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Emergency Department Observation Units

More than a decade ago, the hospital I worked in was facing very serious problems with boarding. We were searching for novel ideas that would benefit both the emergency department (ED) and the hospital. About the same time, the hospital became concerned about the number of patients who were admitted as full inpatients but who failed to meet inpatient criteria; they were “denied.”

The solution we came up with was to open an observation unit. Initially we envisioned 12 beds, but that number grew to almost 30. We found that a fairly large number of patients who were going to the inpatient floor could be admitted to the observation unit and be discharged within 24 hours.

Miraculously, in the first few days of operation, our ambulance diversions (which were solidly based on the number of boarders we were housing in the ED) fell from 100 hours per month to 0.

Eventually we began admitting selected short-stay patients to this service as well. These were patients who we felt would stay less than 3 days and had relatively simple defined problems — congestive heart failure, pneumonia, etc.

While observation may be good for the ED, it is not always good for all patients. Some patients, albeit the minority, may have insurance that does not cover the stay. Elders may find that Medicare does not recognize observation care as counting toward the 3-day stay if they need long-term care placement. Hospitals may receive less reimbursement for observation patients who could have met inpatient criteria.

— Sandra Schneider, MD, FACEP, Editor

Introduction

Observation medicine is one of the newest and rapidly growing subspecialties in emergency medicine. Over the past few decades, ED visits have increased while the number of hospitals and availability of inpatient hospital beds have decreased. Hospitals and EDs are challenged with overcrowding, overutilization, escalating healthcare costs, and avoidable admissions. As a result, observation units (OUs) have grown in numbers.

Background

The Centers for Medicare & Medicaid Services (CMS) defines observation care as a specific, defined set of clinically appropriate services, which include ongoing assessment and reassessment and short-term treatment.¹ This additional period of time allows the clinician to decide whether patients require admission, discharge, or transfer.¹ While under observation care, the patient's bed may be located anywhere in the hospital. Observation services are considered to be outpatient services and must be initiated by an order from a physician or licensed practitioner.

EXECUTIVE SUMMARY

- Observation units (OUs) are found in many hospitals. They offer an option between traditional inpatient admission and discharge from the ED. The American College of Emergency Physicians recommends that emergency physicians staff and control OUs.
- Patients admitted to OUs should have straightforward diagnoses with a clear plan of treatment. Patients who will likely stay more than 24 hours are not appropriate for OUs.
- Patients with low-risk chest pain are often admitted to OUs. Typically, these patients have serial cardiac enzymes measured and repeated ECGs. In many units, patients will have a functional test, such as a stress test or a coronary CT, performed before discharge home.
- OU care is outpatient care and may not be covered by the individual's insurance. In addition, it does not count toward the 3-day stay required by Medicare for long-term care. Patients should be well aware that this is an outpatient service.

Observation units are clinical areas in the ED or hospital where patients are cohorted for observational care. OUs are assigned various names based on preferences or patient types. Such names include Clinical Decision Unit, Chest Pain Unit, ED Short Stay Unit, and ED Observation Unit. The period of time for observation is longer than an emergency visit, but shorter than an admission to the hospital.

Observation units have existed since at least the 1970s, following the development of EDs in the 1960s.^{2,3} These units allowed the emergency medicine physician to have a third option for patient disposition beyond the traditional inpatient admission and discharge. In the majority of cases, the decision whether to discharge or admit the patient can be made in less than 48 hours, and usually in less than 24 hours.^{1,4} In only rare and exceptional cases do reasonable and necessary outpatient observation services span more than 48 hours. The average length of stay (LOS) for admitted patients in the ED is hours, whereas the LOS for admitted inpatients is 5 days.⁵ According to the National Hospital Ambulatory Medical Care Survey from 2011, 20.7% of hospitals surveyed have an OU.⁵ Nationally, there were 2,884,000 patients admitted to OUs.⁵ Approximately two-thirds of these patients were discharged home from the OU, and one-third were admitted to the hospital.⁵

OUs have grown in number during the past few decades in response to a great need to take care of ED patients. Between 1997-2007 the number of annual ED visits was almost twice

the rate of the population growth.⁶ Additionally, the number of EDs in the United States has declined, the number of admitted patients who were boarding in the ED has increased, and the complexity of the ED evaluation has increased.⁷⁻⁹ One contributing factor to these complex ED evaluations is the rapid growth in the use of advanced imaging such as computed tomography (CT) scans, magnetic resonance imaging (MRI), and ultrasounds.¹⁰⁻¹² Another major factor is the increasing number of geriatric patients with complex medical problems.⁷ Between 2001-2009, geriatric patients accounted for 156 million ED visits in the United States, and contributed to a large portion of resource utilization.¹³

Types of OUs

OUs have been categorized into four distinct types.¹⁴⁻¹⁶ Ross et al described the four types of observation units as follows:¹⁴

Type I: Protocol-driven in a dedicated observation unit;

Type II: Discretionary care in a dedicated observation unit;

Type III: Protocol-driven in any bed in the hospital;

Type IV: Discretionary care in any bed in the hospital.

Type I observation units are discrete units usually located adjacent to or within an ED and often staffed by emergency physicians and/or advanced practice providers. They are generally referred to as “emergency department observation units” or “clinical decision units.” Type I units are usually “closed units.” Closed units allow admissions from only a specific set of physicians.

Patients can receive consults from other physicians — and the patient's primary care physician may round on the patient and offer suggestions, and charge a consultation fee — but only the specific physician group can admit.

Type II OUs are often referred to as “open units,” in which physicians from various disciplines manage the care of the patients.

Type III units have been called the “virtual observation unit,” in which different physicians, such as emergency physicians or hospitalists, are knowledgeable about observation protocols and manage the patients. However, the patient's bed may be located anywhere in the hospital or ED.

Type IV OUs have multiple providers who may care for the patients with variability in management. Patients receive similar care as if they were inpatients. The most common OU is Type IV. However, data support Type I as better for patient outcomes and LOS.¹⁴ (*See Table 1.*)

Table 1 summarizes the advantages and disadvantages of different types of OUs. In general, Type I OUs are the most efficient type of OU but may not be the best option for smaller hospitals. Type I OUs are the most expensive to implement upfront, but may result in long-term cost savings. Type IV OUs provide less effective care compared to the other OUs due to a wide variation in practice management and lack of staff training. In a retrospective study of observation services, Ross et al found that patients cared for in Type I OUs had a potential cost savings of \$950 million per year in addition to a 23-38% shorter LOS, and a 17-44% decreased

Table 1. Advantages and Disadvantages of Different Types of OUs

Type	Advantages	Disadvantages
Type I Protocol Driven/Dedicated OU	<ul style="list-style-type: none"> • Better for patient outcome and length of stay • Lower admission ratios than other OUs • Easier to train staff • Dedicated group of providers • Set of clinical guidelines • Time saving due to all patients in one location 	<ul style="list-style-type: none"> • Dedicated space requires extra cost • Smaller hospital with lower volumes — may not be cost effective
Type II Discretionary Care/Dedicated OU	<ul style="list-style-type: none"> • Open unit <ul style="list-style-type: none"> - Multiple providers may use • Allows for continuity of care for private physicians 	<ul style="list-style-type: none"> • Dedicated space requires extra cost • Difficult to expedite coordinated care <ul style="list-style-type: none"> - Due to various providers - Various clinical guidelines
Type III Protocol Driven/Scattered beds in hospital	<ul style="list-style-type: none"> • Lower cost upfront • Set clinical guidelines simplify care for private physicians 	<ul style="list-style-type: none"> • Requires extra training for staff • Providers may opt out of clinical guidelines • Difficult to identify which patients are on observation vs. inpatient
Type IV Discretionary Care/Scattered beds in hospital	<ul style="list-style-type: none"> • Lower cost upfront • Easier to initiate • May get buy-in from multiple providers 	<ul style="list-style-type: none"> • Multiple providers with variability in management • Observation patients often treated as if inpatients

probability of subsequent inpatient admission.¹⁴

Principles in Managing an Optimal Emergency Department OU

The principles of managing an OU should be followed to optimize utilization.¹⁷ These principles include an appropriate location within the hospital, an expected LOS of 6-24 hours, appropriate staffing, ongoing monitoring of quality metrics, and focused and defined patient care goals.^{17,18} Benchmarks for quality metrics for patients in the OU include median LOS of 15 hours and discharge rates between 70-80%.¹⁸

Staffing

The appropriate staffing and leadership is critical for an OU to operate successfully.¹⁹ As OUs have increased in number across the country, many OUs are steering toward a dedicated staff of providers and nurses. The unit should have adequate space, supplies, and equipment for the conditions being managed in the OU. Since these patients are still considered

outpatients, the patient rooms do not need to meet the standards of a licensed inpatient bed. A 2003 survey by Mace et al showed that observation units were staffed with an average of 4.2 patients per nurse, and that 21.4% used advanced practice providers (APP) to assist in patient care.²⁰ During nursing shortages, it may be appealing to reassign nurses from the OU to the ED to care for acute ED patients.¹⁶ Unfortunately, this practice results in the closing of OU beds and leads to observation patients occupying ED and inpatient beds. The overall result is hospital overcrowding.¹⁶ Depending on the size of the OU, a nurse manager may be beneficial to oversee the nursing care of the patients.¹⁶

APPs are often utilized in larger OUs.²¹ The benefits of using APPs in OUs are that they are not as costly as physicians, they can be dedicated to the unit, they can manage complex patients, and they are able to perform minor procedures such as incision and drainage, pelvic examinations, splinting, and laceration repairs. If there is a low census, the APP can perform other tasks such as patient callbacks, seeing patients in the main ED, or assisting

other colleagues with procedures. New staff should have prior experience of working in either an ED or inpatient setting.

Physician coverage of OUs can vary. The American College of Emergency Physicians has stated that observation units, regardless of type, represent “best practice.” They also suggest that observation units be staffed by, and under the supervision of, emergency physicians.²² Some OUs have dedicated physician coverage for the entire shift. Other OUs have a designated physician in the ED who is assigned to cover the OU, often in conjunction with an APP.¹⁸ In some centers, an ED physician may split his or her time between caring for patients in a fast track. In larger, more active units, the ED physician dedicates his or her entire shift to that unit.

Quality and Operational Variables

The ED has often been referred to as the “safety net” for the healthcare system in the United States.¹⁸ With the recent increase in OUs across the country, these units are serving as a safety net for ED patients by preventing

inappropriate discharges or admissions.¹⁸ Monitoring quality of care and appropriate utilization is an essential part of performance improvement for the OU. Some common metrics that are often tracked include the following:

1. Average daily volume;
2. Average LOS. In most units this varies between 12-18 hours. Rarely should a patient stay for more than 24-48 hours;
3. Occupancy rate;
4. Admission rate/discharge to home rate. Most units have an admit rate of 20-30%;
5. Return visits;
6. Sentinel events/adverse outcomes;
7. Patient complaints;
8. Patient satisfaction.

Patient Satisfaction

Patient satisfaction is an important outcome measure for OUs. The goal of OUs, especially protocol-driven units, is to develop quick diagnostic and treatment plans that will address patient needs and offset inpatient care costs while offering equal or better patient satisfaction for certain disease processes.^{23,24} These disease processes include chest pain, asthma, syncope, transient ischemic attack (TIA), atrial fibrillation, heart failure, abdominal pain, and more.^{18,25-28} Studies have shown that in certain instances, patient satisfaction may be higher in OUs compared to inpatient hospitalization for the same disease processes.^{23,24} In two studies by Rydman et al, patient satisfaction and quality of life were significantly higher in an OU when compared to inpatient hospitalization for patients with asthma and chest pain.^{23,24} Data from Press-Ganey surveys also reveal that OUs may improve overall patient satisfaction.²⁹

Documentation

Prior to placing a patient in the OU, ED physician documentation must include the initial evaluation and management that occurred in the ED, medical decision-making, and necessity for requiring observation. An “admit” order for observation services must be documented to obtain hospital and professional billing for observation services. Documentation and billing

vary depending on whether the ED and OU providers are part of the same tax ID group. If physicians from the same specialty group with the same tax ID are providing emergency and observation services on the same day, observation CPT (Current Procedural Terminology) codes should be used for billing.¹⁸ The OU documentation is discrete from the ED documentation, but should reflect that ED documentation was reviewed. Initial patient orders are required for all OU admissions, and may be protocol-driven for specific conditions. During the observation period, progress notes on the patient’s condition are written as needed. The discharge summary should include the clinical course, the final examination and diagnosis, the instructions for continuing care, and the patient’s condition on disposition.¹⁸

Finance, Billing, and Reimbursement for the OU

OUs can have great financial impact, not only on the ED, but on the hospital as well. OUs have the potential of converting non-reimbursable hospital admissions into profitable observation stays. A significant number of inpatient admissions are deemed inappropriate by payers, leading to denials and loss of hospital revenue.³⁰ Currently, payment denials are rare for observation evaluations as compared to short-stay hospital admissions. Patients being assigned to observation services need to be provided with an oral and written notification within 24 hours that they are not admitted to the hospital, but are under observation status. This observation status may affect the patient’s Medicare, Medicaid, and/or private insurance coverage for the current hospital services, including medications and ability to be discharged to a skilled nursing facility. Because of this, OUs need to have a clear sign that states patients are in an observation unit and not admitted to the hospital.

Understanding the nuances of documentation and billing in the OU is an important concept for observation providers. The two types of billing that occur with regard to an OU are physician billing and facility billing.

Physician billing and facility billing are outlined in Chapters 12 and 4 of the *Medicare Claims Processing Manual*, respectively.⁴

Physician Billing

The physician billing guidelines are outlined in the *Medicare Claims Processing Manual*.⁴ The specific guidelines are beyond the scope of this article. Some key concepts regarding billing for OUs include:

- There must be a physician order to place the patient in observation.
- The observation stay must span a minimum 8 hours (one calendar day). The time of observation starts at the time that observation services are initiated and a provider’s order for observation status has been placed.
- Care must be documented in the medical record with an order for observation, observation admission notes, progress notes, discharge notes and instructions, and admission to inpatient notes (if applicable).
- The medical record should include documentation that the physician stratified the patient’s risk and determined that the patient would benefit from observation care.
- Coding and billing varies depending on whether a patient has been in observation for 1 calendar day vs a stay spanning 2 calendar days.

Facility Billing

Facility billing is beyond the scope of this article and is covered in the *Medicare Claims Processing Manual*.⁴ In November 2015, CMS published its 2016 final rule for the Outpatient Prospective Payment System that included important changes to observation billing.³¹ Most importantly, the changes reflected new bundled payments for most facility charges that previously were paid separately. This new comprehensive ambulatory payment classification provides incentives to hospitals to minimize overutilization and decrease lengths of stay.³¹

Two-midnight Rule

In the fall of 2015, CMS finalized its changes regarding the two-midnight rule. For stays in which the physician expects the patient will need

Table 2. Types of Diagnoses/Conditions Managed in an OU

- Chest pain/acute coronary syndrome
- Acute congestive heart failure
- New atrial fibrillation
- Syncope
- Transient ischemic attack
- Benign positional vertigo
- Venous thromboembolism
 - Deep vein thrombosis
 - Pulmonary embolism
- Asymptomatic severely elevated blood pressure
- Asthma/chronic obstructive pulmonary disease
- Community-acquired pneumonia
- Pyelonephritis
- Nephrolithiasis
- Gastroenteritis
- Cellulitis
- Pharyngitis/tonsillitis
- Peritonsillar abscess
- Hyperglycemia/hypoglycemia
- Anemia requiring blood transfusion (not related to acute blood loss)
- Anaphylaxis
- Musculoskeletal pain
- Hyperemesis gravidarum
- Isolated minor traumatic intracranial hemorrhage
- Sickle cell vaso-occlusive crisis
- Refractory ascites requiring large volume paracentesis

less than 2 midnights of hospital care, inpatient admission may be allowed on a case-by-case basis determined by the judgment of the admitting physician.³² The documentation must support the admission and will be subject to review.

Quality Improvement Organizations now have the responsibility for rule enforcement, education, and initial admission review. For hospital stays expected to last 2 midnights or longer, CMS policy remains unchanged. During an observation stay, the patient is considered to be an outpatient. If the patient requires admission, the observation stay may not count toward the inpatient hospital stay that is needed to cover the two-midnight rule. The observation stay also may not count toward the 3-day inpatient hospital stay needed from Medicare to cover a skilled nursing facility stay. Such admissions are reviewed on a case-by-case basis.³²

Selected Conditions Appropriate for Observation and Their Clinical Care

Carefully chosen diagnoses with established clinical protocols are critical to the success of OUs. When creating a new observation unit, the team should focus on developing protocols for a few common diagnoses and expand the program as the staff improves its knowledge and experience. The OU can be utilized for patients who present with common diagnoses that often are admitted but tend to have a short hospital stay.³³ Observation services are not appropriate as a substitute for an inpatient admission, for medically stable patients who need diagnostic testing or procedures that are routinely provided in an outpatient setting, for patients awaiting nursing home placement, and for patient or family convenience.

Common adult OU admission

diagnoses include chest pain, congestive heart failure, syncope, electrolyte imbalances, TIA/rule out stroke, dehydration, and hyperemesis gravidarum.³⁴ Common pediatric observation diagnoses include gastroenteritis, asthma, and abdominal pain. (See Table 2.) A few of the more common diagnoses are outlined below.

Chest Pain

According to the 2011 National Hospital Ambulatory Medical Care Survey, chest pain is the second leading reason for ED visits.⁵ Patients with this chief complaint initially may appear stable, but may in fact have a life-threatening condition such as acute coronary syndrome (ACS), pulmonary embolism, or aortic dissection. Missing these diagnoses poses a mortality and major liability risk.^{34,35} Reasons for misdiagnosis of ACS include patient demographics such as age, race, and gender; misinterpretation of the electrocardiogram (ECG); and atypical presentations.³⁵⁻³⁷ An OU is an ideal location to standardize the evaluation of these apparently low-risk chest pain patients who potentially may have a life-threatening condition.

Chest pain protocols can provide a rapid, cost-effective mechanism for patient evaluation. These protocols can include cardiac biomarkers, cardiac monitoring, risk stratification, stress testing, and noninvasive cardiac imaging.^{38,39} Selecting low-risk chest pain patients can reduce the cost of care and can improve metrics such as LOS and discharge rates.^{40,41}

Patient Evaluation. The patient's history, physical exam, and initial ECG are important tools for early cardiac risk stratification. Some units use risk stratification scores such as the HEART score (History, ECG, Age, Risk factors, and Troponin) or TIMI score (Thrombolysis In Myocardial Infarction). If the initial ECG reveals ST elevations, or if the patient is at high risk based on other ECG findings, hemodynamic instability, or concerning past medical history such as coronary stents or coronary artery bypass graft, these patients would benefit from hospital admission. Patients in whom there is no objective evidence of acute coronary syndrome on ECG or absence

Table 3. Patients Not Appropriate for an Observation Unit

- New inability to ambulate
- Altered mental status
- New neurologic findings (persistent)
- Patients receiving inpatient-type procedures, such as renal or liver biopsy
- Post-operative recovery
- Patients who meet inpatient criteria

of significant findings on physical examination are the low-intermediate risk group who would benefit from an OU stay. Serial ECGs should be performed in patients with continuous symptoms or in patients whose ECG reveals changes suggestive of ischemia. In addition to the ECG, serial cardiac biomarkers can assist in the evaluation. The timing of testing may depend on the type of biomarker, the hospital guidelines, and the latest evidence-based medicine.⁴²⁻⁴⁵ The cardiac troponin biomarkers are considered the gold standard for diagnosing myocardial infarction because of superior sensitivity and specificity.⁴⁶ Recently, studies have suggested that timing of troponin biomarkers as short as 1-3 hours could be used to rule out patients for acute MI, though traditionally troponin rise might take 6-8 hours.⁴⁴ Additional diagnostic testing that can be performed to risk stratify and diagnose patients includes chest X-ray, echocardiography, cardiac stress testing, CT coronary angiography (CTCA), and cardiac MRI. Depending on individual OUs and the outpatient and hospital resources available, some testing can be performed as an outpatient.⁴⁷

Transient Ischemic Attack (TIA)

TIAs may precede strokes, often within 48 hours of presentation. Up to 30% of patients who have a stroke had a TIA.^{48,49} Therefore, OUs are ideal settings to perform rapid diagnostic evaluation, monitor neurologic status, and initiate preventive treatment. According to the 2011 National Hospital Ambulatory Medical Care Survey, cerebrovascular disease is the fifth leading principal discharge diagnosis

for emergency department visits.⁵ According to the American Heart Association, a person in the United States has a stroke every 40 seconds.⁵⁰

Similar to the evaluation of the chest pain patient, the OU can function to improve LOS and decrease the cost for patients who present with a TIA when compared to inpatient admission.^{28,51}

Patient Evaluation. The patient's history, physical exam, and risk factors are important tools for early risk stratification. Initial diagnostic evaluation in the ED includes laboratory studies, ECG, and non-contrast brain CT scan. The ECG is important to evaluate for arrhythmias such as atrial fibrillation, which may lead to emboli. A patient in the OU may then undergo MRI, vascular studies, and cardiac studies such as echocardiogram. These studies may assist in determining the etiology of the TIA in order to initiate specific therapy, including antiplatelet therapy, anticoagulation therapy, and anti-lipid therapy. The initiation of statins to lower cholesterol for patients with TIA has been shown to be effective for stroke prevention.⁵²⁻⁵⁵ The American Heart Association states that the risk of stroke is reduced by 30% when treatment for hyperlipidemia is initiated.⁵⁰ Patients may receive consultation from neurology while being monitored. These patients should be screened for high-risk illnesses and behaviors such as diabetes, hyperlipidemia, hypertension, and cigarette smoking.⁵⁶ The OU is an ideal setting to initiate patient education on lifestyle changes.⁵⁶

In general, patients with ongoing neurologic symptoms are not candidates for the OU. These patients meet criteria for inpatient care, and often require extensive nursing care and consultation.

Although there are exceptions, most patients with new fixed neurologic findings have had a stroke or other insult and benefit from care on a stroke unit.

Geriatrics and OUs

Geriatric patients represent an increasing population that presents to the ED. Out of 136 million ED visits per year, more than 20 million are patients who are age 65 years and older.⁵ Elderly patients who present to the ED often use more resources because they typically have complicated medical histories, are on multiple medications, and require more social services.⁵⁷ They are more likely to have depression, falls, and functional and cognitive impairment.^{58,59} Cognitive impairment, such as dementia and delirium, accounts for up to 40% of geriatric patients.⁵⁹⁻⁶¹ These age-associated problems are often unappreciated by emergency physicians due to time constraints and lack of education.⁶² The ED is often an infeasible place to perform such assessments because of the need to rapidly assess and treat patients.

An OU can be an appropriate setting to perform a more comprehensive geriatric screening assessment. In one study by Foo et al, performing the geriatric screening identified serious unmet needs in more than 10% of patients in their study group.⁶³ The inability to identify their needs puts them at greater risk for premature discharge, adverse events, and readmission.⁶³ Geriatric assessments focus on investigating the patient's medical, functional, and social status and can include fall risk, mobility and ability to perform activities of daily living, visual acuity, hearing assessment, and nutritional and swallowing evaluation.⁶³

Geriatric patients often are admitted to the hospital when the diagnosis is unclear or further monitoring is needed, but they can be more vulnerable to complications from hospitalization such as nosocomial infections, decubitus ulcers, deep vein thrombosis, functional decline, and other adverse outcomes.^{18,64,65} OUs can be utilized to monitor and further evaluate the geriatric patient who presents with unclear presentations.^{63,66,67} In one study by Ross et al, the most common diagnoses

in elderly patients placed in an OU were chest pain (24%), dehydration (11.7%), syncope (6.5%), back pain (4.6%), and chronic obstructive pulmonary disease (3.8%).⁶⁷ Compared to younger patients, the LOS and admission rate for these geriatric patients was higher.⁶⁷

OUs that provide this level of care for elders often have extensive resources, especially social work and care management. In addition, an emergency pharmacist can be of great help in this setting, as many of these patients are on multiple medications.

Conditions in older adults to consider for exclusion to the OU include: likely need for placement in a skilled nursing or rehabilitation facility, failure to thrive, exacerbation of chronic problems, inability to ambulate, altered mental status, and a projected LOS of greater than 24 hours.⁶⁶ CMS requires a 3-day hospital stay prior to placement.⁶⁸ For Medicare beneficiaries, copayments are significantly higher for outpatient services, and placing geriatric patients in the OU may cause financial hardship.^{68,69}

Pediatric OUs

The number of pediatric OUs in the nation is not reported on a national basis, but the literature and healthcare reform supports their increased utilization.⁷⁰ Limited data show that pediatric OUs exist in almost 39% of free-standing children's hospitals, 39% of hospitals with separate pediatric wards, and approximately 4% of hospitals without pediatric wards.⁷¹⁻⁷³

Pediatric OUs are emerging as an alternative site of care for children with selected diagnoses. Previous data have shown that pediatric patients often are hospitalized for brief durations.⁷⁴⁻⁷⁶ Nearly one-third of pediatric admissions are hospitalized for 1 night or less.^{76,77} ED visits for patients younger than 15 years account for close to 25 million visits per year, and for patients between 15-24 years, account for more than 22 million visits per year.⁵ For these reasons, pediatric OUs are an ideal setting for monitoring serial physical examinations, awaiting consultations, and administering short courses of treatment.⁷⁸

The most frequent pediatric OU

diagnoses include abdominal pain, allergic reactions, asthma, bronchiolitis, croup, dehydration, gastroenteritis, minor trauma such as head trauma, and toxic ingestions.^{70,79} Children with painful vaso-occlusive sickle cell crisis may be admitted to the OU.

Macy et al attempted to summarize the literature on standard outcome measures for pediatric OUs.⁷⁹ The study found that the metrics for pediatric OUs are not clearly defined and are variable in the current literature.⁷⁹ These metrics included LOS, admission rates, return visit rates, and costs.⁷⁹ Prior data show that less than 25% of pediatric OU patients are converted to inpatient status.^{79,80} The admission rate may vary depending upon the diagnosis. Admission rates reportedly range from as low as 5% for croup and head injury, to approximately 50% for respiratory diseases such as asthma, pneumonia, and bronchiolitis.^{2,70,75,79,81-83} Although the return visit rate is inconsistently defined, the rates range from 0.01% to 5%, with return time frames ranging from 48 hours to 1 month.⁸⁴⁻⁹²

Patient Education in the OU

The OU presents a golden opportunity to educate patients on their disease processes and on preventive medicine. Patients who can especially benefit include vulnerable patient populations such as the elderly, patients with poor access to healthcare and limited health literacy, and those with multiple risk factors for disease.^{56,60} In a pilot demonstration project by Silverman et al, the OU was utilized to identify patients with previously undiagnosed dysglycemia using a HbA1C, initiate treatment and referrals, and educate patients about their disease.⁵⁶ As an extension of this project, diabetes champions were also identified and trained to become diabetes educators.

Limited literature exists regarding utilization of the OU to educate patients. There is opportunity to expand education for diseases and high-risk behaviors that pose significant morbidity and mortality. Some of these areas include education on smoking cessation, alcohol dependence, and chronic diseases such as diabetes, hypertension,

heart disease, and stroke.^{56,93-95} Such educational interventions can lead not only to improved knowledge, but also to increased satisfaction with their care.⁹⁶

Conclusions

OUs play a critical role in the care of selected patients presenting to the emergency department. The most efficient OU is a Type 1 unit located in the ED. OUs have many benefits, including improvement of patient care, management of hospital and ED overcrowding, increased patient satisfaction, decreased LOS, and cost effectiveness.²⁰ Observation medicine has become a specialized area of emergency medicine. As OUs expand, observation medicine should become a required part of the emergency medicine curriculum. The training for observation medicine is currently variable, although some data suggest that trainees view education in this area as a positive experience.^{34,97}

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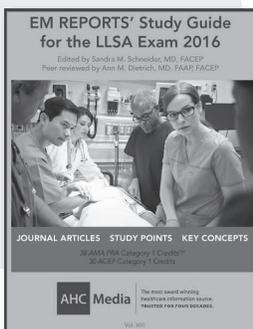
CME/CE Objectives

Upon completion of this educational activity, participants should be able to:

- recognize specific conditions in patients presenting to the emergency department;
- apply state-of-the-art diagnostic and therapeutic techniques to patients with the particular medical problems discussed in the publication;
- discuss the differential diagnosis of the particular medical problems discussed in the publication;
- explain both the likely and rare complications that may be associated with the particular medical problems discussed in the publication.

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- And more!

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- E. sentinel events/adverse outcomes.
4. Common adult observation unit admission diagnoses or conditions include all of the following *except*:
- A. chest pain.
B. transient ischemia attack/rule out stroke.
C. syncope.
D. patients awaiting nursing home placement.
E. asthma.
5. Common pediatric observation unit admission diagnoses or conditions include all of the following *except*:
- A. appendicitis.
B. bronchiolitis.
C. croup.
D. gastroenteritis.
E. minor trauma such as head trauma.
6. An elderly patient presents with new onset confusion and severe back pain. She was found on the floor after a fall in her home. She cannot walk. X-rays were negative. Is this patient appropriate for the OU?
- A. No, because elderly patients should not be admitted to the OU.
B. No, because she is unlikely to be discharged within 24 hours.
C. Yes, because she can be more easily placed in long-term care.
D. Yes, because her stay in the OU will count toward Medicare's 3-day stay rule for long-term care payment.
7. A 40-year-old otherwise healthy male presents with substernal chest tightness lasting 15 minutes while playing tennis. Which of the following should *not* take place in the OU?
- A. Repeated troponin testing
B. Repeated ECGs
C. Stress test
D. Cardiac catheterization
8. A private physician requests OU admission for a patient to have a renal biopsy. Is this an appropriate patient for an OU?
- A. Yes
B. No

CME/CE Questions

1. According to the article, which type of observation unit is considered the most efficient?
- A. All units are the same.
B. Type I: Protocol driven/dedicated observation unit
C. Type II: Discretionary care/dedicated observation unit
D. Type III: Protocol driven/scattered beds in hospital
E. Type IV: Discretionary care/scattered beds in hospital
2. The advantages of a Type I, protocol driven/dedicated observation unit, are all of the following *except*:
- A. time-saving due to all patients in one location.
B. better for patient outcome and length of stay.
C. dedicated group of providers
D. lower admission ratios than other OUs.
E. Lower cost upfront.
3. According to the article, common quality metrics that are tracked in the observation units include all of the following *except*:
- A. average daily volume.
B. average LOS.
C. staffing sick calls.
D. admission rate/discharge to home rate.

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Emergency Department Observation Units

Advantages and Disadvantages of Different Types of OUs

Type	Advantages	Disadvantages
Type I Protocol Driven/Dedicated OU	<ul style="list-style-type: none"> • Better for patient outcome and length of stay • Lower admission ratios than other OUs • Easier to train staff • Dedicated group of providers • Set of clinical guidelines • Time saving due to all patients in one location 	<ul style="list-style-type: none"> • Dedicated space requires extra cost • Smaller hospital with lower volumes — may not be cost effective
Type II Discretionary Care/Dedicated OU	<ul style="list-style-type: none"> • Open unit <ul style="list-style-type: none"> - Multiple providers may use • Allows for continuity of care for private physicians 	<ul style="list-style-type: none"> • Dedicated space requires extra cost • Difficult to expedite coordinated care <ul style="list-style-type: none"> - Due to various providers - Various clinical guidelines
Type III Protocol Driven/Scattered beds in hospital	<ul style="list-style-type: none"> • Lower cost upfront • Set clinical guidelines simplify care for private physicians 	<ul style="list-style-type: none"> • Requires extra training for staff • Providers may opt out of clinical guidelines • Difficult to identify which patients are on observation vs. inpatient
Type IV Discretionary Care/Scattered beds in hospital	<ul style="list-style-type: none"> • Lower cost upfront • Easier to initiate • May get buy-in from multiple providers 	<ul style="list-style-type: none"> • Multiple providers with variability in management • Observation patients often treated as if inpatients

Types of Diagnoses/Conditions Managed in an OU

- Chest pain/acute coronary syndrome
- Acute congestive heart failure
- New atrial fibrillation
- Syncope
- Transient ischemic attack
- Benign positional vertigo
- Venous thromboembolism
 - Deep vein thrombosis
 - Pulmonary embolism
- Asymptomatic severely elevated blood pressure
- Asthma/chronic obstructive pulmonary disease
- Community-acquired pneumonia
- Pyelonephritis
- Nephrolithiasis
- Gastroenteritis
- Cellulitis
- Pharyngitis/tonsillitis
- Peritonsillar abscess
- Hyperglycemia/hypoglycemia
- Anemia requiring blood transfusion (not related to acute blood loss)
- Anaphylaxis
- Musculoskeletal pain
- Hyperemesis gravidarum
- Isolated minor traumatic intracranial hemorrhage
- Sickle cell vaso-occlusive crisis
- Refractory ascites requiring large volume paracentesis

Patients Not Appropriate for an Observation Unit

- New inability to ambulate
- Altered mental status
- New neurologic findings (persistent)
- Patients receiving inpatient-type procedures, such as renal or liver biopsy
- Post-operative recovery
- Patients who meet inpatient criteria

Supplement to *Emergency Medicine Reports*, April 15, 2016: "Emergency Department Observation Units." Authors: Annabella V. Salvador-Kelly, MD, FACEP, Associate Medical Director, Long Island Jewish Medical Center; Attending Physician, Department of Emergency Medicine, Long Island Jewish Medical Center, New Hyde Park, NY; Assistant Professor, Emergency Medicine, Hofstra Northwell School of Medicine; and Nancy S. Kwon, MD, MPA, Associate Chair, Department of Emergency Medicine, Long Island Jewish Medical Center, New Hyde Park, NY; Director of Performance Improvement, Department of Emergency Medicine, Long Island Jewish Medical Center, New Hyde Park, NY; Associate Professor, Emergency Medicine, Hofstra Northwell School of Medicine.

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Emergency Medicine Reports

2016 Reader Survey

In an effort to learn more about the professionals who read *Emergency Medicine Reports*, we are conducting this reader survey. The results will be used to enhance the content and format of *EMR*. Instructions: Fill in the appropriate answers. Please write in answers to the open-ended questions in the space provided. Either fax the completed questionnaire to 678-974-5419, return it in the enclosed postage-paid envelope, or complete it online <https://www.surveymonkey.com/r/EMRReader2016>. The deadline is July 1, 2016.

1. Are the articles in *Emergency Medicine Reports* written about issues of importance and concern to you?

- A. Always
- B. Most of the time
- C. Some of the time
- D. Rarely
- E. Never

2. How would you rate your overall satisfaction with your job?

- A. Very satisfied
- B. Somewhat satisfied
- C. Somewhat dissatisfied
- D. Very dissatisfied

Questions 3-9 ask about topics you might like to see covered in *Emergency Medicine Reports*. Please mark your interest in the topics in the following manner:

A. very interested B. fairly interested C. not interested

- | | | | |
|-----------------------|-------------------------|-------------------------|-------------------------|
| 3. Neurology | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 4. Infectious disease | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 5. Orthopedics | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 6. Cardiology | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 7. Toxicology | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 8. Imaging | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |
| 9. Geriatric patients | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C |

Please rate your level of satisfaction with the following items.

A. excellent B. good C. fair D. poor

- | | | | | |
|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 10. Quality of newsletter | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 11. Article selections | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 12. Timeliness | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 13. Quality of Trauma Reports | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 14. Length of newsletter | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 15. Overall value | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |
| 16. Customer service | <input type="radio"/> A | <input type="radio"/> B | <input type="radio"/> C | <input type="radio"/> D |

17. What is your title?

- A. Practicing emergency medicine physician
- B. Physician assistant
- C. Professor/academician
- D. Emergency medicine manager/director
- E. Resident

18. What state is your hospital in? _____

19. On average, how much time do you spend reading each issue of *EMR*?

- A. fewer than 30 minutes
- B. 30-59 minutes
- C. 1-2 hours
- D. more than 2 hours

20. On average, how many people read your copy of *EMR*?

- A. 1-3
- B. 4-6
- C. 7-9
- D. 10-15
- E. 16 or more

21. How large is your hospital?

- A. fewer than 100 beds
- B. 100-200 beds
- C. 201-300 beds
- D. 301-500 beds
- E. more than 2,000

22. How would you describe your satisfaction with your subscription to *EMR*?

- A. Very satisfied
- B. Somewhat satisfied
- C. Somewhat dissatisfied
- D. Very dissatisfied

23. Do you plan to renew your subscription to *EMR*? A. yes B. no

If not, why? _____

24. To which other publications or information sources about emergency medicine do you subscribe?

25. Which publication or information source do you find most useful, and why?

26. Please list the top three challenges you face in your job today. _____

27. What do you like most about *Emergency Medicine Reports*? _____

28. What do you like least about *Emergency Medicine Reports*? _____

29. What specific topics would you like to see addressed in *Emergency Medicine Reports*? _____

30. Has reading *Emergency Medicine Reports* changed your clinical practice? If yes, how? _____

Contact information _____
