

Factors associated with Neurologically-Intact Survival for Patients with Acute Heart Failure and In-Hospital Cardiac Arrest

Phillip Levy, Scott Compton, Hong Ye, Gregory Luke Larkin for the American Heart Association National Registry of Cardiopulmonary Resuscitation Investigators; Circulation-Heart Failure. 2009; Vol 108 Epub ahead of print Sep. 28.
<http://circheartfailure.ahajournals.org>

- Hospitalized heart failure (HF) patients have increased risk of cardiac arrest.
- Factors are identified to enhance the resuscitation decision process.
- Strategies to optimize neurologically intact survival (NIS) in acute heart failure may enhance resource utilization.

Top 10 Things to Know

1. The estimated 2006 prevalence of heart failure (HF) in adults (20 years or older) is 5,700,000. In people diagnosed with HF sudden cardiac death occurs at six to nine times the rate of the general population. After HF is diagnosed, the one-year mortality rate is high, with 1 in 5 dying.
2. Resource utilization to manage morbidity of chronic HF is continuing to rise; the estimate for 2009 is \$37.2 billion.
3. This study sought to identify factors (positive or negative) associated with neurologically-intact survival (NIS), defined as a cerebral performance category (CPC) of 1 or 2, at discharge for acute HF patients who suffer an in-hospital cardiac arrest (IHCA).
4. This *NRCPR study population was comprised of in-hospital cardiac arrests between January 1, 2000 and December 31, 2007, 13,063 adults (age \geq 18 years) from 457 facilities with a documented diagnosis of acute HF during the index admission.
5. Overall, 2,608 (20.0%) survived to hospital discharge. NIS occurred in 2,307 (17.7%) patients (88.5% of survivors).
6. After adjustment for cardiac monitoring and presence of any ventricular fibrillation/pulseless ventricular tachycardia during the arrest, and duration

of the arrest event, NIS was associated by adjusted odds ratio (OR) with 18 pre-arrest factors, 4 positively and 14 negatively.

7. Four factors were associated with an increased (positive) odds of NIS:
 - No therapeutic interventions at time of arrest
 - Diabetes mellitus at baseline
 - Arrhythmias during index admission
 - Pulmonary artery catheter in place at time of arrest

8. Eight factors had a strong inverse relationship and tended to have a 40-50% reduction in odds of NIS:
 - Acute stroke
 - Non-stroke CNS event
 - Malignancy
 - Continuous infusion of vasopressors
 - Assisted or mechanical ventilation
 - Septicemia
 - Hepatic insufficiency
 - Hypotension/hypoperfusion

9. Six factors having a weaker association for decreased odds of NIS:
 - Age
 - Black race
 - Baseline depression of CNS function
 - Renal insufficiency diagnosed during index admission
 - Continuous infusion of dobutamine
 - Pacemaker use

10. Further studies should attempt to validate factors in the pre-arrest period that could help objectify the process of resuscitation goal setting and enhance the information on which patients and providers establish their preferences for (or against) DNAR status, thus fostering direction of resuscitation efforts towards those most likely to derive meaningful benefit.

*NRCPR is a performance improvement tool that can be used to identify and monitor key process variables and patient outcomes for in-hospital cardiac arrest. Link to: (NRCPR.org)

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