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Layout and flow of dermatology clinics: principles from operations management.

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Abstract

Dermatology is a medical specialty that experiences high patient demand and long patient wait times. Dermatology clinics should look for ways to improve efficiency through the incorporation of principles from operations management. Addressing the layout and flow of a clinic can lead to operational efficiency. An ideal layout may lead to increased patient volume, satisfaction, and retention.

Keywords: facility design, practice management, workflow, business, dermatology

Introduction

In recent years, the national mean waiting time for new patient appointments in dermatology has varied between 33 and 36 days [1]. It has also been shown that longer wait times — both for appointments and during appointments — can lead to decreased patient satisfaction [2, 3]. For some, the waiting room, office cleanliness, and staff temperament can also contribute to patient views and satisfaction [4, 5]. The layout of a business or operation is a significant factor in the quality and efficiency of its function on a daily basis. An inappropriate layout can lead to customer queues, long process times, confusing flow patterns, inflexible operations, unpredictable flow, and high costs [6]. An effective layout can allow for greater efficiency and productivity [7] and can affect both the cost and general effectiveness of a business [6]. Improvements in the layout and flow of a dermatology clinic may lead to increased patient volume, satisfaction, and retention. The importance of appropriate planning, design, and implementation cannot be stressed enough.

Layout Planning

A satisfactory layout is reliant and contingent upon several factors depending on the type of business. Some relevant objectives to consider in the case of a dermatology clinic are its inherent safety, length of flow, clarity of flow, staff conditions, management coordination, and use of space [6]. In order to design a suitable layout, each of these factors should be carefully explored.

The inherent safety of an operation is important, since patient safety is a cornerstone in our profession. As physicians, we have an obligation to protect patients from any preventable harm. In clinics, patients should not be allowed easy access to any restricted areas. This can include medication rooms and storage areas that can house harmful substances, such as lidocaine, bleomycin, methotrexate, 5-fluorouracil, and liquid nitrogen. These should ideally be located away from areas of high patient traffic. They should also be secured with measures that can prevent unwanted access, such as locks that require an ID badge or PIN code for entry.

The length of flow should be optimized to ensure maximum efficiency. The duration of patient visits should be as short as possible, while still allowing for high quality care. A self-check-in system can offer significant reductions in the amount of work for receptionists, while also streamlining the process [8]. To aid in visit time reduction, the distance traveled by patients should also be minimized. The clinic space should be designed to allow for shorter travel between patient stopping points, including the reception area and the patient room. The distance for staff members should also be considered, such as the proximity of pathology areas to surgery rooms for Mohs micrographic surgery.

The clarity of flow is important as it concerns how well-defined the clinic flow is. Patients should be able to easily find the reception area and restrooms without prompting. Since people naturally attempt to exit facilities the same way they entered, the exit and entry path should be the same [9]. These small changes can prevent patient confusion and repetitive questions that may hinder clinic flow. Staff should become familiar with the various processes involved in a clinical visit, including patient rooming, procedure set-ups, post-treatment care, and patient instructions. Spending sufficient time early on to properly train staff can allow for continued benefits in the future.

Staff conditions are essential to keeping the workforce satisfied, which can subsequently increase employee retention. High employee morale can lead to an improved workplace environment, which can benefit not only other employees, but also patients. To improve staff conditions, management should be responsive to their needs. In terms of layout, the staff should have clean and functional workspaces. Break rooms should be located away from areas of high patient traffic to allow for ample privacy. An effective clinical design provides areas for staff to work efficiently.

As with any medical practice, management coordination is vital. The nearby location of staff members and communication devices can assist in the supervision and oversight by physicians. In an ideal clinic, the dermatologist and staff should have work stations in close proximity, where patient rooms can be easily visualized and accessible. A central hub with patient rooms on the periphery is one such model. There should be reliable communication between the reception area and this hub. Implementation of non-verbal communication systems can increase productivity and reduce office commotion [10]. Such methods include using the patient's encounter form, printers, light signaling systems, and the computer interface.

Lastly, the appropriate use of space is extremely salient. Specific areas of the clinic may be designed with different functions in mind. Patient rooms should allow for maximum exam efficiency. This can include the ideal placement of computers, storage of only relevant supplies, sufficient space for ancillary equipment such as medical devices, and room for accompanying family members or wheelchairs [7]. Certain areas, such as entryways and waiting rooms, should also plan for patient convenience and the accommodation of mixed patient demographics. This can include space for wheelchairs, seating for bariatric patients, and children's play areas [7]. Waiting areas can also be built to maximize luxury in order to increase patient satisfaction, which can be especially important to those who pay out-of-pocket for procedures.

Layout Design

The layout design can have significant implications for a dermatology clinic. Depending on the nature of the business, a specific layout may be more conducive to efficient function than others. In the field of operations management, many layout models have been thoroughly described. Specific to a dermatology practice, the functional layout and cell layout designs are the most relevant.

A functional layout design conforms to the needs and convenience of the functions of a business [6]. In this model, similar resources or processes are located together for greater convenience and utilization and also minimization of the distance travelled by staff

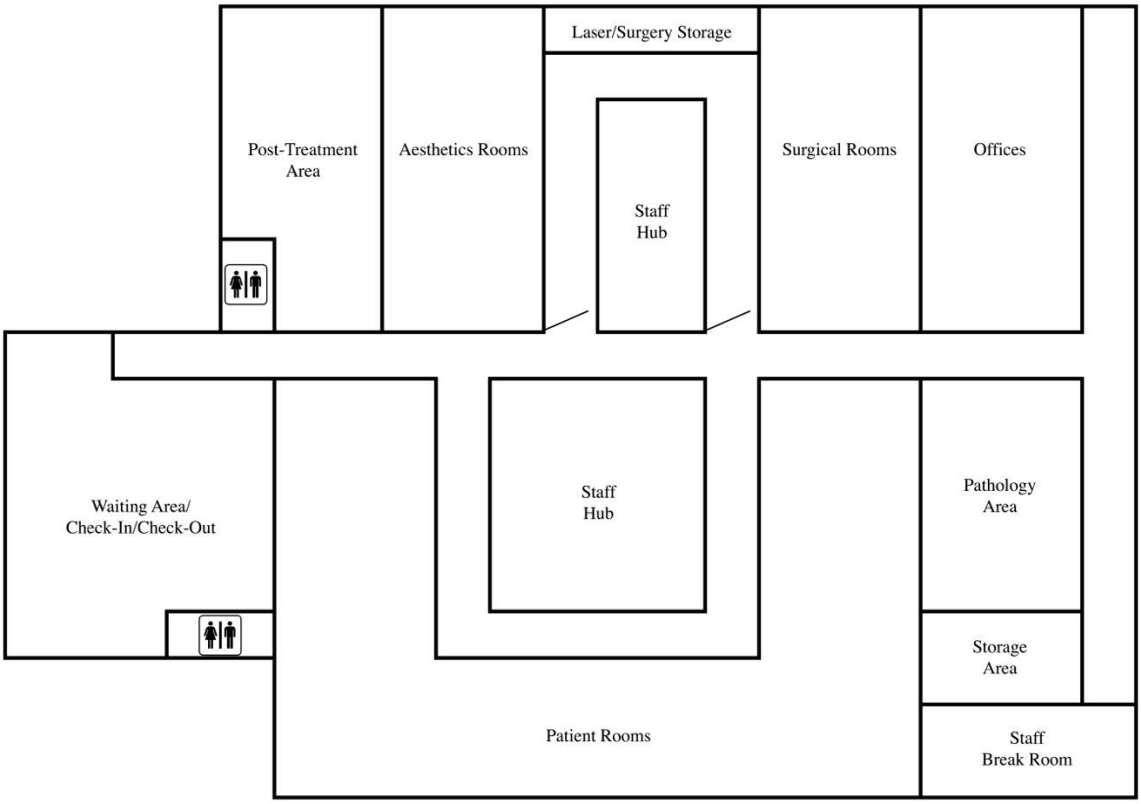

Figure 1. *Sample layout model for a dermatology clinic.*

members. A functional layout design can group similar tasks together. For example, a single pathology room can house the microscopes and all materials needed for skin scrapings, cultures, and histopathology. A post-treatment area can also be used after surgical and aesthetic procedures or between stages during Mohs micrographic surgeries, which can house similar necessary supplies and include refreshments.

A cell layout design is also known as a shop-within-a-shop layout [6]. In this model, patients are selected to enter a single area where the necessary resources are located to meet their immediate needs. An advantage of a cell layout is its fast throughput [6]. A cell layout design is useful when particular areas in the clinic are separated for different purposes. For example, there can be a designated suite for surgery, which would have rooms that house surgical supplies, a nearby pathology lab, and an adjacent waiting area for patients undergoing Mohs micrographic surgery. In another example, a suite for aesthetics may have larger patient rooms to fit medical devices, a nearby area for additional storage of devices, and a medication room to store injectable aesthetic medications. A shared post-treatment area for surgical and aesthetic suites could also be attached. A cell layout would prove useful in improving clinic flow, since an area could be thought of as a one-stop-shop for either surgery or aesthetics.

Layout Model

In modeling a dermatology clinic, several important factors are crucial to allow for improved efficiency and flow. **Figure 1** shows an ideal model. There is a large waiting area and a shared central path for patients to both enter and exit, which leads to all areas of the clinic. Bathrooms are easily accessible. Restricted areas, which include the pathology area, storage areas, staff break room, and offices, are far from areas of high patient traffic. There is a large area for general patient rooms with a central staff hub. There is a separate suite for aesthetics and surgery

that also utilizes a hub. This suite has a separate storage area for medical devices and relevant supplies. The post-treatment area sits adjacent to this suite and on the way to the check-out area. The pathology area is located near both the surgical suite and general patient rooms for increased convenience.

Conclusion

With high patient demand in dermatology and the need to increase efficiency, the layout of a clinic represents a prime target to optimize. In planning and designing the layout, several factors must be considered in order to allow for efficient clinic flow. Improving operational efficiency through layout design may increase patient volume, satisfaction, and retention.

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