Crowded emergency departments pose greater risks for patients with heart attacks

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June 04, 2009 - Patients with heart attacks and other forms of chest pain are three to five times more likely to experience serious complications after hospital admission when they are treated in a crowded emergency department (ED), according to a new study published in the journal *Academic Emergency Medicine*. The authors say that this dramatic difference in rates of serious complications underscores the need for action on the part of hospital administrators, policymakers and emergency physicians to find solutions to what has been termed "a national public health problem." More than six million patients per year come to U.S. emergency departments with chest pain.

"What shocked us is that these complications were not explained by what goes on in the ED, like getting aspirin or a rapid electrocardiogram," says lead author Jesse M. Pines, M.D., MBA, an assistant professor of emergency medicine and epidemiology at the Hospital of the University of Pennsylvania and a senior fellow at the Leonard Davis Institute of Health Economics. "The adverse events occurred after the patient had been admitted to the hospital. Emergency department crowding is really more of a marker of a dysfunctional hospital."

The study followed 4,574 patients who were admitted to the Hospital of the University of Pennsylvania for symptoms of chest pain over an eight-year period. Ultimately, 802 were diagnosed with an acute coronary syndrome (chest pain of cardiac origin); of those, 273 had a true heart attack. There were 251 complications that occurred in the hospital after initial emergency department treatment. Complications included serious

events, such as heart failure, delayed heart attacks, dangerously low blood pressure, heart arrhythmias and cardiac arrest.

When the emergency department was at its highest occupancy and waiting room census, patients with acute coronary syndrome were three times more likely to experience complications in the hospital. When the "patient-hours" was highest, they were more than five times more likely to have a complication. Patient-hours is a sum of the total hours that all patients in the emergency department have been waiting. "It is a measure of real ED workload," says Pines.

Patients without acute coronary syndrome, but still were sick enough to be admitted to the hospital, also had three to four times more complications at highest waiting room census and patient-hours. The authors were unable to pinpoint the exact causes for why both groups of patients had worse outcomes, but they thought that this might be due to poorer care coordination, delays in testing, and overburdened doctors and nurses in the emergency department and in the hospital.

"The federal government and other payers have focused efforts on reducing unnecessary complications by refusing to pay for hospitalizations where there is a preventable cause, such as an infection from a bladder catheter or a central line," says Judd E. Hollander, M.D., the study's senior author and professor of emergency medicine at Penn. "While it's difficult to know what complications are truly preventable, what we do know is that crowding is preventable. But hospitals have to allocate enough resources to their emergency departments so that errors are caught early and patients don't suffer." He went on to say that the major factor that causes crowding is the boarding of admitted patients, where people spend long periods of time waiting in the emergency department after admission.

"The problem is that in today's day and age, hospitals are not held

accountable for crowding and waiting times," says Hollander. Recent literature has shown that paradoxically, hospitals profit when their emergency departments are crowded because it allows more elective patients (such as pre-scheduled surgeries) to be admitted.

But recently, the National Quality Forum has approved several measures of emergency department crowding, including waiting times to see a physician, overall length of stay, boarding times and left-without-being seen rates. "Once hospitals realize that their reputations will be tied to how long people wait, hospitals will have a greater incentive to reduce crowding and waiting. Making sure the emergency department isn't crowded will certainly make patients happier, but our hope is this will make hospitals safer for everyone," says Pines.

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