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The Optimization of the Handover Process Between the Disinfection Supply Center and the Geriatric Department Material Promotes the Prevention and Control of Hospital Infection

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Abstract: As a critical department for hospital infection control, the disinfection supply center is responsible for cleaning, disinfecting, sterilizing, and distributing reusable medical devices and items across the hospital. Geriatric departments, due to their patient population's weakened immune systems and multiple underlying conditions, are particularly vulnerable to infection outbreaks. The material transfer process between these two departments directly impacts infection prevention effectiveness. This study analyzes existing issues in current material transfer procedures between disinfection centers and geriatric departments, proposes targeted optimization measures, and explores how process improvements enhance standardized material management, reduce contamination risks, and strengthen staff infection control awareness. The findings aim to provide practical references for hospitals to refine infection control systems and ensure elderly patient safety, ultimately advancing comprehensive infection management capabilities.

Keywords: Disinfection supply center; Geriatric department; Material handover process; Process optimization; Hospital infection prevention and control

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1. Introduction

Hospital infection control serves as the cornerstone for ensuring medical quality and patient safety, permeating every aspect of healthcare services. As a vital department in modern hospitals, the disinfection and supply center manages the distribution and recycling of clinical medical supplies. The operational efficiency of this department directly impacts hospital operations and patient safety, necessitating enhanced management practices. Implementing efficient and rigorous management models is crucial to optimizing supply center operations and ensuring smooth workflow. Surgical instrument management plays a pivotal role in supply center management,

as its quality directly affects patient safety during surgeries and infection risks. Conventional management approaches fail to meet modern medical demands for surgical instruments. The disinfection and supply center's sterile assurance of equipment and materials directly impacts clinical safety. Geriatric patients, with their weaker immune systems, require heightened sterility standards. The handover process between these groups constitutes a critical juncture, where non-compliance with some hospitals' procedures may lead to infection risks. Therefore, optimizing this process and analyzing its impact on infection prevention holds significant importance.

2. Existing problems in the material handover process between the disinfection supply center and the geriatric department

2.1. The handover process is not standard, and the division of responsibilities is vague

Current hospital disinfection supply centers and geriatric departments lack standardized procedures for material handover, resulting in arbitrary practices. Upon delivery, staff often conduct only basic quantity checks while superficially verifying critical quality parameters like packaging integrity and sterilization indicator status. Some even skip inspections and sign off without proper documentation. When issues such as non-compliant sterilization or damaged packaging are later identified, unclear accountability becomes problematic due to missing handover records. The frequent turnover between disinfection center personnel and geriatric department staff exacerbates irregularities. New hires often lack mastery of standardized handover protocols, creating contamination risks during material transfers and hindering infection control efforts.

2.2. Poor information transmission of materials and lack of coherence in management

The disinfection supply center and geriatric department have yet to establish a comprehensive material information sharing mechanism. Critical details such as sterilization duration, batch numbers, expiration dates, and storage requirements are exclusively transmitted through paper records provided by the disinfection center. When geriatric department staff need to access these documents for subsequent material management and usage, they must repeatedly search through physical records—a process that not only reduces efficiency but also increases risks of document loss and data inaccuracies. Furthermore, the geriatric department's delayed reporting of material consumption and damage situations prevents the disinfection center from accurately tracking actual needs, leading to either insufficient supplies or excessive stockpiles. This communication gap results in disjointed management between the two departments, failing to establish a cohesive management chain that spans sterilization, supply, usage, and feedback. Consequently, this undermines the systematic effectiveness of hospital infection control measures.

3. Optimization measures of material handover between the disinfection supply center and the geriatric department

3.1. Formulate standardized handover procedures and clarify the subject of responsibility

The hospital should collaborate with the disinfection supply center, geriatric department, infection control department, and other relevant departments to establish a "Standardized Material Transfer Protocol between Disinfection Supply Center and Geriatric Department." This protocol specifies detailed procedures for material handover. Before transferring materials, the disinfection supply center's staff must prepare a comprehensive inventory list, ensuring all items are properly packaged, display valid sterilization status indicators, and carry detailed quality documentation. Upon delivery, geriatric department staff and disinfection personnel must verify

each item against the list, checking for intact packaging, proper sterilization status, accurate quantity specifications, and matching sterilization batches/validity dates. Both parties must sign the electronic transfer system or paper record to clarify responsibilities. Any non-compliant items should be immediately marked and returned to the disinfection center for processing. The transfer record must clearly document the reasons for non-compliance and corrective actions to ensure accountability [1]. Additionally, designated positions for disinfection supply center staff and geriatric department personnel must be established. All staff must complete training on transfer protocols and infection control knowledge, with certification required before employment to ensure standardized implementation of handover procedures.

3.2. Establish an information management system to realize material information sharing

The hospital has established a disinfection supply center and an elderly care department material information management system. Critical data, including sterilization records, packaging details, expiration dates, and storage requirements, is entered into the system. When materials are released from the disinfection center, the system generates electronic delivery notes that staff members carry to deliver items to the elderly care department. Receiving personnel can quickly verify and confirm all material details by scanning QR codes or barcodes on packaging through the system. The system automatically logs handover times, personnel information, and material specifications, creating digital documentation of the transfer process. The elderly care department can also report real-time material consumption, damage status, and demand plans via the system. Based on this data, the disinfection center adjusts supply schedules to ensure timely and accurate distribution. Meanwhile, the infection control department monitors material transfer processes and quality information in real-time through the system, providing early warnings for anomalies. This integrated approach enhances both material management consistency and infection control precision.

3.3. Strengthen the management of the handover environment and reduce pollution risks

To optimize the transportation routes between the disinfection supply center and the geriatric department, dedicated corridors should be selected to avoid high-risk infection areas such as ward corridors and waste disposal rooms, thereby minimizing contact between supplies and external contaminants. Vehicles and containers used for transporting materials must undergo regular cleaning and disinfection. After daily deliveries, vehicles and container surfaces should be wiped with chlorine-based disinfectants, followed by a thorough weekly sterilization to ensure equipment remains sterile. The geriatric department should establish a designated material receiving area located away from patient treatment zones and waste storage areas. This area should maintain clean, dry conditions with proper ventilation, equipped with UV disinfection devices that undergo double daily disinfection sessions lasting no less than 30 minutes each. During material handovers, staff must strictly adhere to hand hygiene protocols by wearing disposable gloves and masks to prevent manual contact with packaging materials, thereby reducing infection risks through both environmental and operational measures [2].

4. The promotion effect of optimizing the material handover process between the disinfection supply center and the geriatric department on hospital infection prevention and control

4.1. Standardize material management and reduce the source of infection

The optimized standardized handover process enables the disinfection supply center and geriatric department

to conduct rigorous quality inspections during material transfers, effectively preventing substandard supplies from entering clinical use. Through meticulous checks on packaging integrity and sterilization indicator status, potential issues like inadequate sterilization or damaged packaging can be promptly identified and intercepted before clinical application, thereby reducing infection risks at their source. The digital management system ensures full traceability of materials throughout their life cycle—from sterilization and storage to distribution, handover, usage, and disposal. In the event of an infection incident, this system allows swift tracing of material origins and circulation paths, enabling timely source identification and targeted containment measures to prevent spread. This standardized management not only guarantees sterile and safe supplies for geriatric departments but also provides robust quality assurance for infection control, significantly reducing root causes of nosocomial infections.

4.2. Improve the awareness of personnel prevention and control, and strengthen the implementation of hospital infection prevention and control

During the process optimization, specialized training was conducted for disinfection supply center staff and geriatric department reception personnel. This initiative aimed to help staff fully recognize the critical role of material handover procedures in hospital infection control, clarify their responsibilities, and operational standards within these processes. The training covered relevant laws and regulations on infection prevention, standardized material transfer protocols, hand hygiene guidelines, and personal protective equipment knowledge. Through diverse formats including theoretical explanations, case analyses, and live demonstrations, it effectively enhanced staff's professional expertise and practical skills [3]. In daily handover operations, standardized procedures combined with real-time monitoring through information systems create dual constraints, ensuring strict compliance with protocols. This approach effectively addresses previous issues of non-standardized procedures caused by weak prevention awareness and arbitrary operations. The improved prevention consciousness and standardized practices have made infection control measures during material handovers truly effective, reducing infection risks from improper handling. Furthermore, this strengthens the overall execution of hospital infection control efforts, building a robust defense for patient safety in geriatric care.

4.3. Improve the hospital infection prevention and control system, and improve the overall management level of hospital infection

The optimization of material handover procedures between the disinfection supply center and the geriatric department constitutes a vital component of hospital infection control systems. This process refinement addresses existing gaps in infection prevention during material transfers while promoting deeper collaboration among hospital departments. The Infection Control Department plays a pivotal role in guiding and supervising these processes through procedure development, training assessments, and inspections, thereby enhancing interdepartmental coordination [4]. The information management system provides innovative solutions for infection control operations. Analysis of material transfer data enables timely identification of potential risks, offering robust data support for developing targeted strategies. The standardized management frameworks and digital methodologies established during process optimization can be extended to material handovers across clinical departments and disinfection centers, driving hospital-wide standardization and digital transformation in material management. This advancement strengthens infection control systems, improves overall infection management efficiency, and establishes a solid foundation for patient safety and medical quality enhancement.

5. Conclusion

The optimization of material handover procedures between the disinfection supply center and geriatric departments significantly enhances hospital infection control. By addressing existing issues such as non-standard operations and information flow bottlenecks, implementing standardized protocols, establishing digital systems, and strengthening environmental management, these measures standardize material management, cultivate staff awareness of infection prevention, and reinforce the hospital's infection control framework. This approach reduces infection risks at their source, improves operational efficiency, and elevates overall infection management standards. Hospitals should continuously monitor the implementation of these procedures, dynamically adjust optimization measures according to actual needs, and maintain the scientific validity and practical value of the processes. These efforts ensure safer, higher-quality medical services for elderly patients, consolidate infection control achievements, and support the hospital's high-quality development.

Disclosure statement

The authors declare no conflict of interest.

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