Acute coronary syndrome (ACS) encompasses a spectrum of ischemic heart disease that may include unstable angina (UA), non–ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI). Coronary artery disease (CAD) is the leading cause of mortality in the United States and accounts for 1 in 6 deaths annually. Each year, approximately 635,000 Americans have ACS and 300,000 have a recurrent event. Of persons who experience a coronary event or myocardial infarction, approximately 34% and 15%, respectively, will die. More than 45% of patients with symptoms of acute myocardial infarction arrive at the hospital 4 or more hours after symptom onset, and the mortality rate increases for every 30 minutes that elapse before a patient with ACS is diagnosed and treated. A shorter time to intervention leads to improved outcomes. If the acute stage of a myocardial infarction is survived, patients have a risk of illness and mortality that is 1.5 to 15 times higher than that of the general population. Annually in the United States, the number of hospital discharges with a primary or secondary diagnosis of ACS approaches 1.2 million. Hospitalists diagnose, risk stratify, and initiate early management of patients with ACS. Hospitalists provide leadership for multidisciplinary teams that optimize the quality of inpatient care, maximize opportunities for patient education, and efficiently use resources. In addition, hospitalists initiate secondary preventive measures and facilitate adherence to outpatient medical regimens.

**KNOWLEDGE**

**Hospitalists should be able to:**
- Define and differentiate UA, NSTEMI, and STEMI.
- Describe the pathophysiologic processes and variable clinical presentations of patients with ACS.
- Distinguish ACS from other cardiac and noncardiac conditions that may mimic this disease process.
- Describe the use of cardiac biomarkers in the diagnosis of ACS, including timing of testing and the effects of renal disease and other conditions (such as pulmonary embolism or sepsis) on cardiac biomarker levels.
- Describe the role of noninvasive cardiac tests in the diagnosis and management of ACS.
- Explain indications for and risks associated with cardiac catheterization.
- Recognize indications for early specialty consultation, which may include cardiology and cardiothoracic surgery.
- List the major and minor risk factors predisposing patients to CAD.
- Explain the value and use of validated risk stratification tools.
- Explain indications for hospitalization of patients with chest pain.
- Explain indications and contraindications for fibrinolytic therapy.

**SKILLS**

**Hospitalists should be able to:**
- Elicit a thorough and relevant medical history with emphasis on presenting symptoms and patient risk factors for CAD.
- Perform a physical examination with emphasis on the cardiovascular and pulmonary systems and recognize clinical signs of ACS and disease severity.
- Diagnose ACS through interpretation of expedited testing, including history, physical examination, electrocardiogram, chest radiograph, and biomarkers.
- Perform early risk stratification using validated risk stratification tools.
- Synthesize results of history, physical examination, electrocardiography, laboratory and imaging studies, and risk stratification tools to determine therapeutic options, formulate an evidence-based treatment plan, and determine level of care required.
- Identify patients who may benefit from fibrinolytic therapy and/or early revascularization in a timely manner, and activate appropriate teams accordingly.
- Treat patients’ symptoms of chest pain, anxiety, and other discomfort associated with ACS.
- Initiate immediate indicated therapies when patients display symptoms and signs of decompensation.
- Anticipate and address factors that may complicate ACS or its management, which may include inadequate response to therapies, hemodynamic and cardiopulmonary compromise, life-threatening cardiac arrhythmias, or bleeding.
- Assess patients with suspected ACS in a timely manner, identify the level of care required, and manage or combine the patient with the primary requesting service.
- Communicate with patients and families to explain the history and prognosis of their cardiac disease.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the...
use and potential adverse effects of pharmacologic agents.
• Facilitate discharge planning early during hospitalization.
• Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transition of care.
• Initiate secondary preventive measures before discharge, which may include smoking cessation, dietary modification, and evidence-based medical therapies.
• Communicate to outpatient providers the notable events of the hospitalization and postdischarge needs including outpatient cardiac rehabilitation.
• Provide and coordinate resources to ensure safe transition from the hospital to arranged follow-up care.

ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach, which may include nursing, nutrition, rehabilitation, and social services, in the care of patients with ACS that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations, protocols, and risk-stratification tools for the treatment of ACS.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in efforts to develop protocols to rapidly identify patients with ACS and minimize time to intervention.
• Lead, coordinate, and/or participate in efforts among institutions to develop protocols for the rapid identification and transfer of patients with ACS to appropriate facilities.
• Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations (eg, The Joint Commission, American Heart Association, American College of Cardiology, Agency for Healthcare Research and Quality).
• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize resource use, which may include order sets for ACS and chest pain.
• Lead, coordinate, and/or participate in efforts to educate staff on the importance of smoking cessation counseling and other preventive measures.
• Integrate outcomes research, institution-specific laboratory policies, and hospital formulary to create indicated and cost-effective diagnostic and management strategies for patients with ACS.

References
1.2 ACUTE KIDNEY INJURY

Acute kidney injury (AKI), also known as acute renal failure (ARF), is a decline in renal function over a period of hours or days that results in the accumulation of nitrogenous waste products and an impaired ability to maintain fluid/electrolyte/acid-base homeostasis. Epidemiologic studies of AKI are confounded by inconsistent definitions and under-reporting. The average incidence is estimated to be 23.8 cases per 1000 hospital discharges. Approximately 5% to 20% of critically ill patients experience AKI during the course of their illness. AKI may present in isolation, develop as a complication of other comorbid illness, or result as a deleterious adverse effect of treatment or diagnostic interventions. Uncomplicated AKI is associated with a mortality rate of up to 10%. Patients with AKI and multiorgan failure have mortality rates higher than 50%. AKI is associated with an increased length of hospital stay; a rise in serum creatinine of 0.5 mg/dL or greater while hospitalized confers a 3.5-day increase in length of stay. Hospitalists facilitate the expeditious evaluation and management of AKI to improve patient outcomes, optimize resource use, and reduce length of stay. Hospitalists can also advocate and initiate preventive strategies to reduce the incidence of secondary AKI.

**KNOWLEDGE**

*Hospitalists should be able to:*

- Describe the symptoms and signs of AKI.
- Describe and differentiate pathophysiologic causes of AKI including prerenal, intrinsic renal, and postrenal processes.
- Differentiate among the causes of prerenal, intrinsic renal, and postrenal types of AKI.
- Describe a logical sequence of indicated tests required to evaluate etiologies of AKI based on classification of AKI type.
- List common potentially nephrotoxic agents that can cause or worsen AKI.
- Explain the indications, contraindications, and mechanisms of action of the interventions used to treat AKI.
- Explain the indications, contraindications, benefits, and risks of acute hemodialysis.
- Recognize indications for specialty consultation for AKI and the role of nephrology and/or urology specialists.
- Describe criteria, including specific measures of clinical stability, that must be met before discharging patients with AKI.
- Explain the specific goals that should be met to ensure safe transitions of care for patients with AKI.

**SKILLS**

*Hospitalists should be able to:*

- Assess patients with suspected AKI in a timely manner and manage or comanage the patient with the primary requesting service.
- Elicit a thorough and relevant medical history with emphasis on factors predisposing or contributing to the development of AKI.
- Review all drug use including prescription and over-the-counter medications, herbal remedies, nutritional supplements, and illicit drugs to identify common potential nephrotoxins.
- Perform a physical examination to assess volume status and to identify underlying comorbid states that may predispose to the development of AKI.
- Order and interpret results of indicated diagnostic studies that may include urinalysis and microscopic sediment analysis, urinary diagnostic indices, urinary protein excretion, serologic evaluation, and renal imaging.
- Interpret common clinical, laboratory, and imaging findings used to evaluate and follow the severity of AKI.
- Diagnose common complications, such as electrolyte abnormalities, that occur with AKI and institute corrective measures.
- Calculate estimated creatinine clearance for medication dosage adjustments when indicated.
- Identify patients at risk for developing AKI and institute appropriate preventive measures including avoidance of unnecessary radiographic contrast exposure and adherence to evidence-based interventions to reduce the risk of contrast-induced nephropathy.
- Coordinate appropriate nutritional and metabolic interventions.
- Formulate an AKI treatment plan tailored to the individual patient, which may include fluid management, pharmacologic agents, nutritional recommendations, and patient education.
- Identify and treat factors that may complicate the management of AKI, including extreme blood pressure, underlying infections, and the sequelae of electrolyte abnormalities.
- Communicate with patients and families to explain the cause and prognosis of AKI.
- Communicate with patients and families to explain the rationale for the use of radiographic tests and procedures and the benefit and potential adverse effects of radiographic contrast agents.
- Facilitate discharge planning early during hospitalization.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

**ATTITUDES**

*Hospitalists should be able to:*

- Employ a multidisciplinary approach, which may include nursing, nutrition, and pharmacy services, in the care of
patients with AKI that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations, protocols, and risk-stratification tools for the treatment of AKI.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Advocate for, establish, and support initiatives to reduce the incidence of iatrogenic AKI.
• Lead, coordinate, and/or participate in multidisciplinary teams (including nephrology, nursing, pharmacy, and nutrition services) to improve processes that facilitate early identification of AKI and improved patient outcomes.
• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize management strategies for AKI.

References
Alcohol and drug withdrawal is a set of signs and symptoms that develops in association with sudden cessation or reduction in the use of alcohol or a number of prescription (particularly opioids and benzodiazepines), over-the-counter (OTC), or illicit drugs. Withdrawal syndromes encompass a broad range of symptoms from mild anxiety and tremulousness to more serious manifestations such as delirium tremens, which occurs in up to 5% of alcohol-dependent persons who undergo withdrawal. Withdrawal may occur before hospitalization or during the course of hospitalization. Hospitalists should be able to:

**KNOWLEDGE**

*Hospitalists should be able to:*

- Describe the effects of drug and alcohol withdrawal on medical illness and the effects of medical illness on substance withdrawal.
- Recognize the symptoms and signs of alcohol and drug withdrawal, including withdrawal from prescription and OTC drugs.
- Recognize the medical complications from substance use and dependence.
- Determine when consultation with a medical toxicologist or expert is necessary.
- Distinguish alcohol or drug withdrawal from other causes of delirium.
- Differentiate delirium tremens from other alcohol withdrawal syndromes.
- Differentiate the clinical manifestations of alcohol or drug intoxication from those of withdrawal.
- Recognize different characteristic withdrawal syndromes, such as abstinence syndrome of opioid withdrawal and delirium tremens of alcohol withdrawal.
- Describe the tests indicated to evaluate alcohol or drug withdrawal.
- Identify patients at increased risk for drug and alcohol withdrawal according to current diagnostic criteria.
- Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat acute alcohol and drug withdrawal.
- Identify local trends in illicit drug use.
- Determine the best setting within the hospital to initiate, monitor, evaluate, and treat patients with drug or alcohol withdrawal.
- Explain patient characteristics that portend a poor prognosis.

**SKILLS**

*Hospitalists should be able to:*

- Elicit a thorough and relevant medical history, with emphasis on substance use.
- Assess patients with suspected alcohol or drug withdrawal in a timely manner, identify the level of care required, and manage or comanage the patient with the primary requesting service.
- Perform a rapid, efficient, and targeted physical examination to assess for alcohol or drug withdrawal and determine whether life-threatening comorbidities are present.
- Assess for common comorbidities in patients with a history of alcohol and drug use.
- Formulate a treatment plan tailored to the individual patient, which may include appropriate pharmacologic agents and dosing, route of administration, and nutritional supplementation.
- Integrate existing literature and federal regulations into the management of patients with opioid withdrawal syndromes. For patients who are undergoing existing treatment for opioid dependency, communicate with outpatient treatment centers and integrate dosing regimens into care management.
- Manage withdrawal syndromes in patients with concomitant medical or surgical issues.
- Diagnose oversedation and other complications associated with withdrawal therapies.
- Recommend the use of restraints and direct observation to ensure patient safety when appropriate.
- Reassure, reorient, and frequently monitor patients in a calm environment.
- Use the acute hospitalization as an opportunity to counsel patients about abstinence, recovery, and the medical risks of drug and alcohol use.
- Initiate preventive measures before discharge, including alcohol and drug cessation measures.
- Facilitate discharge planning early in the hospitalization, including communicating with the primary care provider and presenting the patient with contact information for follow-up care, support, and rehabilitation.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transition of care.

**ATTITUDES**

*Hospitalists should be able to:*

- Employ a multidisciplinary approach, which may include...
psychiatry, pharmacy, nursing, and social services, in the treatment of patients with substance use or dependency.

- Follow evidence-based national recommendations to guide diagnosis, monitoring, and treatment of withdrawal symptoms.
- Act in a nonjudgmental manner when managing the hospitalized patient with substance use.
- Establish and maintain an open dialogue with patients and families regarding care goals and limitations.
- Appreciate and document the value of appropriate treatment in reducing mortality, duration of delirium, time required to control agitation, adequate control of delirium, treatment of complications, and cost.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary teams, which may include psychiatry and toxicology, to improve patient safety and management strategies for patients with substance abuse.
- Lead, coordinate, and/or participate in the development and promotion of guidelines and/or pathways that facilitate efficient and timely evaluation and treatment of patients with alcohol and drug withdrawal.
- Promote the development and use of evidence-based guidelines and protocols for the treatment of withdrawal syndromes.
- Advocate for hospital resources to improve the care of patients with substance withdrawal and the environment in which the care is delivered.
- Establish relationships with and develop knowledge of community-based organizations that provide support to patients with substance use disorders.
- Promote awareness of substance use disorders and screening for them.
- Coordinate initiatives to address the increased risk of readmissions associated with substance and polysubstance abuse.

References

Asthma is a chronic disease characterized by airway inflammation and reversible airflow limitation. It is one of the most common chronic conditions and it leads to marked morbidity and mortality in hospitalized patients. In the United States, 1 in 12 persons has asthma and nearly 50% of affected individuals experience an asthma exacerbation each year, accounting for 1.8 million emergency department visits.1,2 Annually, more than 400,000 hospital discharges occur with asthma as the primary diagnosis, with an average length of stay of 3.2 days.2 Hospitalists are central to the provision of care for patients with asthma through the use of evidence-based approaches to manage acute exacerbations and to prevent their recurrence. Hospitalists should strive to lead multidisciplinary teams to develop institutional guidelines and/or care pathways to improve efficiency and quality of care and to reduce readmission rates and morbidity and mortality from asthma.

**KNOWLEDGE**

Hospitalists should be able to:
- Define asthma and describe the pathophysiologic processes that lead to reversible airway obstruction and inflammation.
- Identify precipitants of asthma exacerbation, including environmental and occupational exposures.
- Recognize the clinical presentation of asthma exacerbation and differentiate it from other acute respiratory and nonrespiratory syndromes.
- Describe the role of diagnostic testing, including peak flow monitoring, used for evaluation of asthma exacerbation.
- Recognize indications for specialty consultation, including pulmonary and allergy medicine.
- Describe evidence-based therapies for the treatment of asthma exacerbations, which may include bronchodilators, systemic corticosteroids, and oxygen.
- Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat asthma.
- Recognize signs and symptoms of impending respiratory failure.
- Explain the indications for invasive and noninvasive ventilatory support.
- List the risk factors for disease severity and death from asthma.
- Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

**SKILLS**

Hospitalists should be able to:
- Elicit a thorough and relevant medical history to identify triggers of asthma and symptoms consistent with asthma exacerbation.
- Perform a targeted physical examination to elicit signs consistent with asthma exacerbation, differentiate findings from those of other mimicking conditions, and assess illness severity.
- Select appropriate diagnostic studies to evaluate severity of asthma exacerbation and interpret the results.
- Recognize indications for transfer to the intensive care unit, including impending respiratory failure, and coordinate intubation or noninvasive mechanical ventilation when indicated.
- Prescribe appropriate evidence-based pharmacologic therapies during asthma exacerbation, recommending the most appropriate route, dose, frequency, and duration of treatment.
- Communicate with patients and families to explain the natural history and prognosis of asthma.
- Facilitate discharge planning early during hospitalization.
- Develop an asthma action plan in preparation for discharge.
- Educate patients and families regarding the indications and appropriate use of daily use inhalers and rescue inhalers for asthmatic control.
- Ensure that patients receive training of proper inhaler and peak flow techniques before hospital discharge.
- Communicate with patients and families to explain symptoms and signs that should prompt emergent medical attention.
- Communicate with patients and families to explain the goals of care, including clinical stability criteria, the importance of preventive measures (such as smoking cessation, avoidance of second-hand smoke, appropriate vaccinations, and modification of environmental exposures), and required follow-up care.
- Communicate with patients and families to explain discharge medications, potential adverse effects, duration of therapy and dosing, and taper schedule.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.
- Provide and coordinate resources to ensure safe transition from the hospital to arranged follow-up care.

**ATTITUDES**

Hospitalists should be able to:
- Work collaboratively with primary care physicians and emergency physicians in making admission decisions.
- Employ a multidisciplinary approach, which may include pulmonary medicine, respiratory therapy, nursing, and social services, in the care of patients with asthma exacerbation.
- Follow evidence-based recommendations for the treatment of patients with asthma exacerbations.

**SYSTEM ORGANIZATION AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:
• Contribute to and/or develop educational modules, order sets, and/or pathways that facilitate use of evidence-based strategies for asthma exacerbation in the emergency department and the hospital, with goals of improving outcomes, decreasing length of stay, and reducing rehospitalization rates.

• Lead, coordinate, and/or participate in efforts to educate staff on the importance of smoking cessation counseling and other preventive measures.

• Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaborative efforts with pulmonologists and respiratory therapists, to promote patient safety and optimize cost-effective diagnostic and management strategies for patients with asthma.

References
1.5 CARDIAC ARRHYTHMIA

Cardiac arrhythmias are a group of conditions characterized by an abnormal heart rate or rhythm. These are common and affect approximately 5% of the population in the United States. More than 250,000 Americans die each year of sudden cardiac arrest, and most cases are thought to be due to ventricular fibrillation or ventricular tachycardia.1 Several cardiac arrhythmias can cause instability, prompting hospitalization, or they may result from complications during hospitalization. Annually, more than 740,000 hospital discharges are associated with a primary diagnosis of cardiac arrhythmia.2 Hospitalists identify and treat all types of arrhythmias, coordinate specialty and primary care resources, and transition patients safely and cost-effectively through the acute hospitalization and into the outpatient setting.

KNOWLEDGE

Hospitalists should be able to:
• Identify and differentiate the common clinical presentations of both benign and pathologic arrhythmias.
• Explain the causes of atrial and ventricular arrhythmias.
• Describe the indicated tests required to evaluate arrhythmias.
• Explain how medications, metabolic abnormalities, and medical comorbidities may precipitate various arrhythmias.
• Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat cardiac arrhythmias. Discuss the management options and goals for patients hospitalized with arrhythmias.
• Describe the patient characteristics and comorbid conditions that predict outcomes in patients with arrhythmias.
• Recognize indications for specialty consultation, which may include cardiology and cardiac electrophysiology.
• Explain goals for hospital discharge, including specific measures of clinical stability for safe care transitions.
• Recall appropriate indications for both initiation and discontinuation of continuous telemetry monitoring in the hospitalized patient.

SKILLS

Hospitalists should be able to:
• Elicit a thorough and relevant medical history, including medications, family history, and social history.
• Perform a targeted physical examination with emphasis on identifying signs associated with hemodynamic instability, tissue perfusion, and occult cardiac and vascular disease.
• Identify common benign and pathologic arrhythmias on electrocardiography, rhythm strips, and continuous telemetry monitoring.
• Determine the appropriate level of care required based on risk stratification of patients with cardiac arrhythmias.
• Identify and prioritize high-risk arrhythmias that require urgent intervention and implement emergency protocols as indicated.
• Formulate patient-specific and evidence-based care plans incorporating diagnostic findings, prognosis, and patient characteristics.
• Develop patient-specific care plans that may include rate-controlling interventions, cardioversion, defibrillation, or implantable medical devices.
• Communicate with patients and families to explain the natural history and prognosis of cardiac arrhythmias.
• Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
• Communicate with patients and families to explain drug interactions for antiarrhythmic drugs and the importance of strict adherence to medication regimens and laboratory monitoring.
• Facilitate discharge planning early during hospitalization.
• Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

ATTITUDES

Hospitalists should be able to:
• Employ a multidisciplinary approach, which may include primary care, cardiology, nursing, and social services, in the care of patients with cardiac arrhythmias that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of cardiac arrhythmias.
• Acknowledge and ameliorate patient discomfort from uncontrolled arrhythmias and electrical cardioversion therapies.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary teams to develop patient care guidelines and/or pathways on the basis of peer-reviewed outcomes research, patient and physician satisfaction, and cost.
• Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations (eg, The Joint Commission, American Heart Association, American College of Cardiology, Agency for Healthcare Research and Quality).
• Lead, coordinate, and/or participate in quality improvement initiatives to promote early identification of arrhythmias, reduce preventable complications, and promote appropriate use of telemetry resources.
References


1.6 CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic obstructive pulmonary disease (COPD) is a heterogeneous group of respiratory conditions, predominantly composed of chronic bronchitis and emphysema. COPD is defined by airflow limitation that is not completely reversible, and it is associated with an abnormal airway inflammatory response. Exposure to tobacco smoke is the main risk factor. COPD affects more than 12 million Americans and is the third leading cause of death in the United States. A COPD exacerbation is defined as an increase in the usual symptoms of COPD that is beyond day-to-day variations and leads to a change in medication and often results in hospitalization. Annually, more than 670,000 hospital discharges occur with COPD as the primary diagnosis, and nearly 1 of every 5 hospitalized patients 40 years or older has COPD.1,2 The average length of stay is 4.3 days.1 COPD is a substantial cause of disability and carries a large economic burden, accounting for almost $17 billion of total hospital charges billed to Medicare each year.3 The early detection and prompt treatment of exacerbations are essential to ensure optimal outcomes and to reduce the burden of COPD. Hospitalists use evidence-based approaches to optimize care, and they should strive to lead multidisciplinary teams to develop institutional guidelines and/or care pathways to reduce readmission rates and mortality from COPD exacerbations.

KNOWLEDGE

Hospitalists should be able to:

• Define COPD and describe the pathophysiologic processes that lead to small airway obstruction and alveolar destruction.
• Describe potential precipitants of exacerbation, including both infectious and noninfectious etiologies.
• Differentiate the clinical presentation of a COPD exacerbation from asthma, heart failure, and other acute respiratory and nonrespiratory syndromes.
• List the indicators of disease severity.
• Describe the role of diagnostic testing used for the evaluation of COPD.
• Describe the role of pulmonary function tests in the treatment of a COPD exacerbation.
• Distinguish the medical management of patients with COPD exacerbations from that of patients with stable COPD.
• Recognize indications for specialty consultation, which may include pulmonary medicine.
• Describe the evidence-based therapies for treatment of COPD exacerbations, which may include bronchodilators, systemic corticosteroids, oxygen, and antibiotics.
• Identify the potential risks of supplemental oxygen therapy, including development of hypercarbia in patients with chronic respiratory acidosis.
• Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat COPD.
• Describe and differentiate the means of ventilatory support, including the use of noninvasive positive pressure ventilation in COPD exacerbation.
• Recognize anxiety and depression as important comorbid conditions that negatively affect outcomes.
• Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

SKILLS

Hospitalists should be able to:

• Elicit a thorough and relevant medical history to identify symptoms consistent with a COPD exacerbation and etiologic precipitants.
• Perform a targeted physical examination to elicit signs consistent with a COPD exacerbation, differentiate findings from those of other mimicking conditions, and assess illness severity.
• Diagnose a COPD exacerbation on the basis of history, physical examination, and radiographic data.
• Select and interpret appropriate diagnostic studies to evaluate the severity of a COPD exacerbation.
• Recognize symptoms, signs, and severity of impending respiratory failure and select the indicated evidence-based ventilatory approach.
• Select patients with COPD exacerbation who would benefit from use of positive pressure ventilation and identify those in whom this intervention is contraindicated.
• Prescribe appropriate evidence-based pharmacologic therapies during COPD exacerbation, recommending the most appropriate drug route, dose, frequency, and duration of treatment.
• Address treatment preferences, including advance directives early during hospital stay; implement end-of-life decisions by patients and/or families when indicated or desired.
• Evaluate COPD in perioperative risk assessment, recommend measures to optimize perioperative management of COPD, and manage postoperative complications related to underlying COPD.
• Identify patients with COPD who may benefit from pulmonary rehabilitation.
• Communicate with patients and families to explain the natural history and prognosis of COPD.
• Facilitate discharge planning early during hospitalization.
• Communicate with patients and families to explain discharge medications, potential adverse effects, duration of therapy and dosing, and taper schedule.
• Ensure that patients receive training on proper inhaler techniques and use before hospital discharge.
• Communicate with patients and families to explain the goals of care (including clinical stability criteria, the importance of preventive measures), discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.
• Provide and coordinate resources to ensure safe transition from the hospital to arranged follow-up care.

ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach, which may include pulmonary medicine, respiratory therapy, nursing, and social services, in the care of patients with a COPD exacerbation, beginning at admission and continuing through all care transitions.
• Engage in a collaborative way with primary care physicians and emergency physicians in making admission decisions.
• Promote and encourage preventive strategies, including smoking cessation, vaccinations, and venous thromboembolism prophylaxis.
• Establish and maintain an open dialogue with patients and/or families regarding goals and limitations of care, including palliative care and end-of-life wishes.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaborative efforts with pulmonologists, to promote patient safety and optimize cost-effective diagnostic and management strategies for patients with COPD.
• Lead, coordinate, and/or participate in the development of educational modules, order sets, and/or pathways that facilitate use of evidence-based strategies for COPD exacerbation in the emergency department and the hospital, with goals of improving outcomes, decreasing length of stay, and reducing rehospitalization rates.
• Lead efforts to educate patients and staff on the importance of smoking cessation and other preventive measures.

References
Community-acquired pneumonia (CAP) is an infection of the lung parenchyma that occurs in the community or is diagnosed within 48 hours of hospital admission. CAP is a common and potentially life-threatening infection, and it is a leading cause of death from infectious diseases. Approximately 25% of persons with CAP require hospitalization, and 10% to 20% of these patients require admission to the intensive care unit. The mortality rate ranges from about 13% in hospitalized patients to 36% in patients admitted to the intensive care unit. CAP is a curable condition and an organized approach to management is likely to improve clinical results and reduce mortality. Pneumonia outcome measures are used to evaluate performance of healthcare providers and organizations. Hospitalists apply evidence-based guidelines to the management of patients hospitalized with pneumonia and lead initiatives to improve quality of care and reduce practice variability.

KNOWLEDGE
Hospitalists should be able to:
- Define CAP, list the likely etiologies and the signs and symptoms, and distinguish CAP from hospital-acquired pneumonia and healthcare-associated pneumonia.
- Describe other causes of pulmonary infiltrates on radiographic studies.
- Describe the tests indicated to evaluate and treat CAP.
- Explain indications for respiratory isolation.
- Identify patients with comorbidities (such as immune-compromise, diabetes mellitus, and extremes of age) who are at high risk of a complicated course.
- Identify specific pathogens that predispose patients to a complicated course.
- Recognize indications for specialty consultation.
- Describe indicated therapeutic modalities for CAP, including oxygen therapy, respiratory care modalities, appropriate antimicrobial selection and duration, and other evidence-based treatments.
- Predict patient risk for morbidity and mortality from CAP using a validated risk score.
- Explain goals for hospital discharge, including evidence-based measures of clinical stability for safe care transition.
- Describe factors associated with a nonresponding pneumonia.

SKILLS
Hospitalists should be able to:
- Elicit a thorough and relevant medical history to identify symptoms consistent with CAP and demographic factors that may predispose patients to CAP.
- Perform a targeted physical examination to elicit signs consistent with CAP and differentiate it from other mimicking conditions.
- Order and interpret laboratory, microbiologic, and radiologic studies to confirm the diagnosis of CAP and risk stratify patients.
- Apply evidence-based tools (such as the Pneumonia Severity Index) to triage decisions and identify factors that support the need for intensive care unit admission.
- Initiate empiric antimicrobials for CAP on the basis of illness severity and evidence-based national guidelines, incorporating local resistance patterns.
- Formulate a subsequent treatment plan that includes narrowing antimicrobial therapies on the basis of available culture data and patient response to treatment.
- Recognize the criteria for clinical stability, including the appropriate deescalation of treatment such as transitioning from parenteral to oral antimicrobials.
- Recognize and address complications of CAP and/or inadequate response to therapy, including respiratory failure and parapneumonic effusions.
- Communicate with patients and families to explain the pathophysiology and prognosis of CAP.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
- Facilitate discharge planning early during hospitalization.
- Communicate with patients and families to explain the goals of care (including clinical stability criteria, the importance of preventive measures such as smoking cessation), discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Recognize and address barriers to follow-up care and anticipated postdischarge requirements.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

ATTITUDES
Hospitalists should be able to:
- Employ a multidisciplinary approach, which may include nursing, respiratory therapy, nutrition, and pharmacy services, to the care of patients with CAP through all care transitions.
- Follow evidence-based recommendations for the treatment of patients with CAP.
- Work collaboratively with primary care physicians and emergency physicians in making admission decisions.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
- Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaborative efforts with
infectious disease and pulmonary specialists, to promote patient safety and cost-effective diagnostic and management strategies for patients with CAP.

- Lead, coordinate, and/or participate in efforts to identify, address, and monitor quality indicators for CAP.
- Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations (e.g., Centers for Medicare & Medicaid Services, Infectious Diseases Society of America, American Thoracic Society).
- Integrate evidence-based clinical severity scores and clinical judgment into admission decisions.

- Lead efforts to educate staff on the importance of smoking cessation counseling, vaccinations, and other preventive measures.

References

Delirium is defined as an acute, transient, global disorder of cognition. In two-thirds of cases, delirium occurs in patients with baseline vulnerability, including those with underlying dementia. Although up to 30% of older medical patients experience delirium during hospitalization, this condition is unrecognized in nearly two-thirds of cases. Patients with delirium experience an average increase in length of hospital stay of 8 days and mortality rates that are twice as high as those of patients without delirium. In addition, delirium is associated with high rates of functional and cognitive decline and skilled nursing facility placement after hospitalization. The cost of caring for patients with delirium has a marked impact on individual patients, families, and hospital systems. Hospitalists lead their institutions in the development of screening and prevention protocols for patients at risk for delirium, as well as in the promotion of safe treatment approaches. Hospitalists also develop strategies to operationalize cost-effective delirium prevention programs that improve outcomes.

**KNOWLEDGE**

*Hospitalists should be able to:*

- Define delirium and dementia and distinguish between them.
- Differentiate delirium from other causes of cognitive impairment, confusion, or psychosis.
- Describe the indicated tests required to evaluate delirium.
- Describe the causes of delirium in the hospital setting including environmental and iatrogenic risk factors.
- Identify medications known to precipitate delirium.
- Recognize the indications for specialty consultations.
- Describe methods for the prevention of delirium.
- Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat delirium.
- Describe nonpharmacologic therapies to manage delirium.
- Describe the complications of delirium in the hospitalized patient.
- Discuss the multifaceted impact that delirium has on patients and their families.
- Explain goals for hospital discharge, including specific measures of clinical stability for safe care transitions.

**SKILLS**

*Hospitalists should be able to:*

- Predict a patient’s risk for the development of delirium on the basis of initial history and physical examination.
- Perform appropriate screening for delirium.
- Develop active strategies to reduce delirium in the hospital setting by identifying known patient risk factors that may precipitate delirium.
- Assess patients with suspected delirium in a timely manner, identify the level of care required, and manage or co-manage patients with the primary requesting service.
- Perform a focused evaluation for the underlying etiology of delirium and institute prompt treatment to lessen its severity.
- Determine the best setting within the hospital to initiate, monitor, evaluate, and treat patients with delirium.
- Lead multidisciplinary teams to develop and implement care plans for patients with delirium.
- Develop an appropriate pharmacologic plan to manage delirium.
- Develop an appropriate nonpharmacologic plan to manage delirium.
- Develop an appropriate management plan for patients with delirium in the postoperative setting.
- Document an appropriate treatment plan to reduce mortality, limit the duration of delirium and the time required to control agitation, maintain adequate control of delirium, address complications, and manage cost of treatment.
- Use a patient- and family-centered approach in the care of older inpatients.
- Establish goals and boundaries of care with patients and their families.
- Communicate with patients and families to explain the history and prognosis of delirium.
- Facilitate discharge planning early in the hospitalization, including communicating with the primary care provider and presenting the patient and family with contact information for follow-up care, support, and rehabilitation.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.

**ATTITUDES**

*Hospitalists should be able to:*

- Employ a multidisciplinary approach to the care of patients with delirium that begins at admission and continues through all care transitions.
- Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of delirium and its causes.
- Value a patient- and family-centered approach in the care of older inpatients.

**SYSTEM ORGANIZATION AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary teams to develop early treatment protocols.
- Lead, coordinate, and/or participate in multidisciplinary
initiatives to implement screening and prevention protocols for patients at risk for delirium.

• Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaboration with geriatricians, to promote patient safety and cost-effective diagnostic and management strategies for older patients.

• Engage stakeholders in hospital initiatives to improve safety and quality in the care of patients with delirium.
Dementia is defined as a chronic, often progressive, decline in cognitive function, eventually limiting daily activities. Dementia is a common comorbidity in the hospitalized older patient. Alzheimer disease is the most prevalent form of dementia in older patients, and it accounts for up to 80% of cases. More than 5 million persons older than 65 years have Alzheimer disease in the United States. Patients with dementia are at increased risk for delirium, falls, and functional decline during hospitalization. Patients with baseline cognitive impairment have prolonged lengths of stay and complex needs after discharge. Agitation and behavioral symptoms of dementia can be exacerbated in the hospital setting and are often difficult to manage. Care of the patient with dementia requires that hospitalists engage in a multidisciplinary approach to inpatient and transitional care. Hospitalists may also become involved in hospital quality and safety initiatives that pertain to areas such as restraint use and fall prevention.

**KNOWLEDGE**

**Hospitalists should be able to:**

- Define delirium and dementia and distinguish between them.
- Differentiate dementia from other causes of cognitive impairment, confusion, or psychosis.
- Describe the indicated tests required to evaluate dementia.
- Describe the causes of potentially reversible dementias or dementia-like conditions.
- List indications, contraindications, and mechanisms of action of pharmacologic agents used to treat dementia.
- Describe nonpharmacologic therapies to manage dementia symptoms.
- Recognize the indications for specialty consultations.
- Describe the complications of dementia in the hospitalized patient.
- Discuss the multifaceted impact that dementia has on patients and their families.
- Explain goals for hospital discharge including specific measures of clinical stability for safe care transition.

**SKILLS**

**Hospitalists should be able to:**

- Perform appropriate screening for dementia.
- Develop active strategies to reduce development of delirium in patients with dementia in the hospital setting by identifying known patient risk factors that may precipitate delirium.
- Assess patients with suspected dementia in a timely manner, identify the level of care required, and manage or co-manage patients with the primary requesting service.
- Assess patients for potentially reversible causes of dementia or dementia-like conditions. Assess severity of cognitive impairment and perform a focused evaluation for the underlying etiology of dementia when appropriate.
- Determine the best setting within the hospital to initiate, monitor, evaluate, and treat patients with dementia.
- Formulate and lead multidisciplinary teams to develop and implement care plans for patients with dementia.
- Develop an appropriate pharmacologic plan to manage dementia.
- Develop an appropriate nonpharmacologic plan to manage dementia.
- Use a patient- and family-centered approach in the care of older inpatients.
- Communicate with patients and families to explain the history and prognosis of dementia.
- Use evidence-based methods and tools to assess patients’ medical decision-making capacity.
- Defend patients’ right to autonomy when so qualified.
- Facilitate discharge planning early in the hospitalization, including communicating with the primary care provider and presenting the patient and family with contact information for follow-up care, support, and rehabilitation.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.

**ATTITUDES**

**Hospitalists should be able to:**

- Employ a multidisciplinary approach to the care of patients with dementia that begins at admission and continues through all care transitions.
- Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of dementia and its causes.
- Value a patient- and family-centered approach to educate and engage families and caregivers in the care of older inpatients.
- Responsibly address and respect end-of-life care wishes for patients with advanced dementia.

**SYSTEM ORGANIZATION AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary teams to develop early treatment protocols.
- Lead, coordinate, and/or participate in multidisciplinary initiatives to implement screening and prevention protocols for patients at risk for poor outcomes related to dementia.
- Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaboration with geriatricians, to promote patient safety and cost-effective diagnostic and management strategies for older patients.
- Engage stakeholders in hospital initiatives to improve safety and quality in the care of patients with dementia.

**References**

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1.8 DELIRIUM and DEMENTIA


**SECTION 1: CLINICAL CONDITIONS**

### 1.9 DIABETES MELLITUS

Diabetes mellitus is a disease characterized by abnormal insulin production or disordered glucose metabolism and is a comorbid condition of many hospitalized patients. Diabetic ketoacidosis (DKA) and hyperglycemia hyperosmolar state (HHS) are extreme presentations of diabetes mellitus that require hospitalization. Diabetes mellitus is present in nearly 10% of the US population, and it is more common in older adults, affecting at least 25% of persons older than 65 years. Type 2 diabetes mellitus accounts for 90% to 95% of all diagnosed cases of diabetes in adults. Annually, more than 700,000 hospital discharges occur with diabetes mellitus or DKA as the primary diagnosis.

Hospitalists care for diabetic patients and optimize glycemic control in the hospital setting. They stabilize and treat DKA and HHS. The inpatient setting provides an opportunity to institute therapies to slow disease progression, prevent disease complications, and provide diabetes education to improve quality of life and limit complications leading to readmission. Hospitalists use evidence-based approaches to optimize care and lead multidisciplinary teams to develop institutional guidelines or care pathways to optimize glycemic control.

**KNOWLEDGE**

Hospitalists should be able to:
- Define diabetes mellitus and explain the pathophysiologic processes that lead to hyperglycemia, DKA, and HHS.
- Describe the impact of hyperglycemia on immune function and wound healing.
- Describe the effect of DKA and HHS on intravascular volume status, electrolytes, and acid–base balance.
- Describe the clinical presentation and laboratory findings of DKA and HHS.
- Describe the indicated tests to evaluate and diagnose DKA and HHS.
- Explain the physiologic stressors and medications that adversely affect glycemic control.
- Explain the precipitating factors of DKA and HHS.
- Identify the goals of glycemic control in hospitalized patients in various settings, including critically ill and surgical patients.
- Recognize the indications for managing DKA and HHS in an intensive care unit.
- Recognize indications for early specialty consultation, which may include endocrinology and nutrition.
- Summarize the indications, contraindications, and mechanisms of action of pharmacologic agents used to treat diabetes mellitus.
- Recognize features that indicate disease severity.
- Recognize the impact of suboptimal glycemic control on other concurrent medical conditions and illness.
- Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

**SKILLS**

Hospitalists should be able to:
- Elicit a thorough and relevant medical history and review the medical record to identify factors that can affect glycemic control.
- Estimate the level of previous glycemic control, adherence to medication regimen, and social influences that may affect the quality of glycemic control in hospitalized patients.
- Perform a comprehensive physical examination to identify possible precipitants of hyperglycemia, DKA, or HHS.
- Select and interpret indicated studies in patients suspected of having DKA or HHS, including relevant metabolic and acid–base measurements.
- Develop an individualized management plan for patients with controlled and uncontrolled diabetes mellitus, DKA, HHS, and any associated complications.
- Adjust medications and dosages to achieve optimal glycemic control and minimize adverse effects.
- Evaluate and treat the signs and symptoms of hypoglycemia (especially neuroglycopenia).
- Direct the perioperative management of the diabetic patient, and when necessary, manage or comanage the patient with the primary requesting service.
- Assess caloric and nutritional needs and recommend a suitable diet.
- Assess hospitalized patients for undiagnosed diabetes mellitus.
- Recognize and address the effects of various diabetic complications such as neuropathic pain.
- Communicate with patients and families to explain the natural history and prognosis of diabetes mellitus.
- Communicate with patients and families to explain potential long-term complications of diabetes mellitus and preventive strategies, including foot and eye care.
- Communicate with patients and families to explain the importance of glycemic control and factors that affect it such as adhering to medication regimens and self-monitoring, following dietary and exercise recommendations, and attending routine follow-up appointments.
- Communicate with patients and families to explain the potential adverse effects or adverse interactions of diabetes medications, including hypoglycemia.
- Facilitate discharge planning early in the admission process.
- Recommend appropriate postdischarge care, which may include endocrinology, ophthalmology, and podiatry.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians, including the need for continued nutrition and diabetic counseling.
ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach, which may include nursing, nutrition, social services, and diabetes education, to the care of patients with diabetes that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations in the treatment of inpatients with diabetes mellitus.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary teams, which may include nursing, nutrition, and endocrinology, to promote quality and cost-effective diabetes management.
• Lead, coordinate, and/or participate in efforts to develop guidelines and protocols that standardize the assessment and management of uncontrolled diabetes mellitus, DKA, and HHS.
• Lead, coordinate, and/or participate in initiatives to standardize hospital formulary-based diabetes therapies to reduce the likelihood of an adverse drug event.
• Lead, coordinate, and/or participate in efforts to develop guidelines and/or protocols to optimize glycemic control in hospitalized patients including suitable regimens in critically ill medical and surgical patients.
• Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations.

References
Gastrointestinal (GI) bleed refers to any bleeding that originates in the GI tract. Bleeding is generally defined as upper (between the mouth and the ligament of Treitz) or lower (from the ligament of Treitz to the anus). Acute GI bleeding complicates about 7% of all hospital stays in the United States and has an approximate 3% in-hospital mortality rate. Annually, more than 245,000, 130,000, and 165,000 hospital discharges occur with upper GI bleed, lower GI bleed, and unspecified GI bleed as the primary diagnosis, respectively. The degree of blood loss can vary from microscopic amounts to noticeable or massive volumes that can cause hemodynamic instability. Between 19% and 28% of patients with GI bleeding have complications that require intensive care unit admission. A well-orchestrated approach that includes prompt assessment for risk stratification, evaluation for early endoscopy, initiation of pharmacotherapy, and treatment of comorbid diseases is necessary for a favorable outcome. Hospitalists provide immediate care for patients presenting with GI bleeding while coordinating care across multiple specialties. Hospitalists lead quality improvement initiatives that optimize the efficiency and quality of care for patients with GI bleeding.

**KNOWLEDGE**

*Hospitalists should be able to:*
- Explain the etiologies and pathophysiologic processes that lead to GI bleeds.
- Describe and differentiate the clinical features and presentations of upper and lower GI bleeds.
- Describe the tests required to evaluate GI bleeds.
- Explain the risk factors for upper and lower GI bleeds and clinical indicators of patients at high risk for complications.
- List the indications for early specialty consultation, which may include interventional radiology, gastroenterology, and surgery.
- Describe the approach to transfusion therapy in GI bleeds.
- Describe the treatment for concomitant coagulopathy in patients with GI bleeds.
- Compare the advantages and disadvantages of medical, endoscopic, and surgical treatments for patients with GI bleeds.
- Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat GI bleeds.
- Identify clinical, laboratory, and imaging studies that indicate disease severity.
- Explain goals for hospital discharge including specific measures of clinical stability for safe care transition.

**SKILLS**

*Hospitalists should be able to:*
- Elicit a thorough and relevant history, including a directed medication, family, and social history.
- Perform a physical examination to identify the likely source of bleeding, presence of comorbid conditions (such as liver disease), and signs of clinical instability (such as organ hypoperfusion) or complications (such as intestinal perforation).
- Order and interpret results of appropriate laboratory, imaging, and endoscopic tests.
- Synthesize results of physical examination, laboratory testing, and imaging studies to determine the best management and care plan for the patient.
- Assess patients with GI bleeds for the purpose of risk stratification and determine the corresponding level of care required.
- Initiate preventive measures including avoidance of nonsteroidal anti-inflammatory agents, stress ulcer prophylaxis in critically ill patients, dietary modification, and evidence-based medical therapies.
- Formulate an evidence-based treatment plan, including nutritional recommendations, pharmacologic agents and dosing, and coordination of endoscopic and surgical interventions tailored to the individual patient.
- Determine frequency for laboratory monitoring and transfusion during hospitalization.
- Ensure adequate intravenous access to allow rapid volume and blood product resuscitation.
- Perform rapid hemodynamic resuscitation.
- Recognize and treat signs of clinical decompensation and recurrent bleeding.
- Assess patients with suspected GI bleeds in a timely manner and manage or comanage the patient with the primary requesting service.
- Communicate with patients and families to explain the disease etiology, prognosis, risk reduction strategies, and symptoms of recurrent GI bleed.
- Communicate with patients and families to explain risks, benefits, and alternatives to transfusion therapy.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.

**ATTITUDES**

*Hospitalists should be able to:*
- Employ a multidisciplinary approach, which may include nursing, pharmacy and nutrition services, and specialty and referring physicians, in the care of patients with GI bleeds that begins at admission and continues through all care transitions.
- Establish and maintain an open dialogue with patients and/or families regarding goals and limitations of care, including palliative care and end-of-life wishes.

**SYSTEM ORGANIZATION AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in the development and promotion of evidence-based guidelines and/or pathways for treatment of patients with GI bleeds.
• Lead, coordinate, and/or participate in multidisciplinary teams to develop quality improvement initiatives that promote early identification of GI bleeds and reduce preventable complications.
• Develop systems that provide timely reports of pending study results to outpatient providers.
• Integrate outcomes research, institution-specific laboratory policies, and hospital formulary to create indicated and cost-effective diagnostic and management strategies for patients with GI bleeds.

References
Heart failure (HF) is characterized by impaired cardiac function resulting in a constellation of symptoms that includes fatigue, weakness, and shortness of breath. In North America, the lifetime risk of developing HF is 20% for all persons older than 40 years; more than 5 million persons have HF in the United States. Roughly half of those who develop HF die within 5 years of diagnosis. HF exacerbation is one of the most common diagnoses leading to hospital admission, and annually more than 1 million hospital discharges occur with HF as the primary diagnosis. The average length of stay is 5.2 days. Direct medical costs for HF total more than $20 billion each year. Despite published guidelines for HF management, treatment of hospitalized patients varies markedly. Hospitalists can lead their institutions in the prompt diagnosis of HF, initiation of evidence-based medical therapy, and incorporation of a multidisciplinary approach to management. Hospitalists can also develop strategies to operationalize cost-effective interventions that reduce morbidity, mortality, and readmissions.

**KNOWLEDGE**

*Hospitalists should be able to:*

- Explain underlying causes of HF and precipitating factors leading to exacerbation.
- Differentiate features of systolic and diastolic dysfunction and explain the common etiologies of each.
- Identify the clinical indications for hospitalization for acute decompensated HF.
- Describe the indicated tests required to evaluate HF including assessment of both left and right ventricular function.
- Explain when reassessment of left ventricular function is indicated.
- Explain the utility and limitations of cardiac biomarkers (eg, age adjusted).
- Explain markers of disease severity and factors that influence prognosis.
- Describe risk factors for the development of HF in the hospital setting.
- Recognize indications for early cardiology consultation.
- Describe the goals of inpatient therapy for acute decompensated HF, including pre-load and after-load reduction, hemodynamic stabilization, and optimization of volume status.
- Describe the role of invasive and noninvasive ventilatory support.
- Explain evidence-based therapeutic options for management of both acute and chronic HF and list contraindications to these therapies.
- Explain indications, contraindications, and mechanisms of action of pharmacologic agents used to treat HF.
- Identify medications and interventions contraindicated in HF.
- Recognize indications for device therapy (such as implanted cardioverter defibrillator, cardiac resynchronization therapy, and left ventricular assist devices).
- Recognize indications and qualifications for cardiac transplant evaluation.
- Explain the importance of palliative care in the treatment of patients with chronic HF.
- Explain goals for hospital discharge including specific measures of clinical stability for safe care transition.

**SKILLS**

*Hospitalists should be able to:*

- Elicit a thorough and relevant medical history and review the medical record to identify symptoms, comorbidities, medications, and/or social influences contributing to HF or its exacerbation.
- Recognize the clinical presentation of HF including features of exacerbation and reliability of signs and symptoms.
- Identify physical findings consistent with HF.
- Identify symptoms and signs of low perfusion states and cardiogenic shock.
- Assess patients with suspected HF in a timely manner, identify the level of care required, and manage or communicate the patient with the primary requesting service.
- Order indicated diagnostic testing to identify precipitating factors of HF and assess cardiac function.
- Risk stratify patients admitted with HF and determine the appropriate level of care.
- Formulate an evidence-based treatment plan tailored to the individual patient, which may include pharmacologic agents, device implantation, nutritional recommendations, and patient adherence.
- Recognize symptoms and signs of acute decompensation and initiate immediate indicated therapies.
- Communicate with patients and families to explain the history and prognosis of HF.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
- Communicate with patients and families to explain the importance of home self-monitoring, adherence to medication regimens, nutritional recommendations, and physical rehabilitation.
- Facilitate discharge planning early during hospitalization.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Communicate to outpatient providers the relevant events of the hospitalization and postdischarge needs, including
pending tests, and determine who is responsible for checking the results.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach in the care of patients with HF that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of HF.
• Advocate the importance of behavioral modification to delay the progression of disease and improve quality of life.
• Responsibly address and respect end-of-life care wishes for patients with end-stage HF.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary teams, which may include nursing and social services, nutrition, pharmacy, and physical therapy, early in the hospital course to facilitate patient education and discharge planning, improve patient function and outcomes, and advocate for patient outreach after discharge.
• Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations (eg, Joint Commission on Accreditation of Healthcare Organizations, American Heart Association, American College of Cardiology, Agency for Healthcare Research and Quality).
• Integrate outcomes research, institution-specific laboratory policies, and hospital formulary to create guideline-driven and cost-effective diagnostic and management strategies for patients with HF.
• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize resource use.
• Advocate to hospital administrators to establish and support outpatient programs that have been shown to reduce readmissions and other unfavorable patient outcomes through outreach to patients with HF.
• Lead efforts to educate staff on the importance of smoking cessation counseling and other preventive measures.
• Lead, coordinate, and/or participate in initiatives to increase awareness and improve documentation efforts that appropriately categorize patients with HF and the impact this may have on risk-adjusted mortality and value-based purchasing.

References
1.12 HOSPITAL-ACQUIRED AND HEALTHCARE-ASSOCIATED PNEUMONIA

Hospital-acquired pneumonia (HAP) is an infection of the lung parenchyma that occurs during the course of hospitalization. HAP is a significant source of morbidity, mortality, and increased resource expenditures, including prolonged hospital length of stay by an average of 7 to 9 days. The primary risk factor for the development of HAP accounts for approximately 15% of all hospital-acquired infections, and the associated mortality rate ranges from 20% to 50%. The role of mechanical ventilation as a risk factor for the development of HAP is mechanical ventilation, and HAP occurs in 9% to 27% of all intubated patients. Hospitalists manage patients with HAP either as an attending physician or as a consultant to patients admitted to other services. Healthcare-associated pneumonia (HCAP) was added as a category of pneumonia in the 2005 American Thoracic Society/Infectious Diseases Society of America guidelines to identify patients at increased risk for multidrug-resistant pathogens coming from community settings. HAP is defined as pneumonia acquired in healthcare environments outside of the traditional hospital setting and is distinct from community-acquired pneumonia (CAP), HAP, or ventilator-acquired pneumonia. HCAP more closely resembles HAP with respect to pathogens and prognosis. Quality indicators have been created around the key processes of care for patients with pneumonia, and these indicators are used to evaluate performance of states, healthcare organizations, physician groups, and individual physicians. Hospitalists apply evidence-based practice guidelines to the management of patients hospitalized with pneumonia and lead initiatives to improve quality of care and reduce practice variability.

KNOWLEDGE

Hospitalists should be able to:

- Define HAP and HCAP and differentiate them from CAP.
- List common organisms associated with HAP and HCAP.
- Describe local and national resistance patterns for HAP and HCAP.
- Identify important historical elements, medical record data, and physical examination findings consistent with HAP and HCAP.
- Differentiate the infectious causes of HAP and HCAP from those of CAP.
- Describe the tests required to evaluate HAP and HCAP.
- Identify risk factors for developing HAP and HCAP.
- Describe the role of mechanical ventilation as a risk factor for the development of HAP.
- Explain the prophylactic measures commonly used to lower the risk of HAP.
- Describe steps that can be used to limit the emergence of antibiotic resistance.
- Recognize indications for specialty consultation, which may include infectious disease and/or pulmonary services.
- Describe the role of mechanical ventilation as a potential treatment option.
- Describe infection control practices to prevent the spread of resistant organisms within the hospital.
- Describe potential complications of HAP and HCAP.
- Explain goals for hospital discharge including evidence-based measures of clinical stability for safe care transition.
- Explain implications of HAP and HCAP on discharge planning.

SKILLS

Hospitalists should be able to:

- Elicit a thorough and relevant medical history to identify symptoms consistent with HAP and HCAP.
- Perform a targeted physical examination to elicit signs consistent with HAP and HCAP.
- Assess patients with suspected HAP in a timely manner and manage or comanage the patient with the primary requesting service.
- Order and interpret laboratory, microbiologic, and radiologic studies to confirm the diagnosis of HAP and HCAP and determine the etiologic agent.
- Initiate an empiric antibiotic regimen on the basis of patient history, underlying comorbid conditions, likely organisms, and local resistance patterns.
- Tailor antibiotic regimens on the basis of microbiologic culture and sensitivity data as soon as available.
- Manage complications of HAP and HCAP, which may include respiratory failure, pleural effusions, and empyema.
- Coordinate care for patients requiring mechanical ventilation.
- Identify patients who require thoracentesis, perform or coordinate the procedure, and interpret the results.
- Communicate with patients and families to explain the tests, procedures, and their indications, and to obtain informed consent.
- Communicate with patients and families to explain the etiology, management plan, and potential outcomes of HAP and HCAP.
- Facilitate discharge planning early during hospitalization.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

ATTITUDES

Hospitalists should be able to:

- Employ a multidisciplinary approach, which may include nursing, respiratory therapy, nutrition, and pharmacy services, to the care of patients with HAP and HCAP through all care transitions.
- Follow evidence-based recommendations, protocols, and risk stratification tools for the treatment of HAP.
- Work collaboratively with primary care physicians and emergency physicians in making admission decisions.
SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Collaborate with local infection control practitioners to reduce the spread of resistant organisms within the institution.
• Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaboration with critical care specialists and pulmonologists, to reduce the incidence of HAP in ventilated patients.
• Lead, coordinate, and/or participate in quality improvement initiatives to reduce ventilator days, rates of HAP, and variance in antibiotic use.
• Implement systems to ensure hospital-wide adherence to national standards for empiric antibiotic use and document those measures as specified by recognized organizations.
• Lead efforts to educate staff on the importance of smoking cessation counseling and other preventive measures.

References
1.13 HYponatREMIA

Hyponatremia, defined as a serum sodium value less than 135 mEq/L, is the most common electrolyte disorder observed in hospitalized patients in the United States, occurring in up to 60% of patients. The disorder may develop within 48 hours of, or during, hospitalization (acute), or may be subacute or chronic. When it develops in the hospital, hyponatremia is associated with increased length of stay, increased cost of hospitalization, increased in-hospital mortality, and increased postdischarge mortality. Even chronic hyponatremia present at hospital admission adversely affects outcomes—such patients have a 30% higher risk of mortality and are hospitalized 14% longer than patients without hyponatremia at admission. Hospitalists can facilitate the evaluation and management of hyponatremia to improve patient outcomes, as well as decrease healthcare costs and length of stay.

**KNOWLEDGE**

Hospitalists should be able to:
- Distinguish acute from chronic hyponatremia.
- Identify hospitalized patients at risk of developing hyponatremia and institute monitoring measures to increase early recognition.
- Describe the symptoms of mild and severe hyponatremia.
- Describe the indicated serum and urine laboratory tests used to evaluate the causes of hyponatremia.
- Differentiate among hypertonic, isotonic, and hypotonic forms of hyponatremia.
- Identify the likely pathophysiologic process underlying a patient’s hyponatremia on the basis of urine osmolality and electrolyte concentrations.
- Identify the likely pathophysiologic process underlying a patient’s hyponatremia on the basis of the clinical volume status and urine sodium value.
- Explain how concurrent fluid administration or diuresis may affect urinary tests used in the evaluation of hyponatremia.
- Explain the physiology leading to development of the syndrome of inappropriate antidiuretic hormone secretion (SIADH) and describe how it is diagnosed.
- Recognize indications for specialty consultation, such as endocrinology or nephrology.
- Describe an appropriate treatment strategy for patients with asymptomatic, mildly symptomatic, and severely symptomatic hyponatremia, including the risks of treatment.
- Explain the appropriate rate of correction for acute or chronic hyponatremia, adjusted to the needs of the individual patient.
- Explain the indications for water restriction in hyponatremia.
- Explain the indications for isotonic sodium chloride fluid administration in hyponatremia.
- Explain the indications for hypertonic sodium chloride fluid administration in hyponatremia.
- Explain the role, limitations, risks, and contraindications of vasopressin receptor agonists in the treatment of hyponatremia.
- Predict how concurrent correction of other electrolyte disorders (eg, hypokalemia) may affect sodium correction.

**SKILLS**

Hospitalists should be able to:
- Elicit a thorough and relevant medical history, perform a physical examination, and review the medical record for factors contributing to the development of hyponatremia.
- Accurately assess the relevant volume status and neurologic examination findings of a patient with hyponatremia.
- Order and interpret indicated diagnostic studies that may include serum electrolytes, serum and urine osmolality, serum blood urea nitrogen, creatinine, uric acid, urine sodium, thyrotropin, and early-morning cortisol.
- Formulate and implement the most appropriate intervention tailored to the individual patient’s etiology of hyponatremia while minimizing potential complications from overcorrection or undercorrection.
- Identify the most appropriate care setting to monitor patients with hyponatremia, including indications to transfer to the intensive care unit.
- Recognize symptoms and signs of severe hyponatremia and osmotic demyelination syndrome.
- Communicate with patients and families to explain the significance, etiology, and importance of recognizing and treating hyponatremia.
- Communicate with patients and families to explain the risks, monitoring, and appropriate management of hyponatremia.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.
- Facilitate coordination of transitional monitoring of recurrent hyponatremia after hospital discharge.

**ATTITUDES**

Hospitalists should be able to:
- Follow evidence-based recommendations when managing hospitalized patients with hyponatremia.
- Acknowledge the opportunity to decrease mortality, length of stay, and healthcare costs by addressing hyponatremia, even when asymptomatic.

**SYSTEM ORGANIZATION AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:
- Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize management strategies for hyponatremia.
• Participate in initiatives to articulate, manage, or restrict the use of high-risk therapies, such as hypertonic saline.

References
SECTION 1: CLINICAL CONDITIONS

1.14 PAIN MANAGEMENT

Pain is a very common presenting or accompanying symptom in hospitalized patients. Pain management relies on the use of various modalities to alleviate suffering and restore patient function. Proper assessment and treatment of pain can improve clinical outcomes, discharge planning, and patient and family satisfaction. Managing pain in inpatients necessitates understanding the various mechanisms that cause pain, properties of analgesic pharmacologic and nonpharmacologic modalities, and accurate assessment of severity and treatment response. Hospitalists assess and manage patients experiencing pain. This role requires that hospitalists be aware of current issues and controversies in pain management. Opioid therapy, for example, is a well-established approach for treating severe acute pain and cancer-related pain, and opioids are the most commonly prescribed drug class in the United States. However, the continued increase in opioid prescription coincides with an increased number of poisoning deaths. Poisoning deaths involving opioid analgesics have more than tripled since 1999. To best manage patients’ pain, hospitalists must demonstrate empathy, clinical excellence, and an understanding of the myriad obstacles, cautions, specific knowledge, skills, and attitudes necessary for appropriate pain management. Hospitalists serve as leaders of multidisciplinary teams to develop policies and protocols to improve pain management in their healthcare system.

KNOWLEDGE

Hospitalists should be able to:

- Describe the mechanisms that cause pain.
- Describe the symptoms and signs of pain.
- Differentiate acute, chronic, somatic, neuropathic, referred, and visceral pain syndromes.
- Differentiate tolerance, dependence, addiction, and pseudoaddiction.
- Describe the value and limitations of the physical examination and various validated pain intensity assessment scales.
- Recognize indications for specialty consultation, which may include pain service, anesthesiology, and physical and rehabilitation medicine.
- Explain the relationship among physical, cultural, and psychological factors and pain and pain thresholds.
- Describe the indications and limitations of opioid pharmacotherapy.
- Discuss the genetic, social, and psychological factors that may contribute to opioid addiction.
- Describe the indications and limitations of other analgesics including tramadol, tricyclic agents, and anticonvulsant medications in the treatment of various pain syndromes.
- Describe the indications and limitations of nonopioids including acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), and topical agents.
- Describe specific factors that affect dosing regimens such as drug half-life, renal function, and hepatic function.
- Describe the indications and limitations of nonpharmacologic methods of pain control available in the inpatient setting.
- Establish functional criteria for discharge.

SKILLS

Hospitalists should be able to:

- Elicit a thorough and relevant history and description of pain and review the medical record to determine the likely source and acuity of pain.
- Review patient pharmacologic and psychosocial history and identify factors contributing to pain or factors that might affect its management.
- Perform a physical examination to determine the likely source of pain.
- Order and interpret diagnostic studies to determine the source of pain when underlying acute illness is suspected.
- Assess pain severity using validated measurement tools.
- Formulate an initial pain management plan.
- Determine the appropriate route, dosage, and frequency of dosing for pharmacologic agents on the basis of patient-specific factors.
- Reassess pain severity and determine the need for escalating therapy and/or adjuvant therapies.
- Determine equianalgesic dosing for pharmacologic therapy when needed.
- Titrate short- and long-acting opioids to desired effect.
- Predict and counteract as needed expected analgesic adverse effects, including use of reversal and specific agents, especially in older patients.
- Anticipate and manage adverse effects of pain medications including respiratory depression and sedation, nausea, vomiting, and pruritus.
- Initiate appropriate therapies to prevent and treat constipation when a patient is taking opioid analgesics.
- Assess and communicate the need for pain management during medical consultation.
- Recognize the signs and symptoms of addiction and assess patients for prescription drug abuse when appropriate.
- Educate patients on the adverse effects of prescription drug abuse.
- Educate patients and physicians on the importance of appropriate use of opioids in pain management and explain the rarity of opioid addiction in the setting of appropriate pain management.
- Establish and maintain an open dialogue with patients and families regarding care goals and limitations, which may include palliative care and end-of-life wishes.
- Document treatment plans, provide clear discharge instructions, and communicate with the outpatient clinician responsible for follow-up to ensure a safe transition.
ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach to the assessment and management of patients with pain that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations, including the World Health Organization (WHO) step approach to pain management.
• Promote the ethical imperative of frequent pain assessment and adequate control.
• Appreciate that all pain is subjective and acknowledge patients’ self-reports of pain.
• Appreciate the value of patient-controlled analgesia.
• Appreciate the importance of a patient/family-centered approach for establishing the goals for pain management strategies and setting targets for pain control.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in efforts to develop educational modules, order sets, and/or pathways that facilitate effective pain management in the hospital setting, with goals of improving outcomes and patient satisfaction, decreasing length of stay, and reducing rehospitalization rates.
• Lead, coordinate, and/or participate in efforts to measure quality of inpatient pain control, operationalize system improvements, and reduce barriers to adequate pain control.
• Lead, coordinate, and/or participate in efforts to establish or support existing multidisciplinary pain control teams.

References
1.15 PERIOPERATIVE MEDICINE

Perioperative medicine refers to the medical evaluation and management of patients before, during, and after surgical intervention. Hospitalists perform general medical consultation preoperatively and provide postoperative medical management. During perioperative consultation, internists and hospitalists often identify conditions related to surgical outcomes and make relevant recommendations, such as delaying surgery so the patient's medical condition can be optimized. In orthopedic surgery patients, for example, the hospitalist care model may be associated with shortened time to surgery, decreased length of stay, and lower hospital costs. Optimal care for the surgical patient is realized with a team approach that coordinates the expertise of the hospitalist and the surgical team. Hospitalists apply practice guidelines to medical consultation and lead initiatives to improve the quality of care and patient safety in the perioperative period.

KNOWLEDGE

Hospitalists should be able to:
- Explain the physiologic effects of anesthesia and surgery.
- Describe the goals, components, and role of cardiovascular preoperative risk assessment.
- Describe the goals, components, and role of pulmonary preoperative risk assessment.
- Describe risk factors for perioperative cardiovascular, pulmonary, infectious, hematologic, neurologic, venous thromboembolic, and other complications.
- Identify pharmacologic therapies that may need to be modified or held before surgery including analgesics, anti-hypertensive agents, immunosuppressive therapy, anticoagulants, and complementary/alternative medicines.
- List widely accepted risk assessment tools and explain their value and limitations in patients undergoing non-vascular surgery.
- Describe the evidence surrounding prophylactic perioperative interventions such as β-blockade or incentive spirometry.

SKILLS

Hospitalists should be able to:
- Elicit a thorough history, review the medical record, and inquire about functional capacity in patients undergoing surgery.
- Perform a targeted physical examination focused on the cardiovascular and pulmonary systems and other systems on the basis of patient history.
- Assess pain levels in perioperative patients and make recommendations for pain management when indicated.
- Perform a directed and cost-effective diagnostic evaluation on the basis of the patient's relevant history and physical examination findings.
- Use published algorithms and validated clinical scoring systems, when available, to assess and risk stratify patients.
- Assess the urgency of the requested evaluation and provide feedback and evaluation in an appropriate timeframe.
- Identify medical conditions that increase risk for perioperative complications and make specific evidence-based recommendations to optimize outcomes in the perioperative period.
- Determine the perioperative medical management strategies required to address specific disease states.
- Develop a comprehensive perioperative plan.
- Initiate indicated perioperative preventive strategies.
- Reassess patients for postoperative complications and make medical recommendations as indicated.
- Communicate with patients and families to explain the hospitalist’s role in perioperative medical care, any indicated preoperative testing related to their medical conditions or risk assessment, and any adjustment of pharmacologic therapies.
- Communicate with patients and families to explain any indicated perioperative prophylactic measures.
- Facilitate discharge planning early in the hospitalization, including communicating with the primary care provider and presenting the patient and family with contact information for follow-up care.

ATTITUDES

Hospitalists should be able to:
- Follow evidence-based recommendations for the evaluation and treatment of patients in the perioperative period.
- Serve as an advocate for patients.
- Promote a collaborative relationship with surgical services, which includes effective communication.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:
- Lead, coordinate, and/or participate in multidisciplinary efforts to develop clinical guidelines, protocols, and pathways to improve the timing and quality of perioperative care from initial preoperative evaluation through all care transitions.
- Lead, coordinate, and/or participate in efforts to improve the efficiency and quality of care through innovative models, which may include comanagement of surgical patients in the perioperative period.
- Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize diagnostic and management strategies for surgical patients requiring medical evaluation.
- Lead, coordinate, and/or participate in multidisciplinary protocols to promote the rapid identification, triage, and expeditious evaluation of patients requiring urgent operations.
References
Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection. Sepsis has various etiologies and clinical presentations. It accounts for substantial morbidity and mortality and is a leading cause of hospitalization in the United States. More than 1 million hospital discharges occur with sepsis as the primary diagnosis, and the incidence continues to rise. Sepsis is the most expensive condition treated in US hospitals, and length of stay is roughly 75% longer than it is for other conditions. Sepsis requires expeditious diagnosis and standardized treatment plans to favorably influence patient morbidity and mortality. The in-hospital mortality rate for sepsis varies depending on disease severity and is approximately 16%. Septic shock is a subset of sepsis in which underlying circulatory and cellular/metabolic abnormalities are profound enough to substantially increase mortality. Hospitalists have a key role in the early identification of patients with sepsis, and they practice evidence-based evaluation and interventions such as early goal-directed therapy for patients with sepsis and septic shock. Hospitalists lead their institutions to implement early diagnostic strategies, initiate evidence-based medical therapies, and incorporate multidisciplinary approaches to the care of patients with sepsis.

**KNOWLEDGE**

*Hospitalists should be able to:*

- Define and differentiate sepsis and septic shock from uncomplicated infection.
- Describe prognostic scoring tools used to assess morbidity and mortality in patients with sepsis, such as the Sequential Organ Failure Assessment (SOFA) and Quick SOFA (qSOFA) scores, and the systemic inflammatory response syndrome (SIRS) criteria.
- Describe the pathobiology that leads to sepsis and septic shock.
- Differentiate septic shock from other causes of shock.
- Recognize the value and limitations of the history and physical examination in determining the cause of sepsis.
- Recognize the indications for specialty consultations, which may include critical care medicine.
- Identify patient groups with increased risk for the development of sepsis, increased morbidity or mortality, or uncommon etiologic organisms.
- Describe the elements and efficacy of early goal-directed therapy for the treatment of sepsis and septic shock.
- Describe the mechanism of action, indications, contraindications, and adverse effects of therapeutic agents, including intravenous fluids, vasopressors, and antimicrobials, in the treatment of sepsis.
- Describe the indications for and limitations of central venous access and its value for hemodynamic monitoring and administration of vasoactive agents.
- Explain patient characteristics that on admission portend poor prognosis.

**SKILLS**

*Hospitalists should be able to:*

- Use all available information, including medical records and history provided by the patient and caregivers, to identify factors that contribute to the development of sepsis.
- Perform a rapid and targeted physical examination to identify potential sources of sepsis.
- Order indicated diagnostic testing to identify the source of sepsis and determine severity of organ dysfunction.
- Rapidly identify patients with septic shock and aggressively treat in parallel with transfer to a critical care setting.
- Assess cardiopulmonary stability and implement aggressive fluid resuscitation, airway maintenance, and circulatory support.
- Measure and interpret indicated hemodynamic monitoring parameters.
- Initiate empiric antimicrobial therapy on the basis of the suspected etiologic source of infection.
- Assess the need for central venous access and monitoring; when needed, coordinate or establish central venous access.
- Determine or coordinate appropriate nutritional and metabolic interventions.
- Support organ function and correct metabolic derangements when indicated.
- Implement measures to ensure optimal glycemic control.
- Adopt measures to prevent complications, which may include aspiration precautions, stress ulcer and venous thromboembolism prophylaxis, and decubitus ulcer prevention.
- Communicate with patients and families to explain the history and prognosis of sepsis and indicators of functional improvement or decline.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Address resuscitation status early during hospital stay and discuss and implement end-of-life decisions by patient or family when indicated or desired.
- Communicate with patients and families to explain the goals of care, clinical stability criteria, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.

**ATTITUDES**

*Hospitalists should be able to:*

- Employ an early and multidisciplinary approach, which may include respiratory therapy, nursing, pharmacy, nutrition, rehabilitation and social services, that begins at
admission and continues through all care transitions.
• Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of sepsis.
• Establish and maintain an open dialogue with patients and families regarding care goals and limitations, including palliative care and end-of-life wishes.
• Value good communication with patients and receiving physicians during care transitions.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary teams, which may include nutrition, pharmacy, rehabilitation, social services, and respiratory therapy, early in the hospital course to improve patient function and outcomes.
• Lead, coordinate, and/or participate in the development and promotion of guidelines and/or pathways that facilitate efficient and timely evaluation and treatment of patients with sepsis.
• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize resource use.
• Lead, coordinate, and/or participate in intramural and interinstitutional efforts to develop protocols for the rapid identification and transfer of patients with sepsis to appropriate facilities.
• Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations.
• Integrate outcomes research, institution-specific laboratory policies, and hospital formulary to create indicated and cost-effective diagnostic and management strategies for patients with sepsis.

References
Cellulitis is a bacterial infection of the skin and subcutaneous tissues. It is a common, potentially serious medical condition that can result in significant morbidity and hospitalization. Annually, more than 620,000 hospital discharges occur with skin and soft tissue infection as the primary diagnosis. Potential complications include abscess formation. Hospitalists can lead efforts to standardize care delivery, promote antibiotic stewardship, improve discharge planning, and promptly identify and address severe cases of cellulitis to minimize complications and improve patient outcomes.

**KNOWLEDGE**

Hospitalists should be able to:
- Describe the clinical presentation of cellulitis and distinguish between routine and complicated cellulitis.
- Differentiate cellulitis from chronic venous stasis changes and other mimicking skin conditions and discuss the accuracy of common signs and symptoms in patients with suspected cellulitis.
- Describe the tests used to evaluate cellulitis.
- Discuss possible causative organisms on the basis of classic associations with characteristic host exposures.
- Describe factors associated with an increased risk of worsening disease severity and complications.
- Recognize indications for early specialty consultation in patients with complications, misdiagnosis, or lack of response to therapy.
- Differentiate empiric antibiotic regimens for uncomplicated and complicated types of cellulitis.
- Explain indications for outpatient treatment and need for hospital admission.
- Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

**SKILLS**

Hospitalists should be able to:
- Elicit a focused medical history to identify precipitating causes of cellulitis and comorbid conditions that may affect clinical management.
- Assess patients with cellulitis in a timely manner and manage or comanage patients with the primary requesting service.
- Accurately identify routine cellulitis borders and signs of complications, which may include crepitus and abscess.
- Recommend an appropriate, cost-effective initial diagnostic evaluation of cellulitis, including laboratory and radiologic studies.
- Initiate empiric antibiotic treatment of cellulitis on the basis of host exposures, predisposing underlying systemic illness, history and physical examination findings, presumptive bacterial pathogens, and evidence-based recommendations.
- Treat coexisting fungal infection, edema, and other conditions that may exacerbate cellulitis.
- Formulate a subsequent treatment plan that includes narrowing antibiotic therapies on the basis of available culture data and the patient’s response to treatment.
- Determine appropriate timing for transition from intravenous to oral therapy and duration of antibiotic treatment.
- Initiate preventive measures for minimizing risk of recurrent cellulitis.
- Communicate with patients and families to explain the history and prognosis of cellulitis.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Facilitate discharge planning early during hospitalization.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.

**ATTITUDES**

Hospitalists should be able to:
- Employ a multidisciplinary approach in the care of patients with cellulitis that begins at admission and continues through all care transitions.
- Follow evidence-based recommendations to guide diagnosis, monitoring, and treatment of cellulitis.
- Consider cost-effectiveness (including formulary availability), risk of potential adverse effects, and ease of conversion to outpatient treatment when choosing among therapeutic options.

**SYSTEM ORGANIZATIONS AND IMPROVEMENT**

To improve efficiency and quality within their organizations, hospitalists should:
- Lead, coordinate, and/or participate in multidisciplinary initiatives, which may include collaborative efforts with infectious disease physicians, to promote patient safety and optimize cost-effective diagnostic and management strategies for patients with cellulitis.
- Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations.

**Reference**

1.18 STROKE

Stroke is defined as damage to brain tissue resulting from interruption in blood flow. This condition accounts for significant morbidity and mortality in hospitalized patients. Annually in the United States, approximately 1 million hospital discharges occur with cerebrovascular disease as the primary diagnosis. The average length of stay is 6.1 days. Stroke care is a rapidly evolving field in which expeditious and careful inpatient care significantly affects outcome. For example, intravenous thrombolytic therapy administered within the recommended time window from symptom onset is associated with more favorable outcomes. Therefore, it is incumbent on hospitalists to develop the knowledge and skills to identify and manage strokes, coordinate specialty and primary care resources, and guide patients safely through the acute hospitalization and back into the outpatient setting.

KNOWLEDGE

Hospitalists should be able to:
• Describe causes of ischemic and hemorrhagic stroke.
• Describe the relationship between the anatomic location of stroke and clinical presentation.
• List risk factors for ischemic and hemorrhagic stroke.
• Describe appropriate imaging techniques and laboratory testing to evaluate patients with suspected stroke.
• Recognize the indications for early specialty consultation, which may include neurology, neurosurgery, and interventional radiology.
• Describe indications, contraindications, and mechanisms of action of pharmacologic agents used to treat stroke.
• Describe indications and contraindications for thrombolytic therapy in the setting of acute stroke.
• Explain blood pressure control strategies for patients presenting with different types of stroke.
• List indications for early surgical and endovascular interventions.
• Explain the spectrum of functional outcomes of different types of stroke and how these relate to the initial presentation.
• Explain goals for hospital discharge, including specific measures of clinical stability for safe care transition.

SKILLS

Hospitalists should be able to:
• Elicit a thorough and relevant medical history to assess for symptoms that are typical of stroke.
• Perform an appropriate physical examination to diagnose stroke and to help guide further management.
• Assess patients with stroke in a timely manner.
• Diagnose the etiology of stroke through interpretation of initial testing including history, physical examination, electrocardiogram, neurologic imaging, and laboratory results.
• Initiate indicated acute therapies to improve the prognosis of stroke.
• Identify patients at risk for acute decompensation, which may include those with signs of increased intracranial pressure and posterior circulation disease.
• Identify patients at risk for intracranial hypertension and posterior circulation disease.
• Manage the airway, temperature, blood pressure, and glycemic status of patients with stroke when indicated.
• Address resuscitation status early during hospital stay; implement end-of-life decisions by patients and/or families when indicated or desired.
• Initiate prophylaxis against common complications, which may include urinary tract infection, aspiration pneumonia, and venous thromboembolism.
• Initiate secondary stroke prevention.
• Communicate with patients and families to explain the history and prognosis of stroke.
• Communicate with patients and families to explain the tests and procedures and their indications and to obtain informed consent.
• Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
• Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transition of care.
• Communicate with patients and families to explain the barriers to follow-up care of patients who have had a stroke and involve multidisciplinary hospital staff to accordingly tailor medications and transition of care plans.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians, which may include outpatient rehabilitation.

ATTITUDES

Hospitalists should be able to:
• Employ an early and multidisciplinary approach to the care of patients who have had a stroke that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations, protocols, and risk stratification tools for the treatment of stroke.
• Work collaboratively with allied health professionals (eg, physical therapy, occupational therapy) to develop comprehensive care plans to address deficits or limitations that result from stroke.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary teams, which may include neurology, rehabilitation medicine, nursing, physical and occupational therapy, speech pathology, and other allied health professionals, early in the hospital course to reduce complications, facilitate patient education, and coordinate discharge planning.
• Lead, coordinate, and/or participate in multidisciplinary efforts to develop protocols to rapidly identify patients with stroke who have indications for acute interventions and to minimize time to intervention.

• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize resource use, including aggressive treatment of risk factors and rehabilitation.

References


1.19 SYNCOPE

Syncope is defined as a transient loss of consciousness that results from cerebral hypoperfusion. Characteristically, it is abrupt in onset, short-lived, and resolves spontaneously. Presyncope is a term used to describe a near-syncopal event involving identical pathophysiology as syncope; however, the patient does not fully lose consciousness. Syncope affects approximately 1 million Americans every year and accounts for 6% of all hospital admissions.1–4 Approximately 1 in 3 persons will experience a syncope at least once in their lifetime.2,4,5 The condition reflects the end-point of myriad processes ultimately leading to a disruption in the oxygen supply to the brain. It is most commonly caused by systemic hypotension accompanied by cerebral hypoperfusion. Syncope-related mortality varies depending on the etiology and is higher in persons with underlying cardiovascular disease.3,6 Although many etiologies of syncope are self-limited and benign, hospitalists must be able to identify patients who may have serious underlying diseases, as well as those at high risk for complications from a syncopal event. Hospitalists should evaluate whether diagnostic tests are indicated and curtail their routine use in patients with simple syncope for whom there is little clinical value.7 Furthermore, hospitalists must balance the tempo and depth of an inpatient evaluation to safely assess patients before effectively transitioning them to the outpatient environment. Hospitalists can facilitate the evaluation and management of syncope to improve patient outcomes and decrease healthcare costs associated with identifying and managing this condition.

KNOWLEDGE

Hospitalists should be able to:

• Define syncope.
• Differentiate syncope from other causes of loss of consciousness, such as seizure.
• Explain the physiologic mechanisms that lead to reflex or neurally mediated syncope.
• Identify common causes of neurally mediated syncope such as neurocardiogenic, carotid sinus, and situational syncope.
• Identify conditions associated with orthostatic hypotension that may result in syncope.
• Identify medications that may contribute to, or cause, syncope.
• Identify common cardiac etiologies for syncope, including structural heart disease or dysrhythmia.
• Identify uncommon pulmonary or vascular etiologies for syncope, such as pulmonary embolism or vertebrobasilar insufficiency.
• Recognize associated metabolic conditions that may trigger loss of consciousness such as hypoglycemia.
• Describe risk factors that place patients at higher risk for poorer outcomes and/or complications secondary to syncope.
• List the indications that require inpatient evaluation of syncope.
• Recognize indications for specialty consultation, such as cardiology or neurology.
• Outline an evidence-based strategic process to evaluate patients with syncope.

SKILLS

Hospitalists should be able to:

• Elicit a thorough and relevant medical history, perform a physical examination, and review the medical record to identify factors that led to the development of syncope.
• Accurately assess patients’ volume status and use appropriate special maneuvers to complement the physical examination to identify underlying etiologies of syncope or other causes that may mimic syncope.
• Determine which patients require evaluation of syncope as an inpatient.
• Identify the most appropriate care setting and monitoring requirements for patients admitted for a syncope evaluation (with judicious but appropriate use of continuous telemetry, pulse oximetry, and seizure precautions).
• Formulate a logical diagnostic plan to determine the cause of syncope, while avoiding diagnostic tests that are rarely indicated (such as carotid ultrasonography) except in selected circumstances.
• Order and interpret indicated laboratory studies to evaluate for underlying conditions that may contribute to, or cause, syncope.
• Appropriately order more advanced diagnostic studies to guide a syncope evaluation, seeking guidance from specialists when necessary to interpret the results.
• Determine an appropriate plan to manage syncope once the etiology has been identified.
• Communicate with nursing teams and implement appropriate precautions to prevent inpatient falls in patients admitted with syncope.
• Communicate with patients and families to explain the etiology of syncope and the importance of recognizing and preventing recurrent syncope.
• Communicate with patients and families to explain the associated risks, required monitoring, and appropriate management of syncope.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians.
ATTITUDES
Hospitalists should be able to:
• Follow evidence-based recommendations when managing hospitalized patients with syncope.
• Work collaboratively with primary care physicians and emergency physicians in making admission decisions.
• Acknowledge the opportunity to decrease mortality, length of stay, and healthcare costs by identifying and managing complications of syncope.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary initiatives to promote patient safety and optimize diagnostic and management strategies for syncope.
• Lead, coordinate, and/or participate in efforts to apply high-value care to the evaluation of a patient with uncomplicated syncope (eg, avoidance of neuroimaging and carotid ultrasonography).

References
Urinary tract infection (UTI) refers to a spectrum of clinical presentations ranging from asymptomatic urinary infection to acute pyelonephritis with sepsisemia. UTI is a common infection diagnosed at the time of hospital admission or acquired during hospitalization. Annually in the United States, more than 550,000 hospital discharges occur with UTI as the primary diagnosis with an average length of stay of 4 days. UTI is the most common hospital-acquired infection, and it accounts for nearly 40% of all nosocomial infections. Of UTIs acquired during hospitalization, approximately 75% are associated with urinary catheter use. In addition to patients who have indwelling catheters, other populations that are at greater risk for UTIs are women and older adults, as well as those who are pregnant or have diabetes mellitus. Symptomatic UTIs should be distinguished from asymptomatic bacteriuria, which is more common with advancing age and in persons with diabetes mellitus and should only be treated when it presents in pregnant women or men undergoing urologic procedures. Hospitalists diagnose, treat, and identify complications of UTI. Hospitalists can lead hospital-wide patient safety initiatives to reduce the incidence of hospital-acquired infection and emerging antibiotic resistance.

1.20 URINARY TRACT INFECTION

KNOWLEDGE
Hospitalists should be able to:
- Define UTI and describe the pathophysiology that leads to complicated UTI.
- Describe common symptoms and signs of UTI.
- Explain the clinical spectrum of UTI, including patient populations that may present with atypical symptoms.
- Name specific patient populations at increased risk for development of hospital-acquired or other complicated UTIs.
- Name common community-acquired and hospital-acquired urinary pathogens.
- Explain how local and national resistance patterns affect the selection of initial antibiotics.
- Distinguish UTI from sterile pyuria and from colonization.
- Explain the indications and limitations of specific tests used to diagnose UTI, its underlying causes, and complicating conditions.
- Recognize indications for specialty consultation, which may include urology or infectious disease services.
- Define risk factors for UTI.
- Describe the indications for appropriate urinary bladder catheterization for hospitalized patients.
- Differentiate the specific clinical management, including antibiotic selection for different patient populations, for patients with community-acquired UTI, hospital-acquired UTI, and incidentally recognized pyuria, as well as for patients who have chronic indwelling catheters, are pregnant, or are immunosuppressed.
- Explain the indications for hospitalization in patients with UTI.
- Explain the goals for hospital discharge, including specific measures of clinical stability for safe care transition.

SKILLS
Hospitalists should be able to:
- Elicit a focused medical history to identify risk factors for and symptoms of UTI and its known complications.
- Perform a targeted physical examination looking for signs of complicated UTI, sepsis, prostatitis, and other comorbid conditions.
- Order and interpret the results of imaging studies when indicated.
- Formulate an initial care plan on the basis of patient risk factors, acute medical illness, comorbid disease, and local and national antibiotic resistance patterns.
- Adjust antibiotic therapy on the basis of subsequent culture results and determine the appropriate treatment duration.
- Apply judicious antibiotic selection to help reduce antibiotic resistance.
- Recognize and address complications of UTI and/or inadequate therapeutic response.
- Evaluate and treat patients for UTI in the perioperative setting when indicated.
- Promote and use preventive measures, which may include early removal and avoidance of unnecessary urinary catheters and other interventions to prevent UTI.
- Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
- Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
- Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
- Document the treatment plan and provide clear discharge instructions for postdischarge clinicians, including duration of antibiotic treatment and the need for follow-up testing.
- Provide and coordinate resources to ensure safe transition from the hospital to arranged follow-up care.
- Coordinate discharge plans when patients require ongoing skilled nursing care.

ATTITUDES
Hospitalists should be able to:
- Employ a multidisciplinary approach in the care of patients with complicated UTI that begins at admission and
continues through all care transitions.

- Follow evidence-based recommendations for the diagnosis and treatment of UTI.
- Appreciate and treat patients’ pain.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve efficiency and quality within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in multidisciplinary initiatives to minimize use and duration of urinary catheters and to reduce the incidence of hospital-acquired UTI.
- Implement systems to ensure hospital-wide adherence to national standards and document those measures as specified by recognized organizations.
- Collaborate with local infection control practitioners to reduce the spread of resistant organisms within the institution.

References

1.21 VENOUS THROMBOEMBOLISM

Venous thromboembolism (VTE), or clotting within the venous system, is a common and underrecognized cause of significant preventable morbidity and mortality in hospitalized patients. VTE includes deep vein thrombosis (DVT) and pulmonary embolism (PE). Each year, 300,000 to 600,000 Americans are affected by VTE. VTE is a serious condition that carries a substantial risk of mortality and long-term complications such as chronic venous insufficiency, major bleeding during anticoagulation therapy, and recurrent disease. Annually, VTE may be responsible for more than 100,000 deaths in the United States, and it is the most common preventable cause of hospital death. Hospitals can lead their institutions in the development of screening and prevention protocols for patients at risk for VTE and in the promotion of early diagnosis and safe treatment approaches. Hospitalists can also develop strategies to operationalize cost-effective programs that will improve patient outcomes and reduce the economic burden of VTE.

KNOWLEDGE

Hospitalists should be able to:

• Describe VTE pathophysiology, including contributing aspects of endothelial damage, stasis, and alteration of the coagulation cascade.
• Describe the epidemiology of VTE, including the effects of demographic, environmental, thrombophilic, and hormonal factors, underlying medical and surgical conditions, and length of stay.
• Explain the clinical presentation of VTE and describe the algorithmic diagnostic approach.
• Describe the indications, accuracy, and limitations of specific diagnostic tests.
• Explain when invasive testing, including pulmonary angiography and venography, is indicated and list the contraindications and potential complications of such testing.
• Recognize indications and poor prognostic factors that necessitate early specialty consultation, which may include interventional radiology, vascular surgery, and hematology.
• Describe VTE prophylaxis regimens for specific hospitalized risk groups including medical, general surgical, orthopedic, neurosurgical, obstetric, and critically ill patients.
• Explain the indications for hospitalization and admission to the intensive care unit.
• Explain the indications, contraindications, and adverse effects of thrombolytic therapy in the setting of VTE.
• Explain indications, contraindications, mechanisms of action, and reversal agents for pharmacologic drugs used to treat VTE.
• Explain the role and potential adverse effects of other therapeutic modalities in the setting of VTE, including different anticoagulation regimens, vena caval interruption, thrombolysis, and embolectomy.
• Describe the risk of adverse outcomes from VTE.
• Describe the risks and potential harm associated with pressure gradient stockings.
• Recognize when to prescribe postdischarge prophylaxis.
• Explain goals for hospital discharge including specific measures of clinical stability for safe care transitions.

SKILLS

Hospitalists should be able to:

• Elicit a thorough and relevant medical history and review the medical record to identify relevant risk factors and symptoms consistent with VTE.
• Perform a complete physical examination to identify clinical features that predict the presence of VTE and significant clot burden, including evidence of pulmonary hypertension, right heart failure, low perfusion state, and underlying malignancy.
• Analyze history and physical findings to determine pretest probability for DVT and/or PE.
• Integrate evidence-based diagnostic testing to establish the diagnosis or exclusion of VTE or need for additional testing strategies.
• Assess the need for urgent invasive treatment modalities including thrombolysis or embolectomy.
• Determine the appropriate level of inpatient care required.
• Formulate a treatment plan tailored to the individual patient including selection of a specific anticoagulation regimen or suitable alternative therapy.
• Anticipate and address factors that may complicate VTE or its management including cardiopulmonary compromise, bleeding, and/or anticoagulation failure.
• Address and manage pain, dyspnea, and swelling in patients with VTE.
• Perform VTE risk assessment in all hospitalized patients and initiate indicated prophylactic measures, including pharmacologic agents, mechanical devices, and/or amputation to reduce the likelihood of VTE.
• Facilitate comanagement of VTE treatment and prophylaxis when requested by other services.
• Educate clinicians and nurses in VTE risk assessment and preventive measures.
• Communicate with patients and families to explain the natural history and prognosis of VTE.
• Communicate with patients and families to explain tests and procedures and their indications and to obtain informed consent.
• Communicate with patients and families to explain the use and potential adverse effects of pharmacologic agents.
• Communicate with patients and families to explain the goals of care, discharge instructions, and management after hospital discharge to ensure safe follow-up and transitions of care.
• Prescribe treatments to decrease the risk of postthrombotic syndrome upon hospital discharge.
• Ensure adequate resources, including monitoring of anticoagulation, for patients between hospital discharge and arranged outpatient follow-up.
• Document the treatment plan and provide clear discharge instructions for postdischarge clinicians responsible for monitoring anticoagulation.

ATTITUDES
Hospitalists should be able to:
• Employ a multidisciplinary approach, which may include nursing, anticoagulation, pharmacy, and nutrition services, to the care of patients with VTE that begins at admission and continues through all care transitions.
• Follow evidence-based recommendations when managing hospitalized patients at risk for VTE or those who have acute VTE.
• Work collaboratively with primary care physicians and emergency physicians in making admission decisions.

SYSTEM ORGANIZATION AND IMPROVEMENT
To improve efficiency and quality within their organizations, hospitalists should:
• Lead, coordinate, and/or participate in multidisciplinary initiatives to implement screening and prevention protocols for hospitalized patients on the basis of national evidence-based recommendations.
• Lead, coordinate, and/or participate in multidisciplinary teams to develop early treatment protocols.
• Lead, coordinate, and/or participate in multidisciplinary initiatives to improve inpatient care efficiency, facilitate early discharge, and encourage the outpatient management of VTE.
• Advocate for the establishment and support of postdischarge resources, including patient education, adequate availability of pharmacologic agents, and postdischarge follow-up monitoring and care.
• Lead, coordinate, and/or participate in initiatives to ensure appropriate use of mechanical and pharmacologic prophylaxis.
• Lead, coordinate, and/or participate in initiatives that limit the inappropriate use of VTE prophylaxis.
• Integrate outcomes research, institution-specific laboratory policies, and the hospital formulary to create evidence-based and cost-effective diagnostic and management strategies for patients with VTE.

References