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Analysis of Calls Under-triaged by Priority Medical Dispatch in San Diego

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Purpose: To identify calls "under-triaged" by priority medical dispatch and determine causes and pre-hospital outcomes.

Methods: 6 month retrospective analysis identified calls dispatched "low priority" to which medics assigned "high acuity" transports (acute status or requiring ALS meds; not just IV/O₂/monitor). CAD data, paramedic run-sheets, and audiotapes were reviewed to determine optimal dispatch levels and transport codes. "Under-triage" was defined as calls warranting "high priority" dispatch based on evidence from the run-sheet. Dispatcher, calling party, and patient data influencing "under-triage" were assessed.

Results: In 1995, 11,178/70,887 (16%) medical aid requests were dispatched "low priority". 201 (1.8%) were subsequently assigned "high acuity" transport codes by paramedics. 105/5,737 such consecutive patients were analyzed from July–December 1995. 6 were excluded due to incomplete data. After review, 42/99 actually warranted "high priority" dispatch. 7 had potential life/limb threatening injuries; 35 required ALS intervention. None had adverse prehospital outcome. Under-triage was associated with dispatcher error, information relayed from law enforcement officers (OR = 3.4, CI: 1.2–10) calls involving alcohol (OR = 2.8, CI: 0.9–9.2) or patients with ALOC (OR = 3.4, CI: 1.2–10).

Conclusion:

- 1) Comparing paramedic assigned transport codes to dispatch levels identifies dispatch error but inflates apparent under-triage. Actual under-triage was 42/5,737 (0.7%).
- 2) Though low priority dispatch posed a potential life/limb threat in 7 cases, no adverse outcomes were encountered. Average high/low priority response times differ by <2.5 min in San Diego's single tiered EMS system (HP 7:25/LP 9:52); under-triage consequences may differ in other EMS models.
- 3) Dispatcher protocol deviations, secondhand information, particularly from law enforcement, and cases involving alcohol or ALOC were associated with under-triage in this sample population.

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Ambulance Sphygmomanometer Accuracy: Can It Affect Triage to the Trauma Center?

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Objectives: To determine the accuracy of sphygmomanometers (SPHYGs) from a metropolitan EMS system and quantitate the mis-triage of adult blunt trauma patients based on erroneous systolic blood pressure (SBP) readings.

Methods-A: A cross-sectional, convenient sample of 150 SPHYGs was checked for accuracy using industry standards. Mean high and low deviations were calculated at 90 mmHg.

Methods-B: Retrospectively, a frequency distribution of the initial SBPs of all blunt trauma patients, age ≥ 21 , seen in 1994 was plotted to characterize our study population. The numbers of patients potentially over- or under-triaged were identified when their reported SBP was corrected for using the mean high and low deviation plus 2 SDs.

Results-A: Overall, 25.3% of the SPHYGs were inaccurate. At 90 mmHg, 28.0% (42/150) were inaccurate with 16.7% (7/42) high by 4.6 ± 1.5 mmHg and 81.0% (34/42) low by 6.2 ± 4.2 mmHg; one was inoperable.

Results-B: 1,005 adult blunt trauma patients were evaluated; 61 were eliminated: 35 had initial SBPs of 0 mmHg and 26 had no SBP recorded ($n = 944$). The mean initial SBP was 138 ± 30 mmHg, and 3.8% (36/944) of the patients had SBPs <90 mmHg. Potentially, 2.0% (19/944) of the patients were under-triaged (initial erroneously high SBP reading 90–98 mmHg) and 2.5% (24/944) over-triaged (initial erroneously low SBP reading 74–90 mmHg).

Conclusions: This study suggests that an accurate SBP measurement at 90 mmHg may not be reliably obtained with 28% of the sphygmomanometers currently used in our EMS system. Erroneous initial SBP readings due to inaccurate sphygmomanometers alone may mis-triage up to 4.5% of adult blunt trauma patients.