Designing for Prevention:

How the Right Design Approach Can Enhance Your Infection Prevention Program

The COVID-19 pandemic continues to reshape and challenge the patient-caregiver experience within acute and ambulatory healthcare settings. In many ways, the pandemic has become an accelerator or catalyst for change, forcing healthcare organizations to refocus or fast-track existing programs to accommodate changing needs. One example is infection prevention.

In this white paper, we look at infection prevention from a design standpoint, examining how the right design approach in two key areas (instrument processing and facility workflows) can help enhance infection prevention programs and initiatives.

The Need for Effective Infection Prevention Measures

The dangers surrounding potential transmission of COVID-19 in healthcare settings did not create the need for effective infection prevention measures. Infection prevention has been a focus in healthcare for many years, in both ambulatory and acute care settings.

In 2008, the US Department of Health and Human Services developed the *National HAI Action Plan to Prevent Healthcare-Associated Infections* to provide a roadmap for acute care. The Centers for Disease Control and Prevention (CDC) has identified healthcare-associated infections (HAIs) as a threat to patient safety. The organization estimates that HAIs account for an estimated 1.7 million infections and 99,000 associated deaths each year in hospitals. The CDC also created the *Guide to Infection Prevention for Outpatient Settings,* which outlines minimum expectations for safe care.

The pandemic has brought a new urgency to infection prevention, serving as a reminder to healthcare professionals that a strong infection prevention program is important to keep patients and staff safe. This new urgency has especially highlighted personal hygiene, equipment sterilization and social distancing as a means of reducing transmission of infectious diseases and exposure to contagions.

Dealing with COVID-19 has also strengthened the rationale for taking a patient-centered approach with the delivery of care, drawing a direct and distinctive link to infection prevention initiatives and the point of care experience. As patients express anxiety and hesitation about scheduling routine exams and doctor visits for fear of exposure to the virus, healthcare organizations are finding it imperative to promote and highlight their infection prevention initiatives. Patients are seeking assurances that necessary precautions are taken to ensure visits will be safe and the quality of care delivered will not be negatively impacted.

Instrument Processing Areas

Instrument processing is a critical part of infection prevention protocol. As antimicrobial resistance and "superbugs" loom even larger in headlines, as well as COVID-19, the need for consistent and effective instrument processing in ambulatory care has reached a new urgency.

Adding to the challenge, one simple mistake can result in the unwanted spread of infection, posing a risk to both patients and caregivers. There is additional pressure to quickly process instruments as higher output can mean more income, especially as more procedures move to ambulatory care environments. Without a strong infection control program in place, this can result in instrument processing steps being skipped, staff suffering a sharps injury or patients being exposed to infection. This is where design can play a significant role in maintaining consistent and effective instrument processing that safeguards the well-being of patients and staff.

Ideally, the instrument processing space within your facility should be a separate, discrete area designed specifically for instrument processing and sterilization. This separation will allow you to more easily control and manage the process, and help ensure safety and an efficient workflow. Instrument processing and sterilization should not share space with the laboratory or staff break area, nor should it be located in the facility's storage room.

The instrument processing space should also be centrally located within the facility to allow easy access from all patient areas. Additional attention should also be given to ensure the size and layout of the instrument processing area fits the procedure volume needs of the facility and allows caregivers to treat patients effectively and efficiently.

Five Critical Steps of Instrument Processing

Regardless of the size and shape of your instrument processing area, there are five critical steps, based on CDC guidelines, that should be a part of your instrument processing workflow design. Implementing these steps will help ensure a smooth dirty-to-clean instrument flow design that will help mitigate contamination and maximize efficiency.

1. Receiving, Cleaning + Decontamination

Reusable instruments, supplies and equipment should be placed in appropriate containers at the point of use to prevent percutaneous injuries during transportation to the instrument processing area. All items should be received, sorted, cleaned and decontaminated of both macro- and microscopic debris in one section of the processing area.

2. Preparation + Packaging

This area should contain a sink where the cleaned instruments and other supplies can be rinsed and then dried thoroughly. Items should then be inspected, assembled into sets or trays and wrapped or packaged for sterilization.

3. Sterilization

The sterilization area should include the sterilizer and related supplies with adequate space for loading, unloading and cool down of instruments and other supplies. Thought also needs to be given to the size and type of sterilizer(s) that will need to fit into the area.

4. Monitoring/Sterility Assurance

This area needs to be configured to support the documentation and recording of mechanical, chemical and/or biological monitoring utilized to help ensure the effectiveness of the sterilization process. Monitoring results and records need to be stored long enough to comply with federal, state and local regulations.

5. Storage

The storage area should be covered and contain space for sterile items and disposable items. Supplies and instruments should not be stored under sinks or in other locations where they might become wet or damaged.

Patient-Centered Workflow Designs

Many healthcare organizations and caregivers are realizing that better care starts with a better clinical environment design. The following are three examples of patient-centered workflow designs gaining traction in ambulatory care that can strengthen infection prevention programs and provide a solid foundation for successful initiatives and protocols. By focusing on the patient, these designs allow caregivers to better manage and limit patient interactions and movement throughout the facility, reducing the potential for exposure or transmission.

Collaborative Care Model

The collaborative care model keeps patients at the center of the care experience by delivering ancillary services within the exam room. This model is an embodiment of the patient-centric approach to the delivery of care, providing structure for caregivers to more closely collaborate on patient care plans.

Traditionally, patients move through various locations of the facility during visits, often for diagnostic testing or other ancillary services. By allowing patients to remain in one place and consolidating visits as much as possible, care teams are decreasing patients' overall length of stay while improving access and efficiency. Patients receive services within the same exam room, rather than moving from location to location.

By bringing ancillary services to the patient, time in the clinic is optimized and the overall patient experience can be less stressful. Limiting movement through the facility also limits patient exposure to contagions by minimizing the areas and the staff they come into contact with during their visit. It can also limit the opportunity for increased transmission if they are later determined to have a contagion.

Self-Rooming Model

The self-rooming (or direct-rooming) model has patients move directly to the exam room, allowing healthcare organizations to eliminate waiting areas to improve the point of care experience and maximize exam space. In light of COVID-19 and social distancing measures, the model has also been touted as an effective way to minimize the transmission of infectious diseases and exposure to contagions.

With this model, patients check in for appointments and proceed directly to an exam room or diagnostic sub-waiting location on their own or escorted by staff. To efficiently self-room, health systems often use a real-time locating system (RTLS), assigning locator badges to patients at check-in. RTLS software provides staff visibility to where patients are located and which rooms are clean and available. Upon patient entry into the room, the software automatically notifies the care team of the patient's arrival.

The elimination of the waiting room can improve wait times and creates opportunity for introducing new clinic spaces that are more conducive to direct revenue-generating care delivery, such as additional lab space, more exam rooms or even a multi-functional procedure room. It can also be a strong tool in infection prevention efforts. Crowded, common waiting areas are often an ideal environment for exposure to contagions, especially during a pandemic or flu season.

On-Stage/Off-Stage Model

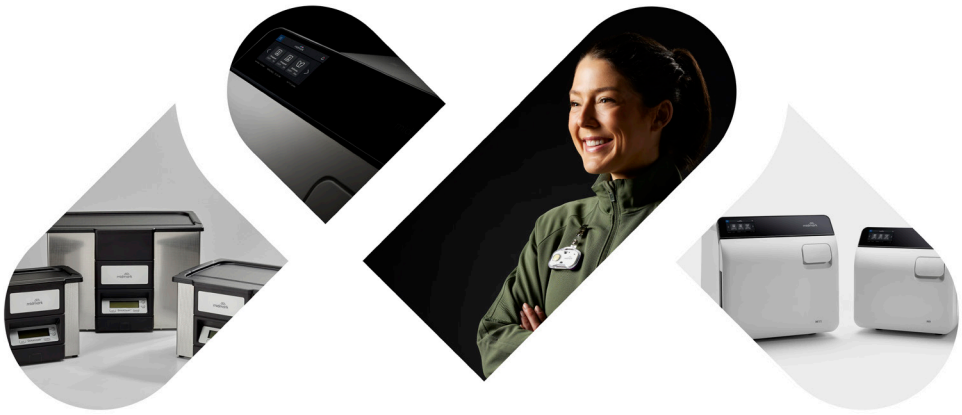
Before COVID-19, the growing patient population was putting greater strain on the traditional linear design of ambulatory care environments. As patients slowly come back for annual visits or elective procedures, those strains will likely reemerge. With the linear design, which features shared corridors and publicly exposed staff workstations, hallways can often become crowded with equipment, patients and caregivers, causing privacy and infection prevention concerns.

The on-stage/off-stage model, which is more easily adoptable with new construction or redesigns, separates caregiver work areas from patient-facing spaces, with dedicated corridors to dual-entry exam rooms where patients and caregivers enter from different sides. The "on-stage" patient corridors and entries offer greater privacy and a calmer environment free from clinical clutter. Meanwhile, the staff and clinician entry leads to an "off-stage" centralized work area where caregivers can be highly collaborative with the entire care team. The off-stage area also provides direct access to all exam rooms for better flow management.

The infection prevention benefits of these three workflow designs can be further enhanced by the use of RTLS technology to enhance visibility, management of processes and orchestration of caregiver interactions. For example, if a patient is diagnosed with an infectious disease, RTLS can automate the labor-intensive, manual contact tracing process. Administrators can simply run a report that helps quickly identify with whom the patient came in contact, which areas of the facility were visited and what equipment was used.

As healthcare organizations assess current infection prevention efforts with an eye toward the point of care experience, there are two key areas, facility workflows and instrument processing, where the right design approach can have a major impact.

By choosing a patient-centered workflow design approach and creating an area of the facility specifically designed for instrument processing and sterilization, healthcare organizations can strengthen infection prevention programs and further enhance patient safety and the delivery of care.



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