This issue of the Journal of Emergency Nursing (JEN) is focused on cardiovascular disease, a growing concern among our aging population and beyond. Cardiovascular disease is the top killer in the United States and worldwide, and cardiovascular emergencies account for approximately 10% of all ED visits in the US. More than 8 million patients with chest pain and/or anginal equivalent symptoms (eg, shortness of breath and diaphoresis) present to emergency departments each year, accounting for the second most common cause of ED visits for adults. In 2019 alone, it was estimated that every 40 seconds, 1 American would suffer from an acute myocardial infarction, nearly 720,000 would suffer from a new coronary event, and approximately 335,000 would have a recurrent cardiac event. Emergency nurses are often the first point of contact for individuals presenting with cardiac symptoms. We are required to differentiate rapidly between life-threatening conditions and non–life-threatening ones and determine accurately which course of treatment will result in optimal patient outcomes.

Acute coronary syndrome (ACS) is a spectrum of clinical syndromes (ST-elevation myocardial infarction, non-ST-elevation myocardial infarction, and unstable angina) reflecting the progression of coronary artery occlusion. Time is of the essence as myocardial infarction ensues after 20 minutes, and complete necrosis of myocardial cells can occur after 2 to 6 hours with total artery occlusion. Prolonged ischemic time (duration and extent of ischemia) is associated with poor outcomes (eg, death and heart failure). Early symptom recognition and intervention to restore blood flow to the affected artery within 30 minutes have the potential to prevent or minimize these events. ACS is often an elusive and challenging diagnosis that depends on rapid assessment, triage, and risk stratification. Emergency nurses are charged with identifying and recognizing quickly individuals who present with symptoms suggestive of ACS. Symptom recognition and timely reperfusion minimize ischemic time, salvage the myocardium, preserve left ventricular function, and improve survival. We rely on assessment and triage for rapid clinical decision making, such as the acquisition of an electrocardiogram (ECG) within 10 minutes of presentation to the emergency department. I suspect it is the combination of the excitement and challenge of these encounters that draws many of us to the field of emergency nursing.

Technology offers us new opportunities to refine the assessment and triage of cardiac patients in the emergency department. In this issue of JEN, we learn about the innovative ways in which clinicians are integrating rapidly evolving technology to advance patient care and improve outcomes. Pon et al report on their quality improvement project to evaluate the causes of high dilTIAZem dosing for individuals presenting to the emergency department with atrial fibrillation (AF). AF is the most frequent arrhythmia seen in the emergency department, and if left untreated, individuals are at increased risk of mortality, stroke, left ventricular dysfunction, and heart failure. AF is treated with beta blockers or calcium channel blockers; yet, patients in the emergency department often receive doses exceeding guideline-recommended doses. After identifying that nearly 70% of initial dilTIAZem doses were outside the recommended range (weight-based), Pon et al developed and tested a novel text message notification system to monitor dilTIAZem dosing in their emergency department. The authors provided staff education after identifying knowledge...
deficit as a primary reason for these medication errors. Pon et al.18 improved care for ED patients with AF through technology.

Another way technology is evolving quickly is through cardiac monitoring. Cardiac monitoring, which includes 12-lead ECG and bedside monitors, enables clinicians to detect arrhythmias, myocardial ischemia, and QT-interval measurements in real time. Cardiac monitoring was first introduced nearly 60 years ago for critically ill patients and focused on heart rate measurement and fatal arrhythmia detection.20 Today, cardiac monitoring technologies are evolving quickly and being implemented across a variety of settings, including prehospital. Emergency nurses rely on the information provided by monitor devices for minute-to-minute clinical decision making. When individual parameters fall outside alarm thresholds for a few seconds, alarms are triggered in either audible or visual text message format. Many of these alarms are false or clinically irrelevant, leading to alarm fatigue. Alarm fatigue is a national patient safety hazard issue and occurs when nurses are desensitized by numerous alarms, which can lead potentially to patient injury or death.21

In this issue of JEN, we learn about strategies to manage alarm fatigue in the emergency department. Fujita and Choi22 conducted a practice improvement project to implement and evaluate a program to reduce the number of clinically nonactionable physiological alarms in the emergency department. Using the Iowa Model of Evidence-Based Practice to guide their framework, Fujita and Choi22 adjusted alarm default settings and implemented an education plan regarding safety and alarms. As a result, the number of nonactionable alarms decreased with no reports of adverse patient outcomes. The authors should be commended because this is the first project to our knowledge that addresses this complex and critical patient safety issue in the ED setting.

My clinical experiences as an emergency nurse directly inform my program of research, which aims to enhance the diagnostic accuracy of ACS and other time-sensitive cardiovascular conditions through noninvasive monitoring. I became intrigued by physiological monitoring at my job in a rural emergency department, when local emergency medical services began transmitting ECGs from the field. I witnessed how ECGs provided critical information regarding the patients before their arrival at the hospital, which is a highly vulnerable period for individuals suffering from acute myocardial ischemia/infarction.23,24 As a nurse scientist, I continue to be curious about how technologies not only provide physiological data regarding an individual but also have the potential to enhance access to life-saving care. This may be demonstrated by the use of drones to deliver automatic external defibrillators in hard-to-reach places.25,26

As articles in this issue of JEN illustrate, we are exploring innovative strategies that integrate an array of technology to optimize care and outcomes for patients with cardiovascular conditions, and beyond. I think it is important to note that these technologies will not replace our critical skills of triage and risk stratification, but rather augment them. Our work to improve patient outcomes, however, is far from done. Research in emergency cardiac care remains challenging and limited by a variety of barriers. These include, but are not limited to, time constraints, physical symptoms, emotional stress, and cognitive impairment.27 There are not clear or established ethical standards concerning consent and patients in the emergency setting. Emergency research, moreover, inherently crosses a wide range of conditions, many in which patients are not conscious. I believe emergency nurses are in a position to lead this charge and conduct future research that informs clinical decision making. I suspect we will continue to embrace the challenges, and the fast pace that emergency nursing promises us, through research, innovation, and patient care.

REFERENCES


