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## "Rooming the patient" vs "moving the patient"

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#### Abstract

Healthcare is coming under ever increasing scrutiny for cost, quality, safety, and patient satisfaction. This paper compares two operational models ("rooming the patience" vs. "moving the patient") against productivity, privacy, user satisfaction, and other performance measurements. Varying risk factors for patient populations ranging from infants to geriatrics and medical specialties from mental health to orthopedics are addressed for both models. In the first operational model after checking-in the patient is escorted to an examination room and waits as various caregivers (nurses, doctors, clerks, etc.) come and go from the exam room. In the second model the caregivers work from a specific location and the patient moves between the waiting room and these caregiver's locations (reception desk, office/exam room, scheduling desk, etc.) and back to the waiting room multiple times. The paper concludes that there are advantages and disadvantages for each model. The best model depends on both the patient type and care being provided. In some situation there are conflicting results depending on the priority of productivity vs. service level. Regardless of the situation, human factors should be an important consideration in any healthcare decision.

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Keywords: Clinic layout; Patient flow; Waiting and exam rooms; Patient satisfaction

#### 1. Introduction

Researchers have begun to realize that a wide variety of factors influences patients' satisfaction. These can be quantitative such as how quickly one is treated [1, 2] or qualitative such as the room's furnishing [3] or even the credentials displayed [4]. At the same time, there is a push in the United States to reduce the rapidly rising costs of healthcare. This has resulted in numerous efforts to analyze and improve a variety of aspects of healthcare ranging from prescription costs, frequency and duration of hospital admissions, eliminating fraud and abuse, and reducing operational costs.

Some in healthcarehave examined clinic appointment procedures and clinic layouts [5]. In determining the best process every aspect from patient check-in to scheduling the next appointment should be considered. The steps in the process are typically:

- · Patient checks-in, arrival entered into the system
- Patient waits to be seen by a nurse or aide
- Vital signs and medical history are taken, data entered into the system
- Patient walks to another location (optional)
- Patient goes to another location for lab work or tests (optional)
- Patient waits to be seen by a doctor, data entered into the system
- Patient waits to be seem by a nurse (optional)
- · Patient walks to check-out desk location
- Patient checks-out and leaves

#### 2. "Rooming the patient" and "moving the patient" models

There are two common approaches to managing patients in the clinical environment, "rooming the patient" and "moving the patient". In the first a patient is taken to an exam room and waits as caregivers come and go from the exam room. In this model the patient is stationary and the caregivers come to the patient after he or she has completed the prior steps in the process. The exam room is utilized both for treatment and for waiting. In the second, the staff members are stationary and the patient comes to them. Often they wait in a common waiting room after checking in, a nurse or aide takes them to their workstation and returns them to the waiting room once they have finished their tasks. After the patient waits again, he or she is asked to move to the doctor's office or exam room. Once the doctor has finished the patient moves to the remaining stations in the process and then leaves the clinic.

#### 3. Model performance – Productivity

At first glance an argument could be made that moving the patient is more productive than rooming the patient. The expensive caregivers spend less time moving about the clinic as patients come to them. Subjective studies have found that interactions among caregivers are greatly reduced in this model. When the patients are roomed, nurses can ask a quick question of a doctor as they pass in the hallway which can improve the responsiveness and effectiveness of the patient's treatment. Parks et al. [6]used computer simulation to model patient flow. They found that patient flow can be a significant source of inefficiencies.Clinicswhere staff movedoftenreducedwaiting times. Reduction in both numbers and amount of time patients waited decreased overall patient time in the system.Dodds [7] found that staff members responded favourably increased workload that resulted when clinics more efficiently. Because by the clinic was then better suited to absorb the random nature of unexpected demand.

In a previous paper [5], we found that the utilization of the rooms and personnel varied with the patient arrival rate, treatment time, and number of rooms available. If one resource is highly constrained, such as the number of exam rooms, "rooming the patient" may be the preferred model. However, in other situations the alternative model may outperform it. Costs associated with patients' waiting time, caregivers, and resources can also influence the results. A clinic that uses a very expensive piece of equipment such as an MRI would likely want to use "moving the patient" to maximize the utilization of the equipment. For the productivity performance measure there is no clear winner between "moving the patient" and "rooming the patient".

#### 4. Model performance – Privacy

The Health Insurance Portability and Accountability Act(HIPAA) has raised awareness concerning privacy issues. There are potential privacy concerns for both models. When the doctors and other caregivers are stationary in the "moving the patient" model, the tendency may be to use the room as an office resulting in patient files or other information being located in the room when future patients arrive. In both models there is a concern that patients

traveling among caregivers working increases the number interruptions and the chance of privacy violations if they see or hear information about another patient. This can be particularly true if patients move past the care teams' work areas or along common hallways. The increased number of trips patients make in the "moving the patient" model makes this a greater concern. The "rooming the patient" model would be preferred for minimizing HIPPA concerns.Attention should be paid to the type of work the healthcare staff will be performing. Passersby overhearing phone calls can present privacy concerns, particularly for staff dealing with insurance companies, billing, and other business activities. It can also be an issue for clinics that provide health information to patients over the phone. One doctor we spoke to had primarily elderly patients in the practice and the nurses often were almost yelling into the phone to be heard by the elderly patient and were frequently overhead by others as an unintended consequence.

Clinics where patients might feel stigmatized such as mental health, plastic surgery, or fertility clinics present a different type of privacy concern. Patients may prefer other patients not realize they are receiving care. The "rooming the patient" model reduces the time patients spend in common waiting rooms as well as reducing the number of patients in the these waiting rooms. Patients who check-in and leave from a clinic that has a crowd waiting room may be disappointed with what they perceive as a lack of privacy.For clinics where patient identity is a sensitive issue, the "rooming the patient" model would be preferred.

#### 5. Model performance - User Satisfaction

Waiting times are a significant component of patient satisfaction [2]yet it is the only factor.User satisfaction is a complex performance measure for any model due to the wide variety of users. Clinics with elderly patients, orthopedic patients, or others with mobility issues would likely find "rooming the patient" the preferred model due to the fewer required trips within the clinic. Pediatrics presents a variety of factors that influences user preference. Parents may prefer the "rooming the patient" to reduce the chance of their child "catching something" from sick children in the waiting room. On the other hand, some parents might prefer spending time in waiting rooms with TVs and toys to entertain the patient and any sibling compared with keeping their children busy and happy in small exams rooms for extended periods of time. There is no clear "winner" for user satisfaction due to the variety of individual in our healthcare system and the diversity of clinics caring for them.

#### 6. Model performance - Safety

In the healthcare setting there are two areas of concern related to safety, the potential for infection and level of security. Clinics often have an undesirable combination of potential contagious infections and individuals with weakened immune systems. Infections can be transmitted in a wide variety of ways. Some can be passed through the air by a simple sneeze or a ventilation system. Some infections are passed by person-to-person contact. Regulations exist for handling of bloodily fluids including blood and urine and related waste products such as sharps, protective clothing, and deposable supplies to minimize the danger of infection. Engineers designing layouts should analyze thesefor any clinic, but for those were infectious diseases are likely – it is critical that health safety be addressed. Similarly clinics that treat individuals with weakened immune systems, such as oncology, pediatrics, and geriatrics this type of analysis is also critical. For these high risk environments, the "rooming the patient" model may perform better since in reduces the interaction among individuals.

When considering clinic safety two threats can be significant: theft and workplace violence. Clinics that store drugs with a high street value or potential to be abused should consider how the drugs will be secured. The "moving the patient" model may present increased opportunity for theft. Even if theft is not a concern, securing expensive equipment from tampering, unintended activation, or idol curiosity may be a consideration. The "rooming the patient" model can reduce the potential for damage from these.

Unfortunately, workplace violence is a safety issue that needs to be considered for healthcare clinics. Workplace violence can be defined as an act or threat of physical violence, harassment, intimidation, or other disruptive behavior in the workplace. It can involve workers, patients, or visitors. In 2010, the Bureau of Labor Statistics (BLS) data reported healthcare and social assistance workers were the victims of approximately 11,370 assaults by persons; a greater than 13% increase over the number of such assaults reported in 2009. Nurses, aides, orderlies, and

attendants suffered the most non-fatal assaults resultingin injury (for more information please see: https://www.osha.gov/SLTC/healthcarefacilities/violence.html).Reviewing entrance and exit strategies are important during the layout design phase to reduce the potential impact of workplace violence in healthcare settings. The "rooming the patient" model can provide a higher level of security for the clinic staff. In this model the door between the waiting room and the exam rooms is typically locked and patients are escorted into the exam area.

#### 7. Conclusions

Industrial engineers have evaluated clinic layouts with respect to square footage and space utilization [5]. Analysts have studied efficiencies of different clinic procedures with respect to flow times [5], wait times [1, 2], and resource utilization [5]. While these types of analysis may be logical for most service industries, healthcare is unique. Human factors should be considered as well. The nature of the treatments provided and the patients involved need to be considered when selecting an operational model. Healthcare is too complex for a one-size-fits-all solution.

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