Examining the Diversity of Approaches for Understanding Patient Flow

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

The CDC predicts that yearly incidences of cancer in the United States will increase by almost 50% by the year 2050 (Weir, 2021). With this massive increase in cancer occurrences inevitably comes more strain on the healthcare system, as larger number of patients will move through the medical network seeking treatment. Optimizing how patients navigate medical centers has the potential to save vital time, money, and resources which can then be reallocated to provide more quality care. Obtaining a better patient flow system can be seen to be mutually beneficial for members of the network, as patients would gain more access to treatment sources and healthcare workers gain a steady client base (Woodall, 2011).

Patient flow, by definition, encompasses the movement of a patient across an entire healthcare network. It chronicles a patient's entire healthcare journey, from scheduling an appointment to completion of said appointment. Depending on the type of appointment, be it a simple check-in or a comprehensive infusion treatment visit, patient flow can have a multitude of steps. In the case of an infusion, patients also must interact with multiple types of healthcare providers before the appointment can be completed. Factors such as time between segments in the process or delays can rapidly increase the flow's complexity. Specifically in the context of a cancer center, even though caregivers strive for the most efficient visit possible, rapid changes in a patient's status can create unexpected delays. Patient flow is vital to the successful operation of a healthcare institution. Efficiency in this area not only reflects well for the organization as a whole, but also improves patient satisfaction drastically.

The research question is presented as follows: *How do different actors within the UVA Infusion Center network conceptualize patient flow and understand the causes of poor flow.* This

topic investigates the role of various actors in contributing to the greater understanding of the concept of patient flow. It is a broad assessment of how different groups view patient flow based primarily on their own experiences with the movement of patients in the UVA Health System. This topic is interesting for readers because it offers insights into a concept which is largely lacking in other studies of medical institutions. Few research endeavors concentrate so heavily on patient flow, especially flow within an Infusion Center. The intent is to emerge with original findings and innovative ideas about patient flow.

Background & Context

The Infusion Center at the University of Virginia is located on the fourth floor of the Emily Couric Clinical Cancer Center (ECCCC) in Charlottesville, Virginia. It houses 54 infusion bays which are used for intravenous chemotherapy for cancer patients. Many patients originating from throughout the state of Virginia come to UVA for their care plan. However, a patient's journey navigating the UVA Health System starts well before receiving treatment. A vast multitude of healthcare employees are vital to ensuring a patient receives both timely and quality care. These staff members can range from infusion nurses to infusion nurse managers to infusion schedulers, among others. As ECCCC has grown, so too has the need for more staff with varying expertise. Each stakeholder plays a key role from the time a patient sits down to schedule an appointment to the conclusion of their treatment at the facility. All care providers must be knowledgeable both in their own area of training and in the operations of the healthcare system as a whole. In most cases, staff members are very accustomed to describing their own role and answering questions about it. They are less confident about the roles of others within the healthcare system, though they are usually aware of the broader organizational mission and overarching goals.

The sociotechnical system surrounding patient flow at ECCCC is vast; groups involved include the patients themselves, healthcare providers, healthcare administrators, and core infusion staff. Each of these actors defines optimized patient flow differently. For some, the most effective patient flow maximizes efficiency as a primary concern. Other groups prioritize patient satisfaction as the most valuable metric regarding patient flow, even at a cost of lost efficiency. Conflicting views are due to several factors, including role of the actor in the network and prior knowledge of patient flow. Competing beliefs when it comes to patient access and patient flow have played a major role in shaping views on both topics (Ansari, 2022). Consider a patient scheduling an appointment for a basic check-in at ECCCC. They must first work with an infusion scheduler to create the appointment. Upon arriving for their appointment, they interact with the front desk worker, then an infusion nurse, then a provider, and then an additional scheduler to talk about next steps. If they are having an appointment for an actual infusion treatment, even more staff members will be involved in the process. Looking at cancer centers more broadly, different centers have different levels of capacity for efficiency based on the number of employees and size of the facility. A study asking cancer centers "What is your organizational goal for newly diagnosed cancer patients or patients with suspicion of cancer to be scheduled and undergo an initial visit?" found that only 10% of them can achieve this in less than 3 days (Chartis, 2020).

A common problem which ECCCC continues to have is the prevalence of areas of inefficiency in patient processing. This challenge stems from differing ideas and goals each member of the network has with regard to patient flow. Some actors interact with patients directly, while others work behind the scenes in a scheduling capacity. Each actor is also only present for a specific part of a patient's movement through the appointment procedure. Often, the

overarching perspective on patient flow across all disciplines is overlooked, which leads to unidentified inefficiency. It is imperative to achieve a more cohesive understanding of how different staff members within ECCCC perceive patient flow as a concept. By comparing perceptions of patient flow as a concept, the practical result will be an improvement in rapid, satisfactory movement of patients. Getting all staff members on the same page with respect to priorities in patient flow understanding will allow for universal guidelines, making the patient flow process both easier and quicker. Discrepancies in understanding may be the foundation of inefficiency and could help establish ways to optimize the patient flow process.

Issues with comprehension patient flow are prevalent across a wide variety of healthcare systems. The fundamental problem of disparities in understanding of patient flow exists across many organizations, but the approaches taken to resolve it differ greatly. Methods ranging from computational solutions to implementation of new training have been attempted with varying success rates (Sobolev, 2005). A final strategy to increase patient flow understanding is to conduct more research across wide-ranging fields, choosing to interview multi-disciplinary teams to get their group perspective (Blackmer, 2020).

To further examine this topic, it will be necessary to incorporate theoretical frameworks, namely openness to change. Openness to change is the combined idea of understanding that change may be necessary, receptiveness to it, and motivation to enact it (Nilsen, 2020). In certain situations and given the right circumstances, people may be more willing to accept a change in their lives. They will be more motivated to enact a change based on the context of the scenario and the impact it will have on their lives. As stated previously, different actors possess different understandings of what patient flow is. Based on their role in the healthcare institution, these distinct groups may have significantly varied perceptions of the underlying causes of issues with

patient flow. Acceptance of changes to the current patient flow process may be received with much more enthusiasm by some actors in the network than others. Going into the STS project, it is imperative to fully recognize these areas of discrepancy. When going about conducting interviews, it should become clearer which actors are most willing to accept changes to the current patient flow. The current climate in the wake of COVID has increased willingness for change in healthcare institutions in general – what is less clear is whether this attitude is especially prevalent in cancer centers (Ochieng, 2022).

Methods

Interviews

Two virtual interviews were conducted, each with an employee working at ECCCC. One of these interviewees works on the second floor of the center, while the other works on the third. The staff members were asked about a variety of ideas related to patient flow understanding, as well as challenges they faced in their day-to-day work related to patient flow. The objective of these interviews was to gain insights specifically from the perspective of actual staff members of ECCCC. The interview was recorded with their consent, and interesting ideas presented which could potentially aid in the research were noted in real time. In addition, the interview was manually transcribed after the fact. The content produced from these interview sessions comprised the primary data collected.

Literature Review

The two interviews were supplemented by secondary evidence gained from an extensive literature review. A variety of sources (primarily found in medical journals) were carefully vetted to determine whether they made sense in the context of the project. They represented data and

understanding gathered from authors with many levels of medical expertise, in an attempt to incorporate as many different perspectives as was possible. Also, some of the literature expanded beyond cancer centers into the realms of other medical institutions such as hospitals, so long as the content was deemed relevant. Literature was used alongside the interviews to ensure that any conclusions reached were both overarching and thorough. The literature also strengthened the arguments presented after the interview themes were finalized.

In order to understand the vast quantity of evidence collected, a qualitative content analysis procedure was utilized. Qualitative content analysis consists of transforming large amounts of data into a concise set of themes (Zhang). It is the ideal method to use when trying to analyze interview records and other primarily qualitative sources. This practice was used on the two transcripts which were created from the conducted interviews. The overall goal was to emerge with a list of key themes related to patient flow understanding, which can be validated by the raw data within the transcripts. These themes should each be distinct from each other and should make sense in the context of the sources. Once the list of themes was solidified, it was applied to the prior literature in the literature review to see if more evidence could be found in support of them. The same coding method was used on each literature source, and any discrepancies in terms of theme relevance were identified. The theme list was then slightly modified, and it was confirmed that the final theme classifications could all be supported by both the interviews and the literature. In this way, the themes could be seen as universal and not just applicable to a single cancer center, but to cancer centers as a whole. The list of themes is the foremost product of the research conducted.

Results & Discussion

The two interviews yielded various key findings about comprehension of patient flow in the context of ECCC. The interviewees first expressed the importance of thoroughly considering this concept, as they said it provided interesting perspectives not always brought to light. There was a clear indication both from the interviews and secondary literature that understanding of patient flow varies depending on role within the facility. Specifically, providers often have a much different patient flow understanding than other staff members.

A major theme identified based on the content of the interview responses is the importance of timeliness of physicians. Based on the interviewees' understanding of patient flow, they both identified timeliness as a major factor to be examined. Patients have a preconceived understanding of how long they expect an infusion center visit to take, as do providers and nurses. Each of these groups, based on their level of expertise about cancer care, perceive time required differently. It is also important to recognize that delays frequently occur behind the scenes which are unknown to patients. Providers and schedulers must work together rapidly to adapt if a patient enters a critical state and requires immediate care. In these cases, other patients may not be seen in as timely of a manner and may be unaware of the rationale for this.

Another key theme which especially became apparent in the literature analysis was resource allocation, as it related to patient flow understanding. Certain individuals in the medical network (for instance, the infusion schedulers) have a much more comprehensive understanding of how many patients can be seen at any given time. Cancer centers are typically divided into several areas which patients move through when receiving care, such as the clinic and the actual treatment center (Woodall, 2011). In each of these subsections of the center, there is a finite number of staff members, as well as limited infusion chairs from which to receive chemotherapy. The majority of stakeholders in patient care have a limited understanding of the intricacies of

scheduling given the constraints on resources. To a great degree, patients are unaware of the behind-the-scenes work which is governing scheduling policies.

Patient experience also played a major role in differences in understanding, based both on the ECCCC interviewees' feedback and the literature referenced. The overall experience of a patient in recent years has gained prominence as one of the most valuable indicators of good medical care – it went from an ideal goal of providers to a necessity (Lang, 2012). Patients may understand patient experience to be quality interactions and common courtesy expressed by nurses and providers. Medical staff, on the other hand, may view concise and efficient communication of a patient's status as the ideal experience. These disparities of thought in what constitutes the most optimal patient experience can be detrimental to efficient patient flow.

Based on both the responses of the interviewees and the references to secondary literature, it appears that across the board there is a stronger willingness to adapt than in a pre-COVID world. This openness to change expands beyond providers and nurses into the realm of administrative changes as well. Medical staff are now more willing than ever to innovate and think outside the "box" created by typical organizational structure presented in a healthcare facility (Liu, 2022). In fact, many of the key themes presented in literature regarding changes in healthcare post-COVID align greatly with the themes gathered from the qualitative analysis. Within cancer centers and other medical institutions, the COVID pandemic was perceived as a crisis of such magnitude that change was a necessary next step. This connection to openness to change across the board is described effectively by Amanda Choflet in her publication about this same topic – "The COVID-19 crisis has created unprecedented demands for immediate and far-reaching organizational change in every healthcare delivery institution. Employees from executive to frontline staff are grappling with the pace, breadth, and depth of these demands"

(Choflet, 2021). Cancer centers have been no exception to this nearly universal shift in medical flexibility.

Conclusion

In 2020, one in six fatalities across the globe were the result of cancer (World Health Organization, 2022). As this number continues to rise in the coming decades, it is vital that all members of the medical network work together to communicate patient flow needs. Whether considering doctors, nurses, administrators, schedulers, or even the patients themselves, all stakeholders have strengths and weaknesses when it comes to patient flow understanding. It is imperative that all concerned groups are aware of their limitations and have the ability to change their perspectives based on the perspectives of those around them. Improvements in patient flow understanding have the potential to save money, conserve resources, and overall heighten the patient experience in a cancer center. Benefits such as these affect everyone across the medical network in a positive, impactful, and long-lasting way.

Future research into this topic should delve deeper into the firsthand perspective, interviewing more staff members from a larger variety of roles. This research was limited to two interviews, and that is a limitation which it is imperative to address. A future study could interview many infusion nurse schedulers, infusion nurses, and providers to obtain a broader perspective. Additionally, obtaining the patient outlook at ECCCC would provide insight into areas often overlooked by those with medical expertise. Patients frequently have a vastly different idea of what patient flow looks like, as they are experiencing the process firsthand. At present, patients are more involved in their own care than ever before, as the internet has allowed them to gain knowledge about their condition. A final idea for future research would be looking

at areas of overlap in the key themes identified in this project. By examining the findings from this analysis, it becomes apparent that there are many interconnected factors which combine to form a person's understanding of patient flow. Investigating the intricacies of these connections will be valuable in the eventual creation of a universal set of guidelines for what ideals establish the optimal flow.

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