

Prehosp Disaster Med

Prehosp Disaster Med, 2011 Jun;26(3):148-50.

End-tidal CO₂ as a predictor of survival in out-of-hospital cardiac arrest.

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2012/08/22

OBJECTIVE:

- Evaluate initial end-tidal CO₂ (EtCO₂) as a predictor of survival in out-of-hospital cardiac arrest.

METHODS:

- **Retrospective:** all adult, non-traumatic, out-of-hospital, cardiac arrests during 2006 and 2007 in Los Angeles, California.
 - The primary outcome variable was attaining ROSC in the field.
 - Logistic regression analysis
 - Determine which variables of the cardiac arrest were significantly associated with ROSC.

RESULTS:

- 3,121 cardiac arrests included
 - 1,689 (54.4%) were witnessed
 - 516 (16.9%) were primary VF.
- The mean initial EtCO₂ was 18.7 (95%CI = 18.2-19.3) for all patients.
 - 695 patients (22.4%) ROSC, EtCO₂: 27.6 (95%CI = 26.3-29.0).
 - Failed to achieve ROSC, EtCO₂: 16.0 (95%CI = 15.5-16.5).

- The following variables were significantly associated with achieving ROSC:

- Witnessed arrest (OR = 1.51; 95%CI = 1.07-2.12);
- Initial EtCO₂ >10 (OR = 4.79; 95%CI = 3.10-4.42);
- EtCO₂ dropping <25% during the resuscitation (OR = 2.82; 95%CI = 2.01-3.97).

- Combination of this was 97% predictive of failure to achieve ROSC

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|-------------------|---------------------------------|-----------------------------------|
| ■ Male gender | ■ Lack of bystander CPR | ■ Unwitnessed collapse |
| ■ Non-vfib arrest | ■ Initial EtCO ₂ ≤10 | ■ EtCO ₂ falling > 25% |

CONCLUSIONS:

- An initial EtCO₂ >10 and the absence of a falling EtCO₂ >25% from baseline → significantly associated with achieving ROSC in OHCA.
- These additional variables should be incorporated in termination of resuscitation algorithms in the prehospital setting

Journal of Trauma and Acute Care Surgery.

J Trauma Acute Care Surg. 2012 Apr;72(4):975-81.

Epidemiology and predictors of cervical spine injury in adult major trauma patients: a multicenter cohort study.

Hasler RM, Exadaktylos AK, Bouamra O, Bennekler LM, Clancy M, Sieber B, Zimmermann H, Lecky F.

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2012/08/22

BACKGROUND:

- Patients with cervical spine injuries are a high-risk group, with the highest reported early mortality rate in spinal trauma.

METHODS:

- Cohort study predictors for C spine injury in adult (≥ 16 years) major trauma patients using prospectively collected data of the Trauma Audit and Research Network from 1988 to 2009.
 - Univariate and multivariate logistic regression analyses
 - Determine predictors for cervical fractures/dislocations or cord injury.

RESULTS:

- 250,584 patients were analyzed.
- Median age 47.2 years (29.8-66.0)
- ISS 9 (4-11)
- 60.2% were male.
 - 6702 patients (2.3%) sustained cervical frx/dislocations alone.
 - 2069 (0.8%) sustained cervical cord injury with/without fractures/dislocations
 - 39.9% of fracture/dislocation and 25.8% of cord injury patients suffered injuries to other body regions.

Predictive for

Frx/dislocations

- Age ≥ 65 years
- Males
- GCS score <15
- LeFort facial fractures
- Sports injuries
- Road traffic collisions
- Falls >2 m

Cord injury

- Age <35 years
- Males
- GCS score <15
- SBP <110 mm Hg
- Sports injuries
- Road traffic collisions
- Falls >2 m

CONCLUSIONS:

- 3.5% of patients suffered cervical spine injury.
- Patients increased risk
 - lowered GCS or SBP,
 - severe facial fractures,
 - dangerous injury mechanism,
 - male gender, and/or age ≥ 35 years
- Contrary to common belief, head injury was not predicted for cervical spine involvement.