Postoperative cardio-pulmonary arrests (CPA) are uncommon and little is known about rates and predictors of in-hospital survival. To more fully address these gaps in knowledge, we set out to study the incidence, presentation, and management characteristics and outcomes of CPA events occurring in the operating room (OR) and the postoperative period within 24 hours of surgery, including PACU arrests. To achieve this study goal, we analyzed data from the National Registry of Cardiopulmonary Resuscitation (NRCPR), an American Heart Association sponsored prospective, multi-site, observational registry, because of its detailed collection of measures of care and outcomes during in-hospital CPA events.

We identified all patients aged 18 years or older who experienced an index, pulseless CPA either in a post anesthesia care unit (PACU) or within 24 hours of a PACU stay. The primary outcome was survival to hospital discharge, and the secondary outcome was favorable neurological outcome in survivors, as measured by a Cerebral Performance Category (score of 1). Predictors of survival were evaluated using multivariable logistic regression with generalized estimating equation models. Patient variables included: admitting diagnosis, coexisting medical conditions, initial cardiac rhythm, duration of CPA event, airway related cause, time of day during cardiac arrest (daytime vs. night-time), location of event (post-PACU vs. PACU) and the use or nonuse of a hospital-wide cardiac arrest alert.

There were 1214 postoperative cardiopulmonary arrests identified from 291 facilities. Overall, 407 (33.5%) patients survived to hospital discharge, and among survivors, 262 (64.4%) survived without significant neurological deficits. Events occurring within 24 hours of PACU discharge were associated with worse survival compared to PACU arrests. Notably, airway cause and daytime events were associated with improved survival. Presence of hepatic insufficiency, trauma and sepsis were associated with worst odds of survival.

In conclusion, 1 in 3 patients survived to hospital discharge after postoperative cardiac arrests, and survival was better with daytime cardiac arrests and the presence of airway causes, underlining the importance of maintaining airway management skills in perianesthesia caregivers. There are significant clinical and research implications for perianesthesia nurses, particularly relating to resuscitation skill retention and PACU discharge disposition.

*NRCPR investigators: Paul S. Chan, Tim Mader, Karl B. Kern, Sam Warren, Graham Nichol, Thomas Noel, Joseph P. Ornato, Mary Ann Peberdy, Romergyko G. Geocadin, Scott Braithwaite, Dana Edelson, Comilla Sasson, Mary E. Mancini, Robert A. Berg, Emilie Allen, Elizabeth A. Hunt, Vinay M. Nadkarni, Kathy Duncan, Tanya Lane Truitt, Brian Eigel*