



KEY POINT SUMMARY

OBJECTIVES

The study defined quantifiable spatial metrics to support the needs of three different exam room user groups: patients, clinicians, and care partners.

Placing users at the center: Evaluating exam room design for improved user experience

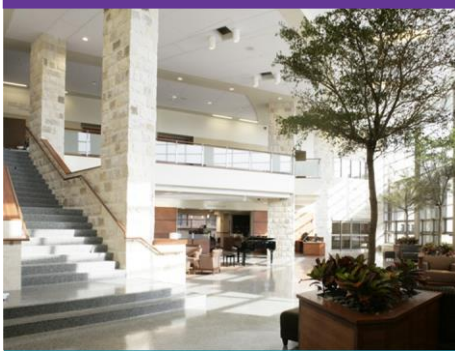
Matić, Z., Oh, Y., Lim, L., Zimring, C., 2022 | HERD: Health Environments Research & Design Journal, Pages in press

Key Concepts/Context

While outpatient exam rooms have remained largely unchanged for the past few decades, limited research suggests that design configurations can influence the quality of care. The relationship of the door, exam table, EHR, and sink can support patient privacy, patient-provider communication, and provider efficiency. This study defines measures that support the functional scenarios of multiple user types. These measures can be used to evaluate design options, as well as potential tradeoffs.

Methods

The research team evaluated eight exam rooms in multiple clinic locations, as well as the design of a hypothetical exam room. All of the rooms were 120 SF, with a single entrance and the typical exam room furniture and equipment (e.g., exam table, sink, visitor chair, workstation). Eleven functional scenarios were defined to quantify the affordances to support the patient (i.e., see a clinician entering, make eye contact and view the computer screen from the exam table, avoid direct view of the exam table from the hallway, receive support from care partners, navigate an accessible path); provider (i.e., access the health record while maintaining eye contact, limit required walking, allow quick and safe egress); and care partner (i.e., ability to remain in exam room, sit close enough to provide support while maintaining eye contact, maintain visual access to the computer screen). The functional scenarios were developed from the existing literature and onsite visits to the exam rooms included in the study, and the team subsequently developed spatial criteria and quantifiable measures for each functional scenario. (According to the authors, this is the first study to apply functional scenarios to outpatient exam room design.) Analysis was conducted with AutoCAD and DepthmapX. Following a comparison of the room configurations, the researchers identified design features and relationships that influenced the results.



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Findings

Four functional scenarios are described in detail: (1) the healthcare provider-patient relationship for the provider is quantified by the degrees between the provider's monitor (from the provider seat) and the patient; (2) the provider work efficiency is quantified by (a) the summed distances between the exam table, sink, monitor, and door; and (b) the ratio of the polygonal area of provider points and the total room area; (3) the provider-patient relationship for the patient perspective is quantified by (a) the amount of turning (degrees) required to have eye contact with the provider; (b) the distance between patient and provider; and (c) the amount of turning (degrees) required to see the computer screen; and (4) care partner information access—the degrees of turn to see the computer screen.

Based on the analysis, the researchers determined that the position and location of the provider workstation (especially the computer) and exam table in relationship to the door are key design factors. The authors conclude that some configurations meet the needs of one group better than others, and as a result tradeoffs need to be evaluated based on the priorities defined by patient demographics, specialty service lines, or other factors. Further, each user group may have different interactions, which can result in a conflicting design strategy (e.g., computer position) despite a common goal (e.g., viewing the screen together).

Limitations

The analysis for this study did not focus on the detailed requirements of a specific setting, but instead balanced the needs of various stakeholders at multiple sites. However, there were a limited number and type of exam rooms, potentially affecting generalizability. The researchers did not address clinical specialties, or features such as dual entrances, natural light, or multiple monitors for shared viewing. In addition, the authors note that while comparing options may help balance tradeoffs, the functional scenario method has limitations in establishing an optimal layout.

Design Implications

An exam table that is perpendicular to the workstation may allow all users to sit close to one another, make eye contact, and make minor adjustments to view the computer together. An exam table located at the back of the room (foot facing the door), with the door swing toward the table may best balance both visibility (who is entering) and privacy. A compact work-zone close to the entry is efficient and offers safe egress.



And Also...

The authors include a comparative table of exam rooms, along with several plans to illustrate the quantified criteria.

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