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BACKGROUND

Rapid economic and technologic advances have led to demographic and epidemiologic changes in the Chinese population toward an increased incidence of injuries as well as chronic conditions such as coronary artery disease, stroke, cancer, and diabetes. These new health challenges require the presence of a functional emergency medical service (EMS) system to appropriately manage emergencies related to these conditions. This is especially important at a county level where the EMS system is responsible for majority of the rural populations that have limited access to care. Current Chinese EMS is faced with many challenges due to a lack of systematic planning, national standards in training, and standardized protocols for pre-hospital patient evaluation and management.

OBJECTIVES

To estimate the frequency with which pre-hospital care providers perform critical actions for selected chief complaints in a county-level EMS dispatch center in Hunan Province, China. This call center services an area of just under 5000 km² with a total population of 1.36 million.

METHODS

We collected data pertaining to pre-hospital evaluation of patients on EMS dispatches from a county-level “120” dispatch center over a 2-month period.

- Cross-sectional observational study, convenience sample between 8 AM and 6 PM.
- A single trained observer accompanied EMS teams on patient transports with selected chief complaints.
- Direct observation of patient evaluation and management for critical actions*.
- Simple statistical analysis was performed to determine the frequency of critical actions performed by EMS providers.

*Critical actions were pre-determined by a panel of emergency medicine faculty from Xiangya Hospital, Central South University and the University of Maryland School of Medicine.

RESULTS

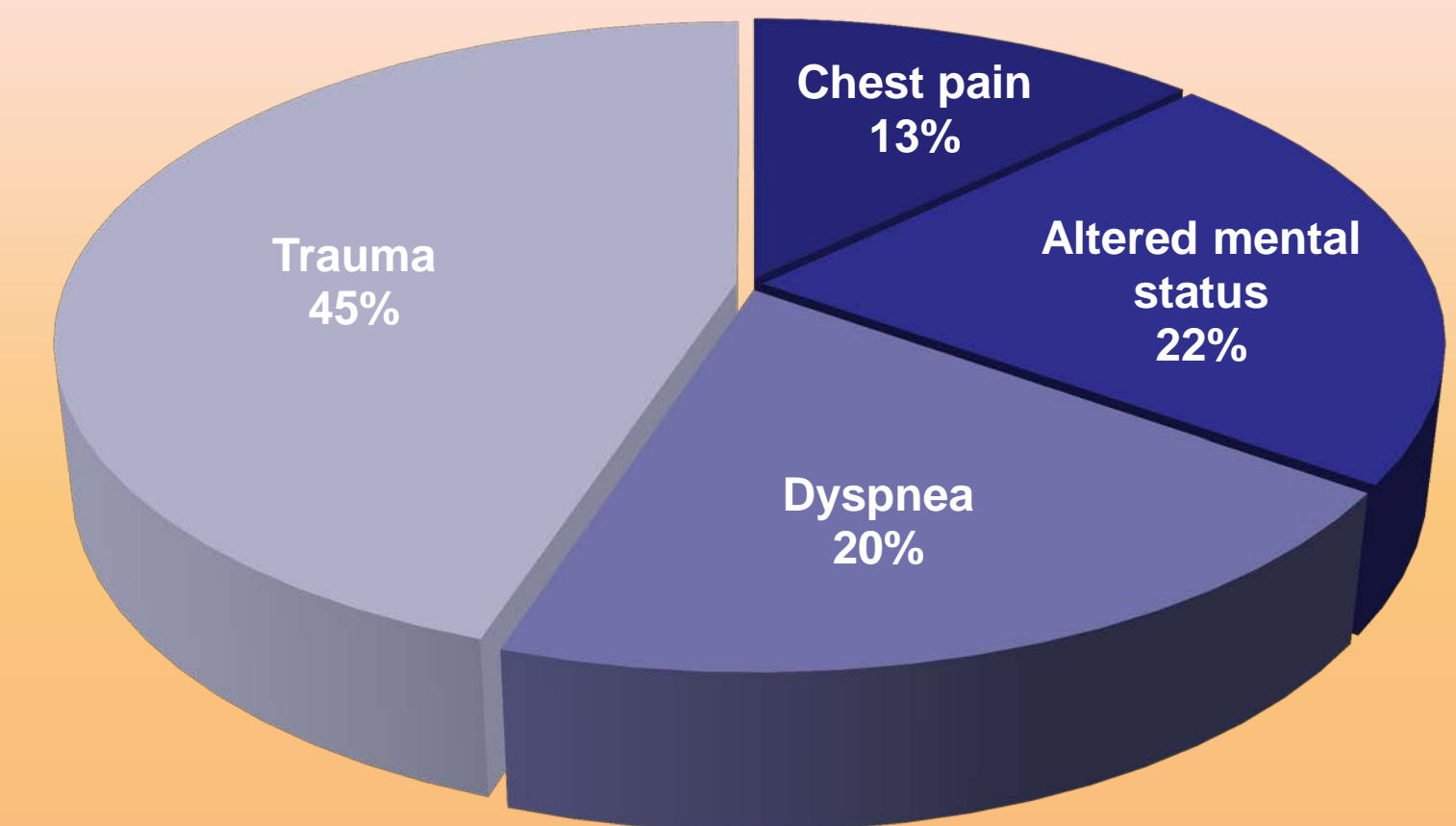
Each EMS team consists of a driver, a nurse, and a physician. During the 2 month study period:

- Total of 1170 patients were transported
- 452 patients were evaluated for chest pain, altered mental status, dyspnea, or trauma.
- 218 (48.2%) of these evaluations were directly observed for critical actions (Figure 1).
- Table 1 illustrates the frequency of critical actions performed by chief complaint.

Table 1. Frequency of selected critical actions performed by pre-hospital personnel.

Chief Complaint	Median Age (Interquartile range)	Critical Action	Performance Frequency
Chest Pain	68.5 (58 – 77.5)	BP	10.7%
		HR	14.3%
		EKG	0%
Altered Mental Status	65.5 (45.8 – 74.3)	BP	17.0%
		Rapid glucose	2.1%
Dyspnea	58 (50 – 70)	RR	9.1%
		Lung exam	22.7%
Trauma	42 (33 – 52)	HR	4.1%
		BP	1.0%
		GCS	57.7%
		Fracture immobilized	22.4%
		Bleed control	87.5%

Fig 1. Proportion of each observed chief complaint.



CONCLUSION

In this observational study of pre-hospital patient evaluation and treatment in a county level EMS system in Hunan, China:

- Majority of the critical actions were performed infrequently for the chief complaints of interest (0 - 22.7%).
- Standardized pre-hospital patient care protocols should be established in China.
- Further training is needed to optimize patient assessment.

LIMITATIONS

Given the variability seen in current Chinese EMS models, the results of this single-site study may not be generalizable to all suburban EMS systems in China. We did not institute a process to ensure that all EMS providers were equally represented during the data collection. Thus, it is possible that some underperforming providers maybe over-represented in the data.