Study finds air traffic control tracking method reduces errors in trauma management

June 11 2009

New research published in the June issue of the *Journal of the American College of Surgeons* shows that a method used by air traffic controllers tracks patient data more effectively and with fewer errors compared with current hospital methods, primarily the use of clipboards.

Currently there is no standard practice for tracking the movement of patients from emergency rooms to the radiology suite, operating rooms, the intensive care unit, inpatient rooms or the discharge area. In addition, basic errors - such as misidentifying which extremity needs to be amputated - have resulted in increased mortality that could be prevented with basic safety measures. Both of these situations underscore the fact that patient safety has become a more visible vulnerability of modern medicine.

Air traffic controllers use a method in which each aircraft is represented by a flight progress strip. Multiple strips are stacked in order of priority within a bay representing a unique stage of flight. Reprioritization regularly occurs for faster aircraft or those that require expedited throughput for emergency or other reasons such as low fuel or weather. Flight progress strips are moved from bay to bay as aircraft move from one stage of flight to another.

"For decades, air traffic controllers have managed the complexities of airspace and aircraft handoff with a simple, manual method that has

evolved to an efficient and nearly flawless system," says Jason D. Hoskins, MA, of the Uniformed Services University of the Health Sciences (USUHS) in Maryland. "Our study successfully demonstrated that this method translates to trauma management, and results in increased accuracy and awareness of patient recording, tracking and throughput management. We are currently in discussions to test a more mature version of the system in clinic."

Researchers compared the air traffic control model and the traditional casualty tracking method of paper and clipboard in 18 four-hour casualty scenarios with six groups of senior medical students, each with five to 30 mock casualties as part of training session at the Emergency Medical Support Level II facility at USUHS. The experimental control groups were alternated to maximize exposure and minimize training effects. Results were compiled into performance indices for each scenario, ranging from 0 to 100 percent to represent the number of information items recorded correctly, divided by the number of information items sampled in the scenario.

When compared with the control group, the air traffic control method had fewer errors than the traditional method in critical patient data (99 percent correct versus 87 percent correct, p=0.017). Additionally, the air traffic control method better tracked mechanism of injury (100 percent versus 88 percent, p=0.004), working diagnosis (100 percent versus 93 percent, p=0.045) and disposition of patients through hospital (100 percent versus 93 percent, p=0.009).

The air traffic control method did not significantly vary from the traditional method in recording name, social security number or patient location, or in determining total number of casualties (both were 92 percent). However, the air traffic control method was able to track where patients were at given times, even after each scenario was finished.

By keeping data in "air traffic control" bays, information was available in one location as opposed to on a roving clipboard. This system provided hospital administrators with knowledge of current hospital capacity and throughput efficiency so that resources could be redirected in real time and a dynamic re-triage process could be maintained.

Post-scenario surveys were provided to key student leadership positions after each cycle. Responders (n=75) preferred the data bays to standard clipboard tracking by a ratio of nearly 3:1 ($p = 0.003$).

Source: Weber Shandwick Worldwide (news : web)