Research Article

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Analysis of Extended Length of Stay in a Comprehensive Cancer Center

Ameri M MD MSc[1*], Ali N MD[2], Dickson K MD[2], Koom-Dabzie K MD[2] and Al-Ameri A MD PHD[2]

[1]*UTMB Medical Branch, Department of Internal Medicine, Galveston, Texas, USA.*

[2]*UT MD Anderson Cancer Center, Department of General Internal Medicine, Galveston, Texas, USA.*

[*]Correspondence:

Moe Ameri, MD, MSc, UTMB Medical Branch, Department of Internal Medicine, 301 University Blvd, Galveston, TX, 77555, USA, Tel: 832-561-5236.

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ABSTRACT

Background: *The management of cancer patients is complex and usually requires hospital admission in order to diagnose and treat complications related to cancer or its therapies. Solid tumor patients have a mean length of stay (LOS) of about 6 to 9 days. A large portion of the cancer patients has extended length of stay more than 10 days. Long hospital stays utilize more resources and is more expensive.*

Methods: *We aimed to assess characteristics of patients with an extended length of stay at UT MD Anderson Onco-Hospitalist service in 2019 to identify focus areas that can help decrease extended LOS.*

Results: *172 out of 1449 patients with extended LOS were analyzed. This study has a 95% confidence interval of finding the true value within (±7%) of the real value. The results showed that 84% of prolonged admissions were due to medical issues and 18% of the patients were either discharged to hospice or died during their hospital stay. Further breakdown of the medical reasons for extended LOS indicated less 4% of these patients received inpatient radiation therapy; around 3% had complications from immunotherapy; 2% patients had issues with pain control and 7% of these patients had issues with placement. Overall, 50% of the patients who had issues with placement had Medicare and 25% had no health insurance. The study was unable to determine any association between the distances of primary residence from hospital to extended LOS.*

Conclusion: *The study was able to identify focus areas such as early Goals of Care (GOC) in end-of-life care, protocolization of immunotherapy adverse reaction therapy, and criteria-based approach to earlier radiation oncology consultation for palliative radiation therapy. All of which will help decrease the extended LOS at places like UT MD Anderson and others.*

Keywords

Cancer, Cardiovascular disease, Radiation therapy, Immunotherapy.

Key Points

Question: What are the characteristics of patients with an extended length of stay at UT MD Anderson Onco-Hospitalist service in 2019 from a hospitalist service standpoint?

Findings: A retrospective cohort study was performed. This study has a 95% confidence interval of finding the true value within ±7% of the real value. The results showed that 83.72% of prolonged admissions were due to medical issues and 18.03% of the patients were either discharged to hospice or died during their hospital stay. Overall, 50% of the patients who had issues with placement had Medicare and 25% had no health insurance. The study was unable to determine any association between the distances of primary residence from hospital to extended LOS.

Meaning: The study showed about 80% of the extended LOS patients have prolonged LOS due to medical reasons.

Introduction

According to the CDC, cancer is the second leading cause of morbidity and mortality in the United States coming only after cardiovascular disease mortality [1,2]. There were reportedly 1,701,315 new cancers diagnosed in 2017, causing approximately 599,099 deaths in the United States. Around every 1 in 4 deaths in the United States was related to cancer [1-3]. The management of cancer patients is complex and usually requires hospital admission in order to diagnose, and treat complications related to cancer or its therapies. Cancer treatment consists of chemotherapy, immunotherapy, radiation therapy, or even surgery. Complications of such therapy might lead to prolonged hospitalizations and even death. Patients may require multiple admissions. All these factors have a profound impact on the length of stay (LOS), which is defined as the time interval between admission and discharge [2-5].

It is certain that long hospital stays utilize more resources and are more expensive. Cancer care is complex and expensive, requiring a multidisciplinary approach. Inpatient care is usually an unavoidable step in the cancer trajectory and tends to increase in the last few months of life [4-7]. The current literature suggests that the mean cost per day at a major cancer center may be up to $7,000. Furthermore, these long hospital stays may ultimately have a profound impact on the quality of life of an individual [8,9]. As such, the aim of this study is to assess characteristics of patients with the extended length of stay in order to identify focus areas that can help decrease extended LOS.

Method

A retrospective cohort study looking at 2019 extended length of stay patients in the UT MD Anderson hospitalist service was done before the Covid pandemic started in 2020. The quality improvement board approved this study. At our institution, inpatient cancer care is divided amongst several inpatient teams. This study focused on the LOS outcomes of the Onco-hospitalist service who help to manage patients with head and neck cancers, thoracic cancers, GI cancers, endocrine cancers, and non-melanoma skin cancers. A mean length of stay in solid tumor patients at a cancer center is 6 to 9 days [10-12]. Subsequently, we defined extended length of stay as any patient who stayed in the hospital greater than 10 consecutive days. In 2019, our onco-hospitalist service managed 5557 admissions out of which about 1449 admissions met the criteria of the extended length of stay. This subgroup of patients had a mean LOS of 18 days.

Results

There are several reasons why patients can end up having an extended length of stay as highlighted in chart 1, however, this study focused on providers' reasons for extended LOS as documented in patients' charts.

A randomized sample of 172 patients' charts was reviewed after discharge with LOS 10 days or longer as part of this study, which gives this study a 95% confidence interval of finding the true value within (±7%) of the real value. All collected data were described with simple statistics such as total sum, means, or percentages. The primary objective of the study was to determine reasons for an extended length of stay, which were categorized into medical, hospice, insurance, placement, inpatient rehab, and others. The secondary objective of the study was to determine the particular medical reasons contributing to the patients' extended LOS. The medical category was subdivided

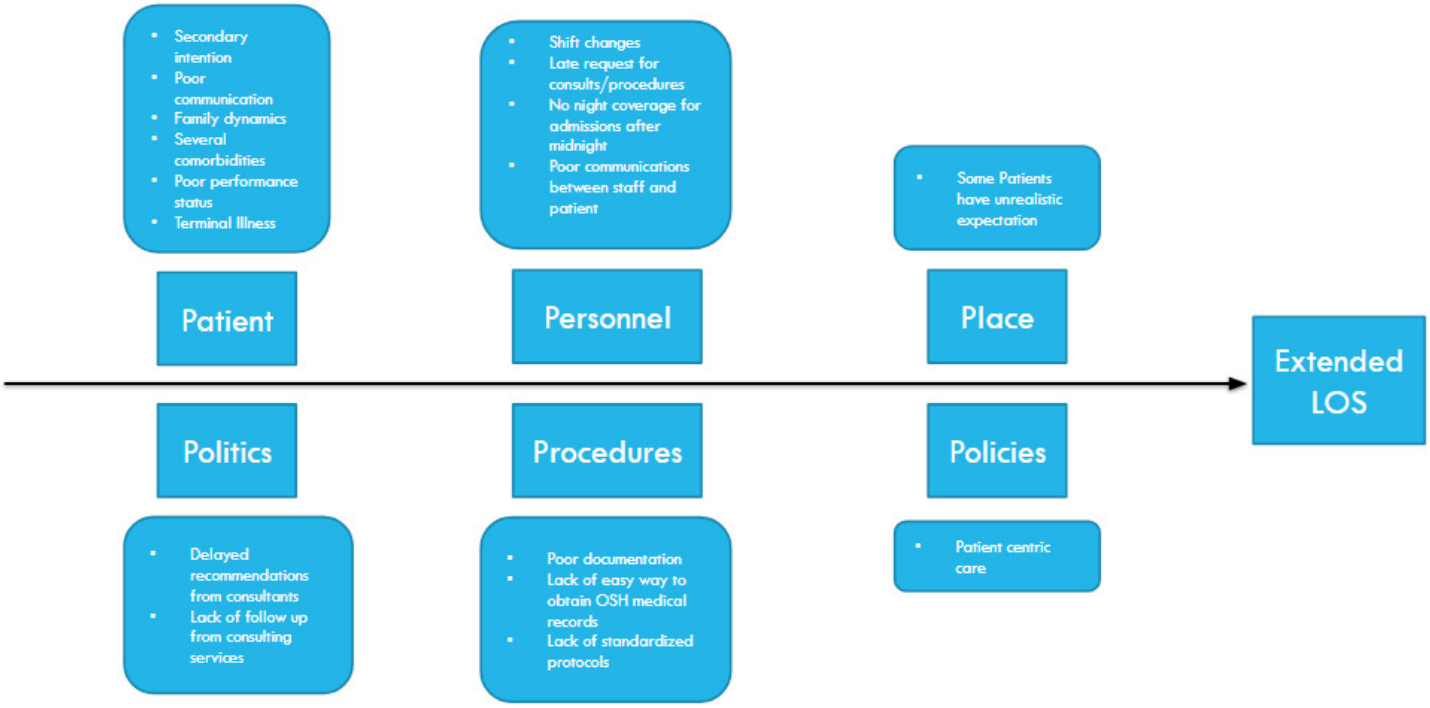

Chart 1: Fishbone Diagram for Reasons for Extended Length of Stay at UT MD Anderson.

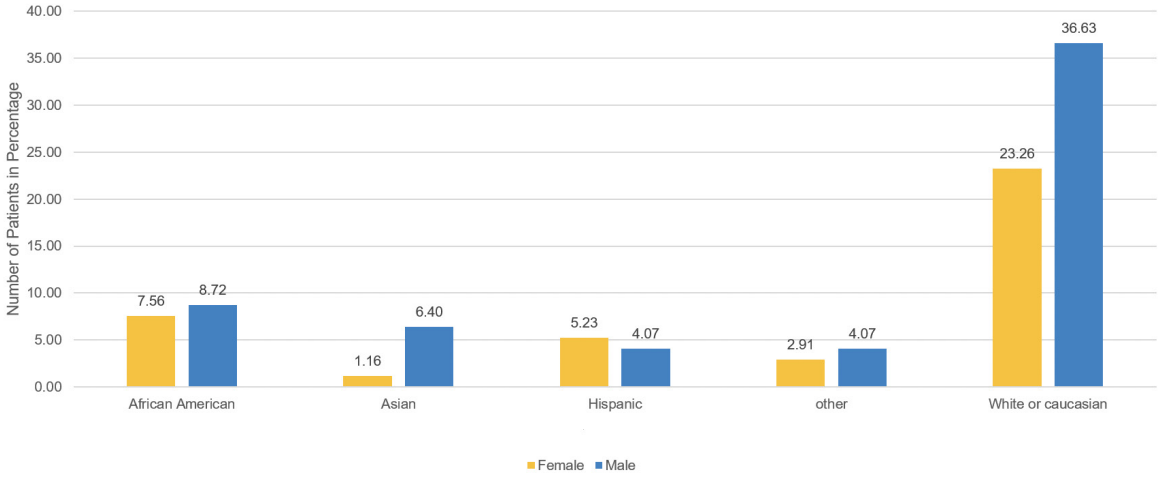

Chart 2: Patient Demographics.

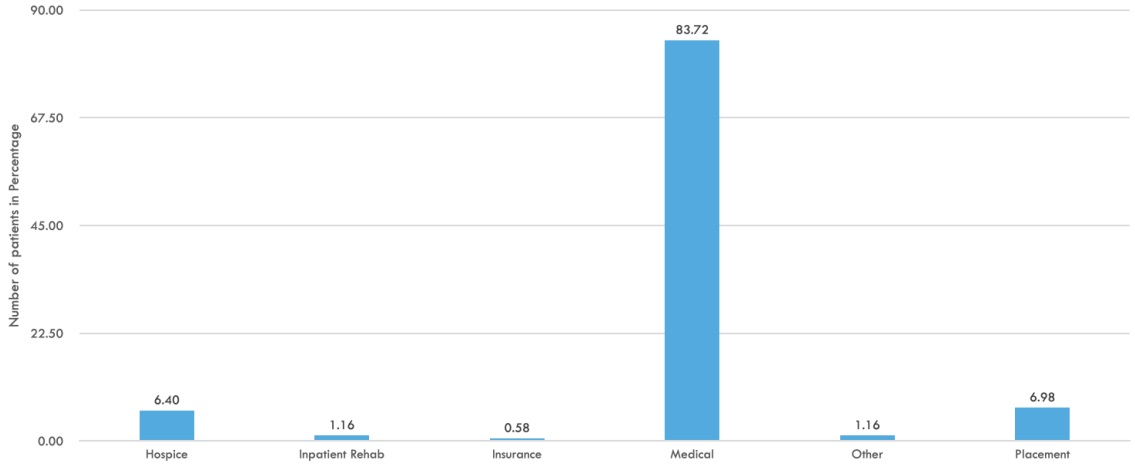

Chart 3: Reasons for Extended LOS.

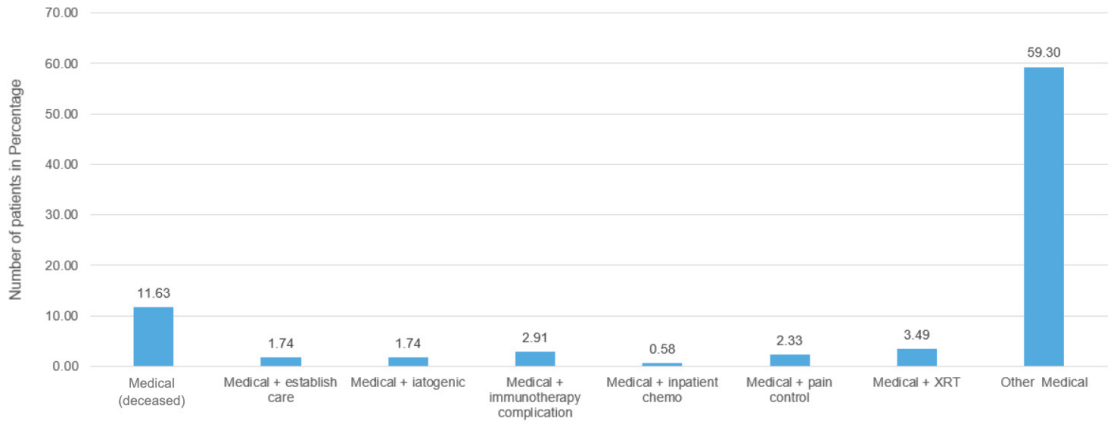

Chart 4: Subcategorization of Medical Reasons for Extended LOS.

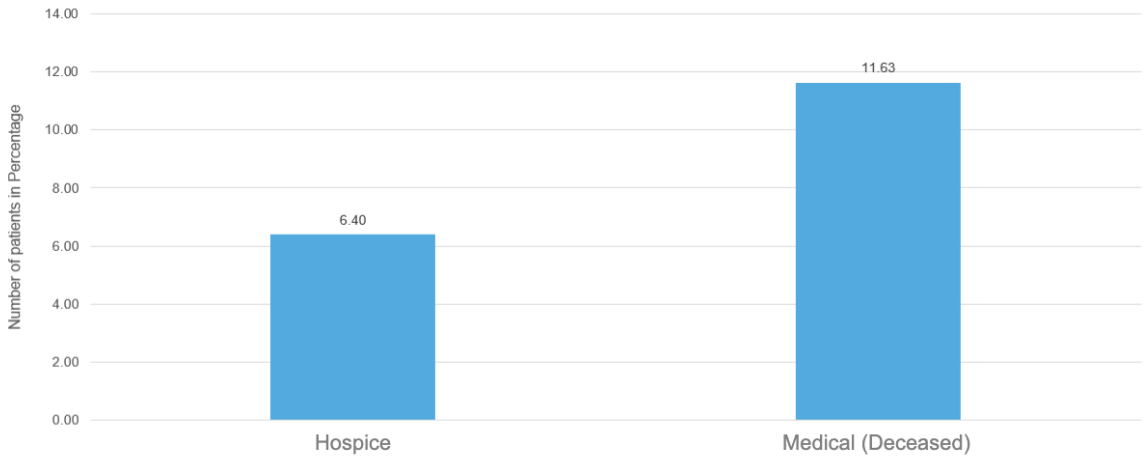

Chart 5: Admission for End of Life.

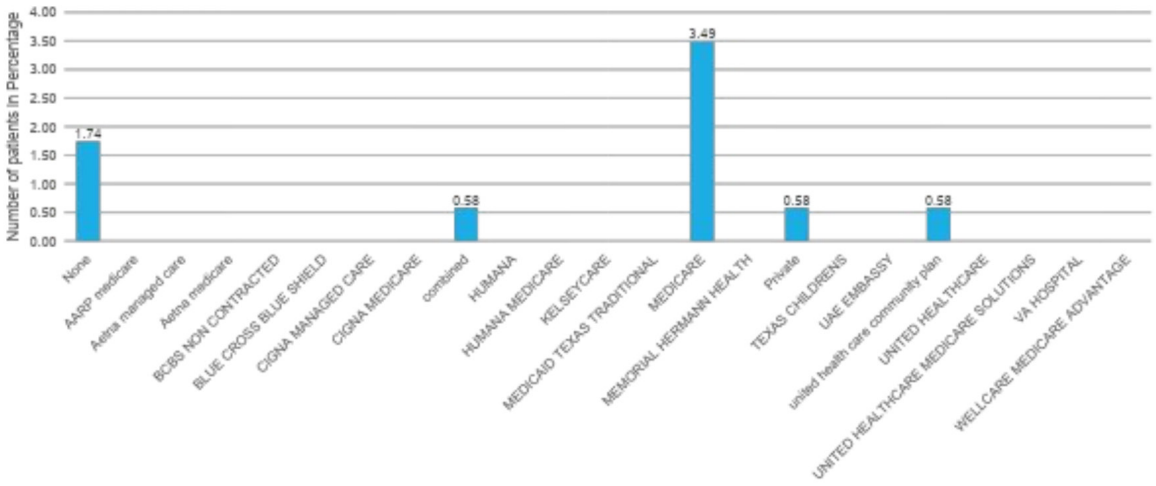

Chart 6: Types of Insurance in Patients having Placement Issues.

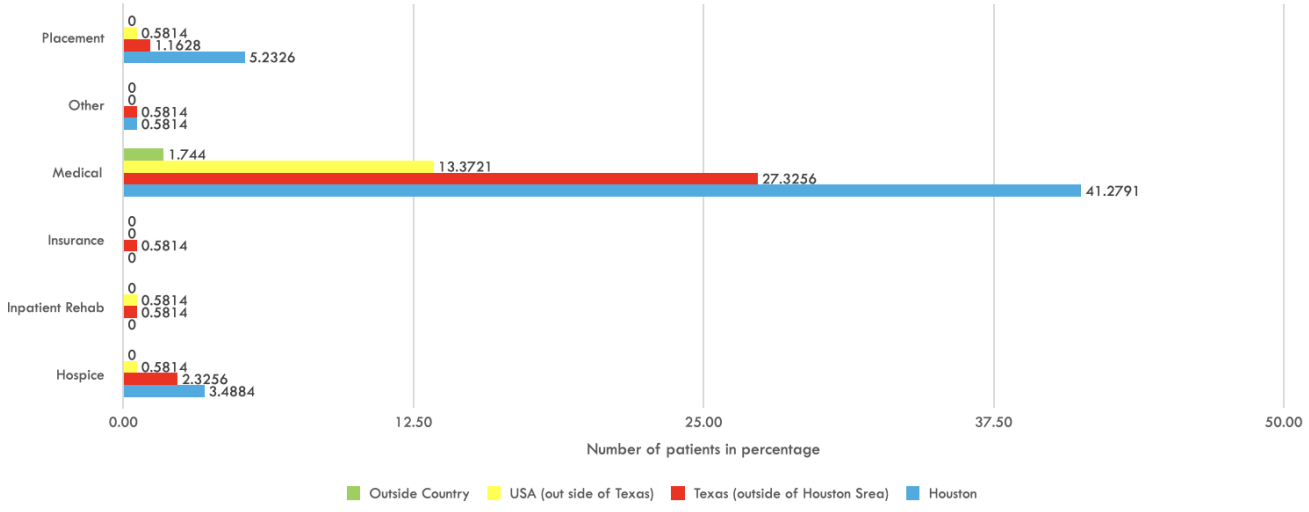

Chart 7: Reasons for extended LOS compared to Patient's Residence Location.

into pain, need for radiation therapy, inpatient chemotherapy, the establishment of care, immunotherapy adverse events, iatrogenic issues, and death. Additionally, the study aimed to determine whether the distance between home and hospital played any role in extended LOS. It also looked at if particular insurance types played any significant role in issues with the placement of patients. All patient data were de-identified prior to analysis.

Demographics of patients are described in chart 2. It showed male patients stayed longer in the hospital as compared to female patients in the studied patients. Caucasians made up a higher percentage of this patient population. A lower percentage of Hispanic patients had a prolonged hospital stay as compared to the general population of reported Hispanics in Texas. The mean age of this population is 63 years.

Reasons for an extended length of hospitalization are represented in percentages in chart 3. As shown in the Chart, around 84% of the patients had medical reasons to stay longer, while close to 7% and 6% of the patients had placement issues and hospice, respectively, as the primary reasons to stay longer in the hospital.

Inpatient rehab, insurance issues, or other a reason for a prolonged stay made up only about 3% of this patient population.

Patients who had extended LOS due to medical reasons were further subcategorized, as shown in chart 4. 60% of these patients had prolonged stays due to other medical reasons. Around 12% of these patients passed away during their hospitalization. Just under 4% of these patients were receiving inpatient radiation therapy. 3% of these patients had complications due to immunotherapy. 2% of these patients had issues with pain control. A small percentage of these patients had issues with establishing care, iatrogenic issues, or receiving inpatient chemotherapy.

Chart 5 shows that a large portion of the extended LOS patients has admission for end-of-life care. In 2019, around 12% of these patients ended up passing away during their hospitalization and around 6% of the extended LOS patients' care was transitioned to hospice care.

Extended LOS patients who were found to have issues with placement are further subcategorized in chart 6 based on the different types of insurance. This chart shows that nearly 50% of these patients who had issues with placement were enrolled with Medicare and about 25% had no insurance.

Lastly, the reasons for extended LOS were compared to the patient's residence located in chart 7. It showed a wide variety of distribution of patients' residences amongst different reasons for extended LOS.

Discussion

The reported data suggests that in 2019, most patients with an extended length of stay greater than 10 days were primarily due to medical reasons, and then followed by issues with placement and hospice, respectively. Issues with inpatient rehab, insurance, and other factors leading to the extended length of stay played a very small role. Additionally, data shows that about 18.03% of the patients reviewed had issues with end of life when hospice and deceased group data are summed up together. Furthermore, the majority of the patients who had placement issues also had Medicare or no insurance at all. Lastly, the location of residence did not appear to contribute significantly to an extended LOS.

This study has several limitations and cannot be generalized beyond the 2019 year. However, it outlines some of the variables that may be contributing to patients at UT MD Anderson having extended LOS. It also did not look at hospital-wide variables as described in chart 1, which also have a significant impact on patients having extended LOS.

Given the high percentage of patients in this cohort having admissions for end of life, we recommend having early and repeated goals of care discussion (GOC) with the patient. Early GOC discussions have been shown to help decrease extended LOS and can potentially improve the quality of life at the end of life [13,14]. Currently, at MD Anderson there are no standardized protocols for addressing the needs of patients getting admitted to establish care or having issues with immunotherapy-related adverse reactions. Establishing standardized protocols has been shown to reduce LOS especially in pulmonary and cancer-related illnesses [15,16]. Therefore, we recommend standardizing care for these patients by protocoling treatment of these issues. Furthermore, for some cancer patients, receiving inpatient radiation therapy is a crucial part of their overall cancer care. Palliative radiation oncology consultation has been shown to reduce hospital costs and reduce LOS [17]. For patients with a lack of pain control during their hospital stay at MD Anderson, we recommend a criteria-based approach to consult radiation oncology so that radiation treatments can potentially start early during a patient's hospital stay.

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