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Analysis of Cleaning and Disinfection of Medical Devices in Health Units during Teaching

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Abstract: ***Objective:*** *To analyze the effectiveness of quality control in the cleaning of medical equipment in the disinfection supply room of a certain hospital.* ***Method:*** *From June 2019 to June 2020, 600 non disposable medical devices that need to be sterilized in our hospital were selected as research samples. According to the different cleaning methods, all medical devices were divided into a control group of 300 pieces and a control group of 300 pieces. The control group medical devices were subjected to routine disinfection supply room management, and on this basis, procedural management and result analysis were carried out.* ***Result:*** *Compared with the control group, the qualified rate of clean medical devices in the control group was significantly improved, P<0.05; Compared with the control group, the control group showed significant improvements in classification packaging, sterilization treatment, instrument cleaning, and hygiene, with P<0.05.* ***Conclusion:*** *Implementing procedural management in the cleaning process of medical devices can greatly improve the quality of device cleaning. At the same time, it can also reduce the incidence of iatrogenic infections.*

Keywords: Health units; Medical apparatus and instruments; Cleaning and disinfection.

1. Data and Methods

1.1 General Information

This experiment selected 600 non disposable medical devices that required sterilization and disinfection in our hospital from June 2019 to June 2020 as research samples. According to different cleaning methods, all medical devices were divided into a control group of 300 pieces and an observation group of 300 pieces. The control group received routine disinfection and supply room management for medical devices, while the observation group received procedural management based on this. 24 pieces of pipeline instruments, 40 knife handles, 54 vascular forceps, 62 needle forceps, 48 surgical forceps, and 72 surgical scissors were observed within the observation group. In the control group, there were 30 pipeline instruments, 36 knife handles, 48 vascular forceps, 52 needle forceps, 56 surgical forceps, and 78 surgical scissors. After comparison, there was no significant difference in baseline data between the two groups of medical devices, with P>0.05, indicating comparability.

1.2 Cleaning Methods for Medical Devices

Using conventional methods to clean the control group's instruments, the detailed steps are as follows:

(1) Based on the actual situation of our hospital, establish a suitable supply room cleaning instrument management system, and regard this standard as the final cleaning standard for disposable medical instruments, effectively standardize the workflow and cleaning methods of staff, and improve work quality. (2) Strengthen the maintenance and quality management of medical device cleaning quality. According to the system, evaluate the quality of the cleaning equipment of the staff and point out the problems. Fundamentally ensuring that all cleaning processes can be implemented effectively. Effectively improve the cleaning quality of medical devices. (3) If conditions permit, use modern equipment to clean non disposable medical devices. For special medical devices, a combination of manual and machine methods can be used to complete the cleaning of medical devices. Based on this, the observation group applies a programmatic management mode for medical devices, specifically by: (1) conducting comprehensive inspections of the cleaning and disinfection process of medical devices in the hospital, while properly recording the cleaning situation. Fundamentally ensuring the cleaning effectiveness of the equipment. (2) Reasonably plan the layout of the disinfection supply room to facilitate the smooth implementation of medical equipment cleaning work. According to the cleaning results, the cleaning area is divided into sterile storage area, inspection area, packaging area, sterilization area, and contamination area. Place sterile items and contaminated items separately. To prevent the medical equipment that has already been disinfected from being contaminated again, the method of scientifically dividing the supply room work area can ensure the smooth implementation of medical equipment cleaning work. This improves the efficiency of cleaning medical devices. (3) Actively standardize the cleaning and disinfection process of existing medical devices. In carrying out such work, it is necessary for staff to complete the cleaning process of non disposable medical devices according to established steps, and pay attention to rinsing, rinsing, washing and other links. Each link should follow the established steps and implement a scientific cleaning system.

1.3 Observation Indicators and Judgment Criteria

1.3.1 Analyze the comparison of the qualified cleaning rates of two groups of medical devices;

1.3.2 After cleaning the medical devices, the occult blood test method and visual inspection method should be used to check the cleaning status of the medical devices. The method of occult blood test is to wipe and clean the medical device with test strips. After 0.5 hours, add the reagent to the surface of the test paper. If it does not change color, it means it is qualified, otherwise it is unqualified.

Visual inspection method: The surface of the cleaned medical device is clean, tidy, free of rust, bloodstains, and stains. If the above standards are met, it is considered qualified; otherwise, it is considered unqualified. If either of the above two indicators is not qualified, it indicates that the overall performance is not qualified.

This experiment applies a self-designed quality survey form for medical device cleaning to analyze the quality of medical device cleaning. The main content includes: classification and packaging, totaling 4 items, with a total score of 20 points; There are a total of 6 sterilization treatments, with a total score of 30 points; There are a total of 10 items for instrument washing, with a total score of 50 points. The higher the score, the better the quality of medical device cleaning work.

1.4 Statistical Analysis

This experiment used SPSS20.0 statistical software to perform chi square test analysis on count data and t-test analysis on metric data. If $P<0.05$, it indicates that there is a statistical difference in the relevant data.

2. Results

2.1 Comparison of Qualified Cleaning Rates for two Groups of Medical Devices

Compared with the control group, the observation group had a significantly higher qualified rate of medical device cleaning, $P<0.05$.

2.2 Comparison of Cleaning Quality between Two Groups of Medical Devices

Compared with the control group, the observation group had significantly higher scores in classification and packaging, sterilization treatment, and instrument washing and cleaning, with $P<0.05$.

3. Discuss

Compared with the past, the number of people undergoing surgical procedures in China has shown a trend of increasing year by year. In this context, various categories of medical equipment such as surgical instruments, ventilator devices, microsurgical instruments, and motor devices have also increased. This undoubtedly poses a new challenge to the safety management of the disinfection supply room within the hospital. The quality management of medical equipment in the hospital disinfection supply center is a key aspect of hospital safety management. It has played a very important role in ensuring the good condition of medical devices, reducing the incidence of iatrogenic infections, and maintaining the effectiveness of treatment. Therefore, hospitals should give comprehensive attention to the quality of medical device cleaning and implement strict regulatory systems.

The disinfection supply room in the hospital is responsible for providing sterile and sterilized medical equipment to various departments. This includes many links such as storage, sterilization, packaging, disinfection, cleaning, and distribution of medical devices, and each link is interrelated. If any mistake occurs during the cleaning process of medical equipment, it will have a negative impact on the overall disinfection and sterilization process. To do a good job in cleaning and disinfecting medical devices, hospitals are required to effectively regulate the management of disinfection supply rooms, create and improve quality control standards for medical device cleaning in supply rooms, provide scientific guidance for related work, enhance the standardization of practitioners' work, and comprehensively improve the quality of medical device cleaning. To ensure that medical devices are completely sterile, only by doing so can the incidence of iatrogenic infections be minimized and the level of medical services provided by our hospital be improved.

Programmatic management refers to a disinfection management plan based on traditional management methods. This management method has the characteristics of scientificity, standardization, and proceduralization. Applying this method to carry out management can effectively improve the quality level of non disposable medical equipment cleaning in our hospital, identify problems in a timely manner, and strengthen the work efficiency of staff. In carrying out practical work, practitioners should also pay attention to the following points: (1) effectively standardize the cleaning process and strictly follow the established steps to complete the cleaning work. (2) Fully monitor the cleaning process and keep records. Take good control of each work step to ensure the cleaning effect. At the same time, it is necessary to effectively plan the disinfection supply room area to ensure the smooth implementation of cleaning work and prevent secondary contamination of medical equipment.

Overall, implementing procedural management in the process of medical device cleaning can greatly improve the quality of device cleaning. At the same time, it can also reduce the incidence of iatrogenic infections.

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