Survival from in-hospital cardiac arrest during nights and weekends.

Dr. Peberdy and NRCPR investigators recently reported the survival of patients sustaining in-hospital cardiac arrests during different hospital shifts. From data collected in the National Registry of Cardiopulmonary Resuscitation (NRCPR), they studied 58,593 patients who sustained a cardiac arrest during the day/evening (7 AM-11 PM) shifts, and 28,155 patients who arrested during night (11 PM-7 AM) shifts. For those patients (approximately 10%) who had more than one cardiac arrest during the same hospitalization, they included only the index (first) event.

They found that survival to discharge, restoration of circulation (ROC) >20 min, and 24-hour survival was better during the day/evening (7 AM-11 PM) shifts compared to the night (11 PM-7 AM) shifts. Survival to discharge was 19.8% during day/evening shifts vs. 14.3% during night shifts, adjusted OR 1.18 (1.38-1.49); ROC >20 Min was 51% vs. 44.7%, OR 1.15 (1.12-1.19); and 24 hr survival was 35.4% vs. 28.9%, OR 1.19 (1.15-1.23).

Except emergency department and trauma patients/units where there was no difference during day/evenings vs. nights, this difference in survival was the same in all other units (operating room/post anesthesia care unit, interventional catheterization laboratory, inpatient monitored and unmonitored, intensive care unit). The survival to discharge during night shifts was the same on weekdays and weekends; but survival during day/evening shifts was lower on weekends vs. weekdays (OR 1.15).

They suggested that there were several potential factors that may influence the type and quality of care delivered to patients during cardiac arrest at night and on weekends: decreased physical and physiological performance on the part of the healthcare worker, different staffing patterns, and less patient surveillance during nights and weekends. Arrests at night were less likely to be monitored by telemetry/electrocardiography or witnessed; and asystole was more frequent and ventricular fibrillation/pulseless ventricular tachycardia were less frequent initial arrhythmias during arrests that occurred during the night shift.

How can NRCPR participants use these data for process improvement in their facilities?

The major direct effect of location and arrest time of day and day of week is restoration of circulation and 24-hour survival. For this it is best to look at each event. Data indicating event

survival is currently available in the quarterly and annual reports, appendices L1 and L2, which describe where and when (time and day of week) resuscitation events are occurring. The purpose of this report is to assist NRCPR participants evaluate staffing, training and equipment needs. Because the number of events in the facility quarterly reports may be small, the annual summary report may be more helpful.

Survival from in-hospital cardiac arrest during nights and weekends. Peberdy MA, Ornato JP, Larkin GL, et al; JAMA 2008; 299: 785-792