

Hypoxemia during aeromedical evacuation of the walking wounded.

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BACKGROUND: Hypobaric hypoxemia is a well-known risk of aeromedical evacuation (AE). Validating patients as safe to fly includes assessment of oxygenation status as well as oxygen-carrying capability (hemoglobin). The incidence and severity of hypoxemia during AE of noncritically injured casualties have not been studied.

METHODS: Subjects deemed safe to fly by the validating flight surgeon were monitored with pulse oximetry from the flight line until arrival at definitive care. All subjects were US military personnel or contractors following traumatic injuries. Noninvasive oxygen saturation (SpO₂), pulse rate, and noninvasive hemoglobin were measured every 5 seconds and recorded to electronic memory. Patient demographics and physiologic data were collected by chart abstraction from the Air Force Form 3899, patient movement record. The incidence and duration of hypoxemic events (SpO₂ < 90%) and critical hypoxemic events were determined (SpO₂ < 85%).

RESULTS: Sixty-one casualties were evaluated during AE from Bagram Air Base to Landstuhl Regional Medical Center. The mean (SD) age was 26.2 (6) years, Injury Severity Score (ISS) was 8 (11), and mean SpO₂ before AE was 96% (2%). The mean (SD) transport time was 9.3 (1.3) hours. Patients were monitored before AE for a brief period, yielding a total recording time of 10.28 hours. The mean (SD) hemoglobin at the time of enrollment was 13.2 (3.5) g/dL (9.4-18.0 g/dL). Hypoxemia (SpO₂ < 90%) was seen in 55 (90%) of 61 subjects. The mean duration of SpO₂ less than 90% was 44 minutes. The mean (SD) change in SpO₂ from baseline to mean in-flight SpO₂ was 4% (1.2%). Thirty-four patients (56%) exhibited an SpO₂ less than 85% for 11.7 (15) minutes.

CONCLUSION: Hypoxemia is a common event during AE of casualties. In patients with infection and concussion or mild traumatic brain injury, this could have long-term consequences.

LEVEL OF EVIDENCE: Epidemiologic/prognostic study, level V.