BILINGUAL PUBLISHING CO.
Pioneer of Global Academics Since 1984

Journal of Advances in Medicine Science
https://ojs.bilpublishing.com/index.php/jams

REVIEW

Improve the Center Supply Room to Ensure the Quality System for Disinfection and Sterilization

Zhe Wang*

Handan City Eye Hospital (The Third Hospital of Handan), Handan, Hebei, 056001, China

ARTICLE INFO

Article history
Received: 29 November 2019
Revised: 6 December 2019
Accepted: 24 January 2020
Published Online: 31 January 2020

Keywords:
Central supply room
Disinfection and sterilization
Quality management
System management

ABSTRACT

The disinfection supply room is a very important department of the hospital. Its main job is to provide sterile equipment and dressings for various activities in the hospital. It is an important department in the hospital infection management process. Doing a good job in the control and management of the disinfection supply room is the main link to ensure the prevention and control of hospital infections. The quality of management directly affects modern clinical medical work. Therefore, the hospital supply room should be strengthened and improved to ensure that all items can be safely used in the work process, which can effectively avoid the occurrence of cross-infection incidents in the hospital.

1. Introduction

Infections in hospitals have been paid attention to by modern society and related medical staff, and high-quality disinfection and sterilization in hospitals can help control hospital infections. In different hospitals, there are more patients and related medical personnel, so this has higher requirements for the staff and work quality of the central supply room. However, it is worth noting that in the investigation and research, the supply quality of the central supply room is a relatively weak link in the overall development of China's medical industry[1]. In order to further promote the control of infections in hospitals, it is necessary to analyze the advanced management experience at home and abroad, understand the management techniques, and establish a complete and advanced central supply system according to the specific characteristics of different hospitals. In this way, the hospital center supply room will be reformed, so as to help prevent infections and prevent hospital infections.

2. Reasonable Layout Facilities Can Ensure the Effect of Infection Control in the Hospital

Since the central supply in different hospitals is a relatively independent area, different sections can be divided according to their cleanliness and work functions, and they can be divided into contaminated areas, clean areas, sterile areas and general working areas. First of all, when managing different areas, strict boundaries should be set in different areas, when medical personnel enter and leave different areas, they need to do protective operations such as changing clothes and changing shoes[2]. It is necessary to set clear labels at different doorways and establish a perfect isolation barrier. A conventional fully automatic cleaning and disinfecting machine is required between the contaminated area and the clean area as a physical barrier; relevant staff members need to carry out

**Corresponding Author:*
Zhe Wang,
Handan City Eye Hospital (The Third Hospital of Handan), No. 39 Lingxi Street, Handan, Hebei, 056001, China;
E-mail: 1663509005@qq.com

 DOI: https://doi.org/10.30564/jams.v3i1.1450

maintenance analysis on the working status of the disinfection washing machine on a regular basis to ensure that the areas can have corresponding cleaning and disinfection effects. The high-pressure steam sterilizer needs to be used as a physical barrier between the cleaning area and the aseptic area. It is also necessary for the corresponding staff to manage their operating conditions reasonably. Air purifiers can also be installed inside different areas to keep the air in the room clean. In order to avoid contamination of the aseptic zone or the cleaning zone in other areas during the working process, the air pressure in the sterile zone can be set to a slight positive pressure, and the contaminated zone needs to be set to a micro-negative pressure, which ensures air circulation between the sterile and contaminated areas, from the sterile area to the contaminated area rather than the contaminated area to the sterile area[3]. In the daily work process, the room temperature in the central supply room needs to be controlled at about 20 degrees Celsius, and the relative humidity is set at about 50%, while ensuring the supply of water and charge compressed air.

In the environmental management of the central supply room, it is necessary to set up relevant rules and regulations to ensure that different items are placed in the corresponding positions, and the daily staff needs to be properly managed and inspected, and checked regularly. At the same time, random inspections are carried out, which ensures that the layout facilities in the central supply room are in a normal state. It is worth noting that when a certain equipment or equipment in the center supply room is aged or damaged, it needs to be repaired or replaced immediately. This is the key to ensuring environmental sanitation in the aseptic area and the clean area, which avoids contamination of the sterile field without the support of the facility. When setting up the environment, a prominent label should be posted everywhere, and the writing on the label should be clear. If it is out of paint or discoloration, it needs to be replenished or replaced immediately, which will ensure that medical personnel can follow the signs when conducting various medical activities.

3. The Various Workflows Need to Be Consistent with the Requirements of the "Three Workflows" in the Central Supply Room

In the disinfection supply room, the workflow needs to include: accepting the dirt "recycling equipment→classification→cleaning→disinfection→drying→inspection, maintenance→packaging→sterilization→storage→distribution".

When the circulation of various items is carried out, the circulation of the personnel in the department in the disinfection supply room and the circulation of the articles shall be carried out separately, and the topography or shuttle phenomenon in different areas may not occur, so as to ensure the quality of the aseptic. When the department handed over the goods, it should first enter the contaminated area to hand over the contaminated items to the relevant receiving personnel. After the two parties have verified the correctness, the receiving party may notify the dispensing office of the sterile article and issue the sterile goods to the handover personnel to ensure the rationality of the exchange of the articles. After the items are recycled, the relevant staff should first record and classify the items, and disinfect them accordingly. After the objects are disinfected, they need to be properly packaged according to the characteristics of the items and the needs of the equipment. After the packaging is completed, the sterilization operation is carried out and tested to check whether the sterilization effect is qualified. After confirming the qualified, it is placed in a sterile cabinet for storage, and then distributed when necessary[4]. By carrying out the item handover and management operations in strict accordance with such a process, it is possible to make the item management meet the requirements and avoid the contamination of the item.

Since the various items in the operating room are particularly specific in application, it is necessary to operate according to the surgery in the disinfection supply room[5]. A separate channel is set for each item in the room. If the operating room is close to the disinfection supply, an elevator can be placed directly in the aseptic area and the contaminated area to directly connect the contaminated area and the sterile area to the operating room. In the polluted area, the contaminated items after the operating room are directly sent to the supply through the pollution elevator. The disinfection personnel in the polluted area collect and record them, and then put them into the cleaning box and send them to the cleaning and disinfecting machine for cleaning and disinfection, After entering the cleaning area, the articles are effectively sorted and sterilized, and the articles are directly delivered to the operating room through the aseptic elevator or stored in the aseptic storage cabinet until the next operation. After the surgery on the day is completed, the roving nurse needs to contact the staff in the disinfection supply room to analyze the omissions and adjust them, and then deliver the items involved to the operating room through the aseptic elevator. This kind of workflow enables the nursing staff in the operating room to concentrate on the operation of cleaning, maintenance and disinfection of the instruments during the operation, so that the nursing staff can more actively understand the patient's condition and achieve the effect of doctor-patient handover[6].

It is worth noting that during the various workflows, monthly or quarterly, the omissions of operations in each process need to be clarified and summarized to understand the omis-

DOI: https://doi.org/10.30564/jams.v3i1.1450

sions between the workflows and adjusted through reasonable management and adjustment, which ensures continuous improvement in the operations in the sterilization supply room.

4. Supporting Application of Equipment

In the process of disinfection supply operation, it is necessary to clarify the supporting application and management of the equipment, which can improve the disinfection efficiency as much as possible, avoid the situation of excessive workload, and reduce the cross-infection caused by the flow of personnel in the disinfection supply room to reduce the incidence of nosocomial infections[7].

4.1 Equipment Cleaning and Disinfection Management

With the continuous development of new disinfection and cleaning technologies in recent years, it is necessary to clean and disinfect the various medical operations in order to ensure complete sterilization[8]. This is because any residual organic matter may affect the effective contact between the microorganism and the sterilization medium during the sterilization operation. Common organic substances include blood clots, proteins, and mucus, and this condition produces a protective film against bacteria that ultimately affects the sterilization effect. Therefore, it is extremely important to perform appropriate cleaning operations before sterilization.

For the time being, clinical cleaning operations mainly include manual cleaning and mechanical cleaning.

In the process of manual cleaning, the instruments are mainly cleaned and disinfected by hand. The main components include precision and sharp instruments, instruments that cannot be immersed in water and serious pollution or blood stains on the instruments that cannot be cleaned by the machine. The main purpose of manual cleaning is to protect the equipment, and at the same time, it cannot be processed by various kinds of machinery, or the materials of the machine will be cleaned during the cleaning process. This can ensure the cleaning effectiveness of the equipment and ensure the reasonableness of the equipment of different contents. Clean[9]. But it is worth noting that manual cleaning has certain limitations. This is because manual cleaning may be affected by many factors, resulting in incomplete cleaning. Even sharp and sharp items in the cleaning process can damage the relevant medical personnel. Therefore, it is necessary to pay attention to self-protection when applying manual cleaning to avoid occupational exposure.

In the process of cleaning the contaminated device during mechanical cleaning, even if the cleaning cannot remove the dirt, however, it is possible to directly heat the device to above 90 degrees Celsius, which can kill most of the bacteria and viruses. The disinfection effect is an ideal operation for infection control in hospitals. At the same time, the use of water and detergent as a disinfecting medium in the mechanical cleaning process can avoid the brushing during the manual cleaning process, and minimize the wear and damage caused to the equipment. Due to the extremely high fluidity of the water, it is possible to remove the parts that are difficult to clean in the artificial environment when the machine is used for disinfection. For example, the gap between the instruments and the position of the joints can greatly reduce the occurrence of sanitary corners. When cleaning is performed, since the operations are performed by machinery, the possibility of occupational exposure of the operator is reduced. The machine can fully automate the treatment of the items, effectively isolating different areas to minimize the incidence of re-contamination events. During the disinfection process, the machine can be adjusted through effective physical monitoring parameters and set with appropriate monitoring standards. It is more scientific than the visual inspection of manual cleaning, and can more accurately judge the cleanliness. Different hospitals can be equipped with automatic cleaning and disinfection machines according to their own conditions.

4.2 Item Packaging

At present, China's domestic high-pressure steam sterilization packaging mainly chooses cotton cloth, and after each application of the cloth, it is necessary to thoroughly clean the cloth and check whether there is a hole in the surface of the cloth[10]. In order to manage and control the cloth, it is necessary to irradiate the packing table with the corresponding inspection lamp during the inspection, so as to confirm whether the cloth is of good quality. If the vulnerability of the package is found during the application process, it needs to be replaced in time, and it cannot be repaired. This is because the quality is passed through the production process, and the quality is passed through the repair method. If the cloth is reapplied, it may affect the quality of the package and cause contamination.

For the time being, ethylene oxide sterilized packaging materials mainly choose finger-based tapes, which can be packaged by a special sealing and packaging machine with printing function. In the packaging process, the packaging date, expiration date and staff code can also be packaged and printed, which will avoid artificial changes, make the packaging more standardized, and implement the responsibility to the people, further ensuring strict implementation of the rules and regulations for disinfection operations.

4.3 Item Sterilization

The central supply room often has various types of steril-

DOI: https://doi.org/10.30564/jams.v3i1.1450

izers such as a pre-vacuum high-pressure steam sterilizer, an ethylene oxide sterilizer, and a dry heat sterilizer. The main purpose is to ensure that when the article is sterilized, according to the type and characteristics of the article, a suitable solution is selected for sterilization, which can ensure the rationality of the sterilization of the article and avoid damage to the device. In order to further distinguish between sterilized and non-sterile items, the loading and unloading should be separated in the sterilizer, the loading side is unloaded in the cleaning area, and the side is the sterile area. In the sterilization room, it is necessary to minimize the flow of the sterilizer, and the same group of personnel can effectively sterilize, so as to avoid cross-infection, and in order to ensure the sterilization effect, strict physical, chemical and biological monitoring is required.

During the sterilization process, high-pressure steam sterilization should be the first to be the main sterilization solution. This sterilization method has good killing effect on a variety of bacteria, and has fewer side effects, and can be applied to sterilization of various high-temperature resistant articles. However, it is worth noting that many medical devices used in clinical practice have the characteristics of being incapable of high pressure and high temperature, so it is necessary to select a low temperature sterilization technology, which is extremely important for the control of infection events in hospitals. For the time being, the cryostat sterilization method applied in the clinic is mainly based on plasma hydrogen peroxide sterilization. Plasma hydrogen peroxide is the most penetrating broad-spectrum sterilizing agent reported in modern clinical practice. This sterilant penetrates many tiny holes in the device, reaches the depths of the item, and is extremely biodegradable. Applying it to the sterilization of the device can protect the equipment from damage while ensuring the sterilization effect. At the same time, it can keep the articles sterile for 180 days while being sterilized with packaging materials. It can be used for emergency storage of first-aid items and unusable items. The plasma hydrogen peroxide sterilizer used in modern clinical practice has a high degree of automation, and the vacuum can be automatically extracted and the temperature and humidity can be automatically adjusted during the sterilization process, at the same time, according to the state and shape of the article to adjust the sterilization time, there are fewer factors that require human intervention, and the influence of human factors on it can be reduced as much as possible to ensure the sterilization effect. In the detection process, this detection method is also more standardized, and various detection schemes such as physical and biological can be used, and the use is strong at the same time, it does not pollute the sterilized items. Equipments for sterilizing such sterilizers can be selected in the operating room and in various departments.

5. Conclusion

In addition to the management of various items and equipment, relevant practitioners in the department need to actively participate in clinical trials and research in the hospital. Identify the omissions in the sterilization operation and improve them, and confirm the quality system of disinfection and sterilization to ensure the smooth operation of various sterilization operations and surgical operations inside the hospital.

References

[1] Wen Niu. Standardized management and effectiveness observation of supply room supply room[J]. The world's latest medical information digest, 2018, 18(82):201-202. (in Chinese)

[2] Ping Yang. Analysis of the effect of centralized disinfection supply mode in the central supply room[J]. Integrated Chinese and Western Medicine (Chinese and English), 2017, 3(09):174-176. (in Chinese)

[3] Baolian Hao, Lili Wang, Yu Cao, Lin Jia. Function and application of disinfection supply traceability system[J]. Science and Technology Information, 2015, 13(09):246. (in Chinese)

[4] Tianxia Hou, Yuqiang Huang, Jiafang Zang. Study on the role of integrated management of operating room and central supply room in hospital infection control[J]. Chinese Medicine Guide, 2014, 12(32):53-54. (in Chinese)

[5] Rong Fan, Yu Meng, Fuhua Chen. Investigation and analysis of occupational injury in central supply room[J]. Journal of Bengbu Medical College, 2013, 38(12):1633-1634. (in Chinese)

[6] Yanzhen Wu. Investigation and analysis of hospital infection control in the central supply room[J]. Chinese Journal of Hospital Infectious Diseases, 2013, 23(15):3712-3714. (in Chinese)

[7] Xiaobin He, Yanhong Fan. Construction and application of quality control traceability system in disinfection supply center[J]. China Digital Medicine, 2013, 8(05):44-46. (in Chinese)

[8] Jihong Huang. Analysis of common safety hazards in disinfection supply room and management countermeasures[J]. Chinese Journal of Medicine, 2011, 23(06):89-90. (in Chinese)

[9] Lijuan Wu. Practice of centralized management of surgical instruments by disinfection supply center[J]. China Medical Herald, 2011, 8(35):138-139. (in Chinese)

[10] Lijuan Wu, Chunyu Liu. Problems and countermeasures of foreign surgical instruments in the management of disinfection supply center[J]. China Medical Herald, 2011, 8(34):164-165. (in Chinese)

DOI: https://doi.org/10.30564/jams.v3i1.1450