



## **DEDICATED CLEAN AND SOILED SERVICE ELEVATORS**

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There has been on-going debate within the Healthcare and Architectural communities regarding the need for dedicated clean and soiled service elevators within new and existing Hospitals. This is especially true for small to medium size Hospitals that use the same elevators for the transport of patients, medical waste, soiled linen and soiled patient equipment.

In some facilities, the use of a common service elevator for the transport of patients, clean and soiled material is of no concern. In other facilities, the Director of Infection Control / Environmental Services is emphatic that dedicated clean and soiled service elevators are mandatory to prevent cross contamination of items and patients within the Hospital. These Hospital representatives insist that dedicated elevators will prevent patients, supplies, linen, food and equipment from being contaminated by soiled linen, soiled patient equipment and waste that may carry infectious pathogenic microorganisms. The intent of this article is to provide some insight on this healthcare concern.

There are many misconceptions regarding the design of new Hospitals or refining the operations within existing facilities. One misconception is that dedicated clean and soiled elevators will prevent airborne transmission of pathogenic microorganisms to patient, supplies, materials and equipment. It is true, that this approach will assist in reducing the potential for contamination of items being transported on a common patient / service elevator. However, patients, supplies, food and equipment are transported horizontally through the same common corridor system as medical waste, soiled linen and soiled medical equipment. Therefore, the potential for contamination on a common elevator is the same as with a common corridor system.

A similar scenario arises when deciding which elevator, clean or soiled, should be used when transporting a patient. Transporting healthy patients on a soiled

elevator could potentially put them at greater risk for noscomial infections. Inversely, transporting a potentially infectious patient (who could sneeze, or cough) on a clean elevator may cause the elevator cab to be contaminated with infectious airborne microorganisms.

Another misconception is that dedicated clean elevators are clean. Elevators can only remain clean if proper sanitation is performed by the housekeeping department on a regular basis. In most facilities the regular cleaning of the elevator cabs, floors and walls is not being performed. Additionally, elevators are only as clean as their hoistway and pits. Poor housekeeping by the elevator maintenance company can lead to accumulation of waste, water, oil, dirt and dust in the hoistway and elevator pit. The accumulation of waste and water allows the hoistway and pit to become a breeding ground for mold and other potentially infectious microorganisms.

A third misconception is that dedicated clean and soiled elevators will improve the flow and transport of patients, supplies, food, equipment and waste. The vertical circulation of a facility might be improved by implementing a system that utilizes a one-way traffic scheme. (Clean items go up using one set of elevators and soiled items go down using a second set of elevators). However, dedicated clean and soiled corridors are needed to support this one-way operational concept. A secondary, duplicate, corridor system in a new facility would be cost prohibitive and most existing facilities do not have adequate space to support this duplication.

In addition to the common misconceptions, there are many design and operational implications with dedicated clean and soiled patient / service elevators. The first implication is that new Hospitals will require a duplication of elevator equipment. For example, a new Hospital would be required to have a dedicated set of clean elevators and a duplicate set of elevators for soiled items. This duplication of equipment would increase the size of the building floor plate, increase the building construction cost and increase equipment maintenance costs. In addition, the analysis to determine the quantity of clean and soiled elevators for a facility becomes more complex task for the design professional. The elevator analysis would now have to include a traffic matrix detailing the number of anticipated clean and soiled movements within the new facility. If the estimated number clean and soiled trips are not identical, then the quantity of clean and soiled elevators may be different.

There are also operational implications that must be considered. For example, existing facilities may experience longer queue times waiting for the dedicated soiled or clean elevator. Most groups of elevators use a common controller. Operationally, the controller will dispatch an elevator that is idle or nearest to the call. If this is a two car group, then there is a 50% chance that the correct elevator will arrive at the floor. If this is a three car group, then there is only a 33% chance that the correct elevator will arrive at the floor. If the wrong elevator

arrives at the floor, the Hospital employee will have to wait until the door closes, then push the car call button again. This is a very inefficient process that increases staff wait time and lowers elevator through-put. In some existing facilities the longer elevator wait times have led to additional staffing to perform material handling and distribution functions within the Hospital.

Another implication for the design professional is that a secondary corridor system will be needed to support the dedicated clean and soiled elevator concept. (This approach continues the criteria of separating clean and soiled commodities on the elevators as well as on each floor.) Again, this concept will increase the overall size of the new Hospital and drive the location and layout of departments within the facility. For existing Hospitals, providing dedicated clean and soiled corridors will cause longer transport routes, longer transport times and increase the number of staff needed to move patient, materials, equipment and waste within the facility.

Experience has shown that the Hospital employee is the weakest link in supporting an operation that is based upon the use of dedicated clean and soiled elevators and corridor systems. It is human tendency to board the first available elevator that arrives at the floor and to use a corridor that insures the shortest trip between two points. This tendency may cause soiled items to be transported down clean elevators or corridors.

There are many agencies that address various infection control issues within the health care setting. However, present infection control guidelines, standards and codes do not specifically address the transportation of soiled linen, soiled patient equipment and medical waste within elevators. The infection control guidelines, standards and codes from the following agencies were regarding dedicated clean and soiled elevators:

- Center of Disease Control.
- Occupational Safety and Health Administration.
- Joint Commission on Accreditation of Healthcare Organizations
- Universal Precautions.
- National Institute of Health.

The Center of Disease Control (CDC) guidelines state, "There is no epidemiologic evidence to suggest that most hospital waste is any more infective than residential waste. Moreover, there is no epidemiologic evidence that current hospital waste disposal practices have caused disease." In addition, CDC states that, "Although soiled linen may harbor large numbers of pathogenic microorganisms, the risk of actual disease transmission from soiled linen is negligible. Rather than rigid rules and regulations, common-sense hygienic practices for processing and storage of linen are recommended."

The Occupational Safety and Health Administration (OSHA) does require that infectious waste and soiled linen be placed and transported in bags or containers which prevent soak-through and / or leakage of fluids to the exterior. Refer to OSHA 1910.1030(d)(4)(iii)(B)(1) and 1910.1030(d)(4)(iv)(A).

Most of the national agencies require that the Hospital assess their own operations and then create an in-house policy that helps prevent the potential of infection transmission. It appears that the guidelines and policies for the transport of soiled linen, soiled patient equipment and medical waste, within a facility, are being established by the Director of Infection Control / Environmental Services and other Hospital representatives.

Having worked with over 200 facilities throughout the United States, our experience has found that the “Best Practice”, for the transport of medical waste and soiled linen includes the following elements:

- A published infection control policy that outlines how medical waste and soiled linen is packaged, handled and transported. This policy should be developed by a committee composed of representatives from Infection Control, Environmental Services, Central Processing and Distribution.
- The use of leak proof bags for the collection and transport of medical waste and soiled linen.
- The use of covered or enclosed carts for the transport of clean material. Covered carts need to have an impervious bottom shelf to prevent potential contamination from the floor.
- The use of covered or enclosed carts for the transport of soiled material. Covered carts need to be designed with an impervious bottom pan and have the ability to catch any fluids if leaks occur.
- Patient and cart transport to be separated by schedule. The Hospital develops a transport schedule to insure that patients, clean and soiled materials are being transported during different hours of the day.
- Regular cleaning of the elevator cabs by housekeeping.
- Regular cleaning of the elevator hoistways and pits by the maintenance contractor.
- Cleaning of soiled linen and waste carts after each use. Preferable methods of cleaning carts include the use of steam gun or cart wash. (Manual cleaning does not provide the same level of sanitation as obtained by utilizing a steam gun or cart wash.)

There are exceptions for the design and use of dedicated clean and soiled elevators within a Hospital. The exception occurs when Central Sterile Processing and Surgery are vertically aligned on different floors of a Hospital. In this scenario, a dedicated clean elevator (or lift) is required to move sterile instruments from the prep and pack area up to the sterile core of the OR suite. (The elevator supplies a direct connection between two sterile areas on two separate floors.)

Medical waste, soiled linen and soiled instrumentation should be bagged, placed in their respective covered soiled carts and then transported using the Hospital service elevators. However, best practices have indicated that a dedicated soiled elevator (or lift) be used to supply a direct vertical link between the circulation corridor, adjacent to the OR suite, and the instrument decontamination area in sterile processing. The dedicated elevator, for the movement of soiled instruments, increases operational efficiencies and lowers instrument turn over time.

In conclusion, dedicated clean and soiled patient / service elevators, except between the Central Processing and Surgery, are not required in a new or existing facility when there are well defined and implement infection control policies that utilize the best practices identified in this article.