improved, related to the improvement of the job management and training system, and the self-identity of the staff of after being improved and then implemented continuous improvement, the numerical value of various indicators will be improved.

To sum up, the application of continuous quality improvement to the quality management of the inspection department can effectively improve the management quality of the inspection department. At the same time, the work satisfaction of the inspection department staff has been greatly improved. This working mode is worth promoting and applying.

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