CORRELATION OF MEDICAL HELICOPTER TRANSPORTS WITH CONSENSUS UTILIZATION GUIDELINES

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Introduction: Helicopter air ambulances in the United States now transport over 300,000 patients annually. There is some concern about helicopter utilization, with suggestions of low patient acuity and high 24-hour discharge rates for trauma patients. Retrospective evaluations of trauma resource utilization necessarily demonstrate significant overtriage and, while the majority of transports, there is little review of helicopter use for interfacility transports.

Consensus guidelines from the National Association of Emergency Medical Services Physicians (NAEMSP) and the American College of Surgeons (ACS) represent the best available real-time resources for providers to identify candidates for helicopter air medical transport. The relationship between those guidelines and the patients actually transported by air medical helicopter is not well reported.

Methods. A prospective evaluation of each patient transported by one of five North East Air Alliance air-medical programs in the third and fourth quarters of 2006. The programs, with a diverse array of program models and aviation providers, serve 18,354,000 people with ten helicopters. Transport teams completed a post-transport data tool identifying which, if any, ACS or NAEMSP criterion was met for the transport, as well as request time and transport distance information. Completed tools were indexed with dispatch records to ensure 100% transport capture.

For analysis, “provider judgment” was excluded as a transport indicator because there must be a specific provider request for any transport in the region. Descriptive

statistics are reported with confidence intervals, and associations are made with the Chi-Square test. Comparisons have 80% power at a 0.05 significance level.

Results. There were 3,263 helicopter transports, distributed as 74.9% interfacility (n = 2445) and 25.1% (n = 818) scene transports; 55.9% had a medical diagnosis (n = 1825) and 44.1% (n = 1438). Mean transport distance was 39.4 +/- 32.2 miles (range 1 – 346, median 31), and 65.3% of transports occurred between 0700 and 1900 (n = 2111).

Overall, 94.9% of transports met at least one objective transport criterion (n = 3098, 95% CI 94.1 – 95.7%): 53.4% met a medical criterion, 41.6% met a trauma criterion. For the 165 transports that did not meet any criterion (5.1%, 95% CI 4.3 – 5.9%), 2.6% were medical and 2.5% were trauma.

For trauma patients, 94.4% met at least one objective ACS transport criterion (n = 1357, 95% CI 93.2% - 95.6%): 89.9% of scene patients (n = 705, 95% CI 87.8 – 92.0%) and 99.7% of interfacility requests (n = 652, 95% CI 99.3 – 99.9%, $p < 0.001$). Of the ACS categories for scene patients, 26.7% of patients had a physiological indicator for transport, 31.8% an anatomical indicator, 26.0% a mechanism indicator alone, and 5.5% an "other" indicator for transport.

For medical patients, 95.4% met at least one criterion (n = 1741, 95% CI 94.4 – 96.4%): 95.5% for interfacility (n = 1710, 95% CI 94.5 – 96.5%) and 91.2% for medical scene requests (n = 31, 95% CI 80.7 – 99.9%, p = NS). Transport distance was longer for medical patients who did not meet a transport criterion than for patients who did: 60.8 +/- 50.0 v. 43.5 +/- 32.0 miles, $p < 0.01$). There were no other associations between transport indicators and time of day or transport mileage.

Conclusion: In the region studied, nearly all patients transported by air medical helicopter met at least one consensus transport criterion. Compliance rates were lowest for scene trauma transports.