



SPECIAL CONTRIBUTION

Observation Medicine



State of the Art: Observation Units in the Emergency Department, an Interim Practice Update and Policy Review

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Abstract

Emergency department observation units (EDOUs) provide an essential model of care to address emergency department crowding, preventable hospital admissions, and rising health-care costs through protocol-driven, short-term management of patients requiring further evaluation or treatment. This interim update to the 2013 American College of Emergency Physicians Policy Resource and Education Paper reviews the current state of observation medicine, highlighting structural and staffing principles, professional billing models, and evolving applications across diverse clinical conditions, including geriatrics, toxicology, psychiatry, oncology, and chest pain. Recent developments in telehealth integration, pandemic surge response, and novel clinical pathways underscore the adaptability and high-value role of observation units within modern emergency care. By consolidating evidence-based practices and policy considerations, this paper emphasizes the continued importance of EDOUs in improving efficiency, outcomes, and cost-effectiveness while outlining key directions for future research and implementation.

1 CONCEPTS, PRINCIPLES, AND DEFINITIONS

Hospitals and emergency departments (EDs) continue to face the challenges of escalating health-care costs, resource

provisioning and utilization, minimizing avoidable admissions, and overcrowding. Hospitals use emergency department observation units (EDOUs) to address these issues. Research in this setting has increased in recent years, leading to a better

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TABLE 1. Scheduled procedure patients may share an EDOU to optimize resource utilization.

Adult scheduled procedure patients	Pediatric scheduled procedure patients
Blood transfusion	Sedation for procedure
Intravenous medication/fluids	pH probe
Myelogram	Infusion (eg, intravenous immunoglobulin and infliximab)
Arteriogram	Biopsy (eg, renal, liver, bowel, and eye)
Cardiac catheterization	Closed-circuit television EEG
Liver biopsy	Intrathecal baclofen trial
Thoracentesis	Orthopedic procedure
Paracentesis	Percutaneous endoscopic gastrostomy
Lumbar puncture	Sleep study
Intravenous chemotherapy	Postcardiac catheterization
Peripherally inserted central catheter	
Lung biopsy	
Renal biopsy	

understanding of the role of these units and their unique benefits.¹ The American College of Emergency Physicians (ACEP) last published its Policy and Policy Resource and Education Paper in 2012.² This paper updates key areas relevant to the current state of EDOUs.

Patients presenting to the ED are either discharged, admitted, or placed in observation to determine the need for discharge or admission when a definitive disposition is unclear. Inpatient admissions spanning less than 1 midnight generally do not qualify for reimbursement and are discouraged except for a few select scenarios.³ Observation medicine provides an evidence-based clinical model to efficiently manage patients in need of this short-term care.^{4–8} The defining feature of observation medicine is the active management of patients following the initial ED care to determine the need for inpatient admission or discharge. Observation medicine is best delivered in a dedicated, protocol-driven EDOU. EDOUs are assigned various names based on local preferences and specific patient populations served; however, their function is the same (Table 1).

2 STRUCTURAL, PROCESS, AND STAFFING ELEMENTS

ACEP's policy on EDOUs recommends specific criteria for patient selection, defined clinical endpoints for admission or discharge, identification of physicians, advanced practice providers, and nurses who will be responsible for the patient throughout the admission, criteria documentation and

physician communication, maximum length of stay (LOS), and guidelines that describe medical and nursing leadership roles, including monitoring of utilization and quality.⁹

Principles of managing an EDOU have previously been described (Table 2).¹⁰ Patients managed in an EDOU should have a well-defined reason for observation. Patients may be observed for additional diagnostic testing, continued management of an acute condition, or complex disposition planning. Patients selected for treatment should have at least an 80% probability of discharge, a relatively low severity of illness, and single to few acute clinical conditions and require a level of service appropriate for unit resources and staffing.¹¹ Although the LOS should be <2 midnights, EDOU care can often be completed sooner.^{12–14} Conditions exceeding these benchmarks should be scrutinized with respect to patient selection, management, or opportunity for inpatient admission.

Observation services should be delivered in a dedicated, protocol-driven EDOU rather than being co-located with patients in an inpatient ward or scattered in the ED. This model of care is defined as a type 1 EDOU and is the only EDOU delivery model proven to reduce LOS, reduce unnecessary testing, improve patient satisfaction, reduce costs, and optimize clinical outcomes for observation services.^{4–7,14–25} Geographical location proximate to the ED provides key efficiencies vs locating the EDOU in a geographically remote setting, such as an inpatient ward. These efficiencies result in shorter LOS, greater bed utilization, reduced ambulance diversion, and a marked reduction in the rate of patients who leave without being seen.^{26–28} These are the direct results of increasing ED capacity by decongesting the ED of long stays and availing of inpatient beds through avoided short-stay admissions, which both reduce ED boarding and provide the opportunity for higher acuity, more financially advantageous inpatient admissions.^{29,30}

The EDOU should have adequate space, staffing, equipment, and supplies appropriate for the managed conditions.⁹ Dedicated physician, nurse, and administrative leadership is essential for EDOU operational success.³¹ Leadership must liaise with key stakeholders, monitor utilization and quality, develop and implement clinical protocols, facilitate ongoing education, and oversee staff. A previous survey reported that units were staffed with an average of 4.2 patients per nurse, and 21.4% were staffed by physician assistants or nurse practitioners.¹² Additional support staff may be required based on the size and complexity of the unit. A future update to the literature with respect to unit structure and staffing is warranted as experience with EDOUs continues to evolve.

3 PROFESSIONAL BILLING AND PHYSICIAN GROUP STRUCTURE

Physician documentation of the care in the EDOU begins with documentation of the initial evaluation and management in the ED. This should include ED medical decision making and the intended care plan for the EDOU. An order for observation services is required for a hospital to bill for

TABLE 2. Principles of managing an ED observation unit.¹⁰

1. Focused patient care goals
2. Limited duration and intensity of services
3. Appropriate hospital location
4. Appropriate staffing
5. Providing ongoing care to an ED patient
6. Intensive review
7. Economical service

observation services. EDOU orders are required and should be protocol driven. Daily progress notes and a final discharge narrative should be completed describing the patient’s clinical course, final examination, diagnosis, and instructions for postdischarge care.²² These elements are required for optimal patient care and billing for observation services as described by Current Procedural Terminology (CPT). If physicians from the same group and specialty provide both emergency and observation services on the same date of service, then observation CPT codes are generally used for billing.²² Comparison of documentation requirements of the observation and emergency codes is listed in [Table 3](#).²²

Providing observation care in the EDOU increases the amount of work for emergency physicians relative to simply admitting or discharging the patient from the ED. The added work of observation services may be appropriately reimbursed by billing observation CPT codes and optimizing staffing ([Table 4](#)). Historically, physicians from the same specialty and the same group cannot bill for both emergency services and observation services on the same calendar date. For the first time, the 2023 CPT guidance has described a modifier (Modifier 25) that can be added to a professional evaluation and management charge to indicate separately billable services provided by the same group and specialty on the same date. However, whether major payors such as Medicare and commercial insurers will accept this new guidance and issue payments when this modifier is used remains unclear.³² As a result, most single provider groups choose to bill for observation instead of emergency services, capturing a higher level of relative value units (RVUs). Alternatively, if physicians from a different specialty service provide observation services, then both the emergency and the observation encounter on the same day can be billed separately. These 2 scenarios define “one-service” and “two-service” models, respectively.

In the single-service model, EDOU staffing costs exceed professional payments at all levels of patient encounters, making a hospital subsidy necessary to create a financially viable model for the professional group until a breakeven point is reached, which is directly related to unit size and/or patient volume.³³ Professional groups seeking to staff and bill for both emergency and observation services generally require larger EDOUs (ie, >20 patients per day) capable of generating adequate professional revenue to offset staffing costs. These

TABLE 3. ED observation unit monitors.

Utilization monitors

- Key data elements—patient identifier, reason for observation, date/time elements (ED arrival, EDOU arrival, and EDOU departure), disposition (admit/discharge).
- Utilization monitors—to be reviewed monthly and annually, for the unit as a whole and by specific condition:
 - o EDOU census—for unit and by condition
 - o Length of stay—average and outliers (LOS <6 h, LOS >24 h)
 - o Percent discharge
 - o Percent of ED census observed
 - o No. of patients/EDOU bed/d

Quality monitors

- Return visits within 7 or 14 d
- Concerns and complaints
- Patient satisfaction surveys
- Unit and protocol compliance audits
- ICU admissions
- Sentinel events, resuscitations, and deaths in the unit

ED, emergency department; EDOU, emergency department observation unit; ICU, intensive care unit; LOS, length of stay.

groups must also navigate regulatory hurdles required to establish a separate observation professional group with a unique tax identification number.

4 SELECTED CLINICAL CONDITIONS APPROPRIATE FOR OBSERVATION UNITS

Broad clinical applications of observation medicine have previously been described.^{2,14,34–36} Key interim developments of clinical applications for observation medicine are outlined below.

4.1 Telehealth

Telehealth allows for the initiation or expansion of EDOUs while limiting associated costs.^{37,38} Observation medicine can be delivered via telehealth through a variety of means, such as networking multiple hospital EDOUs to reach a critical mass to support a 2-service model (financial benefit) or by connecting smaller EDOUs to a larger EDOU to support observation services from a central, virtual staffing location (throughput benefit).²⁹ Telemedicine can thus consolidate observation care to a single physician or physician assistant and combine interhospital EDOUs.

The daily schedule for observation patients remains the same and utilizes 1 or more members of the health-care team via telehealth to round, reassess, and disposition patients.^{38–41} The efficacy of this delivery model of observation medicine is consistent with previous literature, supporting the use of telehealth in other patient care areas.^{42–45}

TABLE 4. Physician CPT payment codes for emergency and observation services.^a

Service	CPT	2025 total RVUs
Emergency level 1	99281	0.34
Emergency level 2	99282	1.25
Emergency level 3	99283	2.11
Emergency level 4	99284	3.60
Emergency level 5	99285	5.22
Observation discharge (<30 min)	99238	2.42
Observation discharge (>30 min)	99239	3.42
Observation level 1	99221	2.46
Observation level 2	99222	3.88
Observation level 3	99223	5.17
Same day observation/ discharge 1	99234	2.90
Same day observation/ discharge 2	99235	4.72
Same day observation/ discharge 3	99236	6.17

CPT, Current Procedural Terminology; RVU: relative value unit.

^a For observation patients staying ≥ 3 calendar days, the middle days of their visit are paid using the Subsequent Observation code set: CPT 99224 (total RVU .82), 99225 (total RVU 1.45), and 99226 (total RVU 2.17). These are similar to the subsequent inpatient care codes and consider the level of care and time spent.

4.2 Geriatric Patients

Observation medicine is a validated clinical model for older patients (ages ≥ 65 years) presenting to the ED, who comprise up to 30% of EDOU patients.^{46–48} EDOUs effectively perform evaluations for geriatric syndromes, such as delirium, fall risk, and identifying postacute-care needs. EDOUs provide an efficient setting for physical therapy evaluations, case manager assistance, and medication review. Many EDOU care plans include multidisciplinary geriatric consultations from geriatricians or geriatric-trained staff, which can reduce hospital admissions in this cohort by 15%.^{49,50} This provides an opportunity for cost savings to hospitals facing high admission rates through lower 30-day and 60-day Medicare expenditures.^{51,52}

Two British studies (502 patients) and 1 large US study (14,145 patients) describe the care of geriatric patients (>65 years old) in an adult EDOU.^{14,53} They report discharge rates of 71% to 74% among the elderly, which are slightly lower than those of younger patients. The odds of subsequent inpatient admission for the elderly, relative to younger patients, were highest for back pain (O.R. 2.1), urinary tract infection (O.R. 1.8), and chest pain (O.R. 1.7). EDOU LOS for elderly patients was slightly longer than that of younger

patients, 15.8 hours vs 14.4 hours. The rates of related return visits within 30 days were comparable between elderly and younger patients, 9.4% vs 7.6%.²³ Madsen et al reported that geriatric status was not an independent predictor of either hospitalization or cardiac intervention in patients admitted for chest pain in their EDOU.⁵⁴

There are unique benefits of shorter hospital stays for the elderly. Previous studies have shown the elderly to be more vulnerable to inpatient complications, with higher rates of adverse drug events, nosocomial infections, falls, use of restraints, pressure sores, delirium, and a decline in functional status.^{55–57} For some elderly, the decline begins within 1 day of inpatient admission.⁵⁸ Elderly EDOU patients will also likely require more resources due to greater health-care needs.

EDOUs provide ideal settings to manage older patients with fragility fractures and can safely reduce the need for admission by up to 50% while providing resources for pain control and physical therapy evaluations.⁵⁹ Clinical protocols can include fall risk assessment and risk mitigation, such as reconciling polypharmacy, addressing visual-acuity changes, and gait abnormalities.⁶⁰ Home safety evaluations and home health services can be implemented from the EDOU.⁶¹

4.3 Patients with Intentional Substance Ingestions

In 2004, the American Association of Poison Control Centers (AAPCC) reported 300,000 intentional drug/toxic substance ingestions. Nearly 200,000 of these were secondary to suicidal intent.⁶² Based on the current AAPCC data, most patients are either nontoxic or minimally toxic. Commonly used clinical toxicology and emergency medicine textbooks recommend observation for overdose patients.^{63,64} The Western Australian Toxicology Service has utilized EDOUs for the management of overdose patients.⁶⁵ Lateef et al reported the use of short-stay units (SSU) in Singapore for initial decontamination procedures for mild poisoning or overdoses. Antidote administration, monitoring of serum drug levels, and social and psychiatric management are also provided in the SSU.⁶⁶ A recent study has developed a risk stratification nomogram for acute acetaminophen toxicity, which can identify a low-risk patient population ideal for 20-hour N-acetylcysteine therapy.⁶⁷

Previously published guidelines provide a framework for managing patients with deliberate ingestions in EDOUs in the USA. The Mayo Clinic in Rochester developed and implemented an EDOU protocol for intentional drug ingestion in adults.⁶⁸ Inclusion criteria for placement in this EDOU protocol were asymptomatic adult patients (age ≥ 15 years) who presented after known or suspected potentially toxic deliberate ingestion. The exclusion criteria were patients with isolated alcohol intoxication, ingestion of sustained-release preparation, chronic drug intoxication, elevated drug levels requiring prolonged medical therapy, end-organ toxicity upon arrival, high risk for deterioration after antidepressant ingestion, and persistent self-injurious or violent behavior posing a

serious threat to the safety of the patient and nursing and ancillary staff.

4.4 Psychiatric Conditions

Managing psychiatric conditions in EDOUs plays a crucial role in emergency psychiatric care.^{69–71} Emergency psychiatrists typically oversee these units, but emergency physicians can also provide this oversight. Psychiatric observation allows time for diagnostic clarity, offers an alternative to admission, provides patients with respite, and addresses dependency needs.

Most psychiatric diagnoses, including substance use disorders, are eligible for observation, which has demonstrated improved psychiatric outcome measures, reduced restraint use, and elopement risk for patients placed in psychiatric observation, while reducing overall LOS and need for inpatient admission.^{71–75} Use of a dedicated psychiatric EDOU is preferred to combining medical and psychiatric patients in the same EDOU, which allows for cohorting patients and leveraging specialized staff dedicated to psychiatric care. If resources do not allow for a dedicated psychiatric EDOU, then appropriate safety and behavioral health adaptations should be incorporated into the EDOU to allow for safe care.

ACEP's CPT team has advocated for prolonged behavioral health stay in the CPT panel, supporting observation coding for psychiatric patients. This includes CPT codes 99221–99223 for the initial day, 99231–99233 for middle days, and 99238–39 for the discharge day.⁷⁶ The financial benefits of establishing psychiatric EDOUs may vary based on patient volumes and associated costs. Reducing ED psychiatric boarders and improving ED bed utilization can factor into a favorable financial margin.

4.5 Oncology Patients

Approximately 4.2 million ED visits annually (~4% of total ED visits) are by adult patients with cancer.⁷⁷ These visits result in disproportionately high admission rates (up to 60%) despite a quarter of admissions resulting in a LOS of ≤ 2 days.^{78,79}

Notably, the 5 most common ED diagnoses for this patient population are symptom related and amenable to EDOU care.^{78,80} Although there may be a perception that patients with cancer are inherently more complex and not well suited for EDOUs, studies from Comprehensive Cancer Centers' urgent cares have demonstrated the benefit and safety of cancer-specific observation protocols.^{79,81,82} The data suggests EDOU care is likely underutilized in patients with cancer, resulting in an opportunity to develop new clinical protocols and delivery models leveraging EDOUs that specifically target the needs of this growing ED population.^{79,83,84}

4.6 Chest Pain

Chest pain is the second most common reason for an adult ED visit, accounting for >6.5 million visits annually. It is also the symptom most associated with acute myocardial

infarction.^{26,85} Failure to diagnose and treat myocardial infarction remains a leading source of malpractice litigation for emergency physicians.⁸⁶ To avoid inadvertently discharging patients at risk of myocardial infarction, patients are often admitted for further diagnostic testing. To address disposition issues, available guidelines suggest a systematic approach to the chest pain patient with possible acute coronary syndrome.^{1,87–89}

Recent innovations have improved risk stratification, reducing both inappropriate discharges and avoidable admissions. This has led to a decline in the use of the EDOU for chest pain testing.⁹⁰ These innovations are summarized in the ACC/AHA Chest Pain Guidelines and feature a structured risk assessment or "clinical decision pathway".⁸⁸ Based on risk stratification, low-risk patients are generally discharged, and high-risk patients are often admitted, leaving intermediate-risk patients as ideal EDOU candidates for further observation and cardiac imaging. This approach has been found to safely decrease the number of patients kept for further testing by 12% to 28%.⁸⁸

Prospective randomized studies have shown that chest pain protocols are associated with lower cost, shorter LOS, and improved resource utilization relative to inpatient admission.^{91–94} Larger observational studies of the impact of an EDOU on the outcomes of all ED chest pain patients found a significant reduction in both cost and inpatient admission for the whole group, with a reduced rate of missed myocardial infarction.^{95,96} Studies have reported improved ED chest pain patient satisfaction and quality of life with care in an EDOU relative to inpatient care.^{92,96} Analyses of national databases have shown that this approach might improve national inpatient bed utilization and decrease national health-care costs.^{97,98} Based on these and other benefits, the ACC/AHA Chest Pain guidelines recommend, "For intermediate-risk patients with acute chest pain, management in an observation unit is reasonable to shorten the LOS and lower cost relative to an inpatient admission." This recommendation is ranked as having the highest level of evidence (level A).⁸⁸

4.7 Disaster Considerations

Pandemics stress limited ED resources through rapidly increased patient volumes combined with increased morbidity and mortality.^{99–104} The COVID-19 pandemic significantly stressed health-care systems with increased ED visits, high inpatient admission rates, decreased inpatient bed availability, ED crowding, and infrastructural demands created by infection prevention and control.^{105–110} As EDOUs have historically extended the safety net provided by the ED, EDOUs were one of many innovative care models utilized to address the pandemic-related patient surge.^{99,104,111,112} This is accomplished by repurposing existing EDOU resources, implementing a virtual EDOU to support a physical ED, or even creating an EDOU independent from an ED.^{111,113,114} EDOUs rapidly create capacity during surge scenarios using

space within the hospital or functioning through virtual systems.^{101–103,105,106,110,112,114–123}

The COVID-19 pandemic highlighted the importance of flexibility, interdisciplinary collaboration, and managing infrastructure challenges. The ability, experience, and protocols generated from repurposing an EDOU or expanding remote EDOU health services are invaluable to the approach to future pandemics.

5 FUTURE DIRECTIONS

The EDOU remains a critically important tool used by emergency physicians to care for acutely ill and injured patients. Utilization of EDOUs remains essential to achieve the beneficial clinical and economic outcomes associated with these units. This aspect of emergency medicine demonstrates an area of high value and merits additional research as the health-care system continues to be challenged to improve quality while decreasing cost.

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CONFLICT OF INTEREST

Christopher Caspers, Christopher W. Baugh, Mathew Wheatley, George B. Hughes, Michael A. Ross, and Lauren T. Southerland have a disclosure/conflict because they currently or have previously belonged to the ACEP Observation Medicine section. These are unpaid, uncompensated positions in a nonprofit group. Christopher Caspers, Christopher W. Baugh, and Michael A. Ross are committee members of the ACEP Observation Unit Accreditation Board of Governors. These are unpaid, uncompensated positions in a nonprofit group. Christopher W. Baugh is a paid speaker for Roche Diagnostics and has previously participated in Roche Diagnostics, Salix Pharmaceuticals, SERB Pharmaceuticals, Pfizer, Terumo, and AstraZeneca advisory boards, consults for Roche Diagnostics, Abbott Laboratories, Monaghan Medical, Terumo, SERB Pharmaceuticals, and AxumEdge Consulting, and is an advisor to Quai.MD, Vera Health, and Lucia Health Guidelines. Lauren Southerland's work on geriatric observation units was supported by NIH grant # K23AG061284. The other authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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