**Sterile Process**

**1.Decontamination Methods**

Neurosurgery is a medical faculty dealing with the surgical diagnosis and overall reintegration of ailments, which upset the nervous system. Instruments used in surgical treatment need frequent decontamination, precisely after each operation. Decontamination consists of procedures, including cleaning, fumigation, and sterilization. Sterilization refers to the thorough elimination of all organic matter, including dust and viruses. In health care settings, these measures should be handled with a high degree of concern and carefulness to curb cross-infection, putting patients at menace.

In this case study, improper handling and maintenance of neurological instruments unfolded the mess. The presence of dirty instruments may have been brought forth by several mishandlings. Primarily, each neurological instrument should be evaluated and inspected for cleanliness after decontamination before brought to the operation room. A practice that was maybe not put into account. Furthermore, decontaminating these instruments in the same area where clean items are handled can contaminate this free-dirt equipment. Moreover, when used instruments take a long duration between the end of any operation and decontamination, biofilm forms on the instruments' surface. This coating becomes more challenging to remove; hence the effectiveness of disinfection and sterilization can be compromised.

Several handling precautions ought to be observed to gain the best desirable results. Firstly, the guidelines and procedures on decontamination validated by the manufacturers should be observed to the latter. For instance, some instruments may entail a microbiocidal process after cleaning, sponging with about eighty percent alcohol. The person working in the disinfection area and handling contaminated instruments should wear personal protective equipment (PPEs) (Chang et al.,2018). Tainted instruments are the latent source of contagious pathogens. The personnel are at high risk of contact with blood, body fluids, and other communicable constituents; hence, PPEs help safeguard individuals from exposure to infectious materials.

To curb the incident of dirty instruments making their way into the operation room (OR), all instruments unwrapped onto the OR's sterile field ought to be decontaminated whether or not they have been used. Simply because scrubbed persons may touch and contaminate instruments without notice. Besides, the unused items may come into contact with used instruments. For the case of loaned instruments, they should be bidden when the surgery is planned and conveyed to the health care facility inappropriate time to allow in-house inspection, disassembly, cleaning, packaging, and terminal sterilization in conformity with manufacturer’s validation.

The decontamination process involves five key stages. They include; pre-sterilization, disinfection, inspection sterilization, and storage. In the pre-sterilization stage, contaminated instruments are thoroughly cleaned using a disinfector before sterilization. After this stage, the instrument is ready for inspection, where instruments are inspected for spotlessness and tested for mutilation. If they are damaged or still unhygienic, they ought to be abandoned and re-cleaned. Afterward, in the sterilization stage, instruments are sterilized by autoclaving. They are run at the highest temperature, after which they are stored in a clean, dry, and covered environment. The instruments required for surgery should be designated before the operation; even though they are unused, they should be treated as if contaminated.

**2.Sterilization Methods**

Sterilization is reached by an amalgamation of heat, substances, radioactivity, high pressure, and percolation like steam under pressure. Commonly used sterilization methods include; heat method, filtration, radiation sterilization, and chemical sterilization method. A sterilized set is considered a wet pack if dampness is left on it upon cooling, whereas a wet load is moisture existent on or within several sets in a sterilized load after the package has dehydrated and cooled.

Even after sterilization, reasons behind dampness include poor-quality wrapping materials, faulty loading and packaging procedure, low quality of stem, and sterilizer malfunctioning. This damp scenario can be evaded through the use of good quality steam, undertaking episodic upkeep of the autoclaves, avoiding sterilizer overloading, and allowing adequate post sterilization time to cool down the tools to room temperature (Seavey, 2016).

Wet packs worry since the lasting moisture generates a conduit for microorganisms to travel from the exterior environment to the wrapping materials and probably contaminate the instruments after sterilization. This fosters a high infection risk to a patient and other incidences of cancellation of processes. To avoid wet pack occurrences, frequent upkeep and autoclaves' calibration should be observed, using good quality wrapping materials for packaging purposes. Furthermore, fixing of de-humidifier in the sterile store to evade moisture ensures quality.

To conclude, decontamination is vital to ensuring patient welfare. Similarly, it applies to the sterilization process. Sterilization of all patient –care objects is unnecessary; health faculty procedures identify principally based on the items' intended use, whether cleaning, decontamination, or disinfection is specified.

References

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