



# Utilization of oncologic emergency department observation units: benefits to patients, providers, and payers

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## Background

Emergency department observation units (EDOUs) have been shown to increase patient satisfaction, reduce the length of stay, and improve emergency department (ED) throughput efficiency and cost-effectiveness,<sup>1</sup> while providing high-quality, efficient care for patients with certain common complaints who may require short-term stays for further testing or treatment.<sup>2</sup>

Higher hospitalization rates are observed in patients with cancer after being evaluated in the ED when compared with the general population.<sup>3</sup> Moreover, patients with cancer who are admitted to the hospital through the ED tend to be more ill than those who are admitted through other avenues.<sup>4,5</sup> Given the increased rate of hospitalization and the wide-ranging outcomes in this population, it is important to better understand which of these patients can successfully be placed in a specialized observation unit.

The EDOU at our hospital is a designated medical unit in which adult patients with cancer can be placed when there is a medical necessity for ongoing short-term treatment, assessment, and reassessment before an ED provider decides to admit or discharge the patient. Our EDOU is considered a hybrid between a type 1 unit and a type 2 unit because limited protocols have been developed and most patients' care is directed by the EDOU providers.

In this study, we aimed to describe patients who were placed in a cancer center's EDOU to the clinical characteristics of patients who were placed in our EDOU, their diagnosis at time of admission to the EDOU, their length of EDOU stay, the percentage of these patients who were converted to full admission, their ED recidivism rates within 72 hours, and their 14- and 30-day mortality outcomes.

## Methods

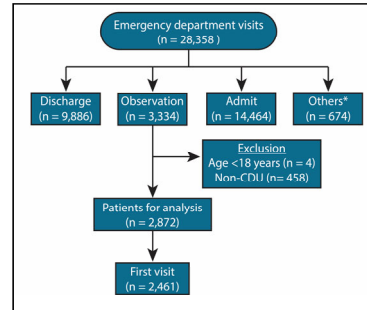
A retrospective observational study was performed and included all patients aged 18 years and older who were placed in the EDOU of our comprehensive cancer center between March 1, 2019, and February 29, 2020.

The patient's electronic medical records were queried for demographics, clinical variables, length of stay, disposition from the EDOU, ED return within 72 hours after discharge from the EDOU, and mortality outcomes at 14 and 30 days. Descriptive statistics were used to summarize the sociodemographic characteristics of the study population. Continuous variables were reported as medians and interquartile ranges or means and standard deviations, and categorical variables were analyzed as counts and percentages. Clinical characteristics and 14- and 30-day mortality rates were compared between discharged and admitted patients.

All statistical analyses were performed using R software (version 3.6.2, The R Foundation).<sup>18</sup> The institutional review board of MD Anderson approved this study and granted waivers of informed consent.

## Results

Of the 28,358 visits to our center's ED during the study period, 3,334 visits (11.8%) resulted in patients being placed under observation; 2,461 (85.7%) unique first visits were eligible for analysis once the exclusion criteria were applied (Fig 1). The majority (2,372 [96.4%]) of the included patients had at least one cancer type. The median patient age was 63 years, and the majority of patients (67.4%) were White and/or Caucasian. Breast, lung, and colorectal cancers were the most frequent cancer types observed (Table 1), and 89 patients (3.6%) had more than one cancer type.



**Fig. 1** Flowchart of patient selection and exclusion criteria.

\* Including expired and transferred patients and patients who left against medical advice. CDU, clinical decision unit; ED, emergency department.

**Table 1.** Demographics, Clinical Characteristics, and Presentation Among Patients Admitted to the Emergency Department Observation Unit

| Characteristics              | N (%)        |
|------------------------------|--------------|
| Total visits                 | 2,461        |
| Age, median (IQR), years     | 63 (53, 72)  |
| Sex                          |              |
| Female                       | 1,377 (56.0) |
| Male                         | 1,084 (44.0) |
| Race/ethnicity               |              |
| Non-Hispanic White/Caucasian | 1,659 (67.4) |
| Black/African American       | 381 (15.5)   |
| Hispanic/Latino              | 224 (9.1)    |
| Asian                        | 129 (5.2)    |
| Others                       | 68 (2.8)     |
| Primary cancer type          |              |
| Breast                       | 306 (12.4)   |
| Lung                         | 202 (8.2)    |
| Colorectal                   | 189 (7.7)    |
| Lymphoma                     | 166 (6.7)    |
| Head and neck                | 150 (6.1)    |
| Endometrial and cervical     | 124 (5.0)    |
| Sarcoma                      | 123 (5.0)    |
| Pancreas                     | 112 (4.6)    |
| Male genital                 | 108 (4.4)    |
| Gastroesophageal             | 98 (4.0)     |
| Kidney                       | 95 (3.9)     |
| Multiple myeloma             | 84 (3.4)     |
| Hepatobiliary                | 84 (3.4)     |
| Ovary and fallopian tube     | 74 (3.0)     |
| Urinary bladder and ureter   | 64 (2.6)     |
| Others                       | 390 (15.8)   |
| Non-cancer                   | 92 (3.7)     |

Pain due to neoplastic disease was reported as the main reason for observation in 25.8% of the visits (Table 2). Other frequent reasons were electrolyte and/or metabolic disturbance (20.7%), cardiac problems (9.4%), infection (9.2%), and GI symptoms (7.8%).

**Table 2.** Reason for observation for patients presenting to the Emergency Department Observation Unit

| Reason for observation            | N (%)      |
|-----------------------------------|------------|
| Pain due to neoplastic disease    | 596 (25.8) |
| Electrolyte/metabolic disturbance | 478 (20.7) |
| Cardiac                           | 216 (9.4)  |
| Infection                         | 212 (9.2)  |
| Gastrointestinal symptoms         | 181 (7.8)  |
| Anemia                            | 123 (5.3)  |
| Pulmonary                         | 113 (4.9)  |
| Bleeding                          | 94 (4.1)   |
| Supportive care                   | 80 (3.5)   |
| Neurologic                        | 71 (3.1)   |
| Procedure                         | 36 (1.6)   |
| Other                             | 52 (2.3)   |

The median length of stay was 23 hours, with an admission rate of 30.4%. The 14- and 30-day mortality rates were 0.7% and 3.0%, respectively. Forty-seven patients (1.9%) from the whole cohort (including 46 [2.7%] from the ones who got discharged) had returned to the ED within 72 hours of their initial visit (Table 2).

**Table 3.** Management and Outcomes of Patients Admitted to the Emergency Department Observation Unit

| Outcome                            | N (%)        |
|------------------------------------|--------------|
| Median length of stay (IQR), hours | 23 (17, 39)  |
| Disposition                        |              |
| Admission                          | 748 (30.4)   |
| Discharge                          | 1,713 (69.6) |
| Consultations requested            |              |
| No                                 | 1,528 (62.1) |
| Yes                                | 933 (37.9)   |
| ED revisit within 72 hours         |              |
| No                                 | 2,414 (98.1) |
| Yes                                | 47 (1.9)     |
| Death within 14 days               |              |
| No                                 | 2,443 (99.3) |
| Yes                                | 18 (0.7)     |
| Death within 30 days               |              |
| No                                 | 2,387 (97.0) |
| Yes                                | 74 (3.0)     |

Comparing the percentage of patients who returned to the ED within 72 hours of their visit after ED discharge without observation during the same study period with those discharged from observation, we found the former group had a significantly higher return rate (8.2% [812 of 9,886 patients] and 2.7% [46 of 1,713 patients], respectively,  $P < .001$ ).

## Conclusions

Our data suggest that placing patients with cancer in a type 2 observation unit is safe, as evidenced by our low ED return rates within 72 hours and low 14- and 30-day mortality rates, although a higher percentage of these patients were admitted than were patients in the general observation units. Even so, observation in cancer has the potential to avoid admissions and reserve inpatient hospital resources for patients who can receive the most benefit without compromising care, as it has been shown to do in noncancer populations. Further study is needed to elucidate predictive factors that may further maximize efficiency of observation status by reducing observation to admission rates.

## References

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