



Hospital Peer Alert

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Hospital Peer Review is a monthly newsletter sponsored by the Rural Healthcare Quality Network to alert Critical Access Hospitals regarding findings from the Peer Review Program. Summarized are a few of the key findings and best practices that would be helpful for other critical access hospitals to be knowledgeable about. This newsletter is edited by Myron Bloom, Medical Director and he can be reached at drmbloom@msn.com.

“DOA” ED bounce backs – what can be learned?

Unanticipated Death After Discharge Home From the Emergency Department

Ann Emerg Med. 2007;49:735-745.

In this review of almost 400,000 patients discharged from an academic medical center during a 10-year period, roughly 30 per 100,000 patients died within 7 days of ED discharge, 20 per 100,000 unexpectedly and 9 per 100,000 with a potentially contributory medical error. The median number of days between discharge to home and death was 3 days; the mean number was 3.8 days (limit of opportunity to intervene?). Abnormal vital signs, exacerbation of chronic disease, atypical presentations, and mental illness/substance abuse were common themes.

This study of 387,334 visits from 186,859 individuals (average of 2.1 visits per patient). took place at the University of New Mexico Health Sciences Center in Albuquerque of all patients from 1994 to 2004 older than 10 years of age who had been evaluated and discharged from the ED and subsequently died within the next 7 days and were reported to the New Mexico's state medical examiner as required by law: Half were male; the overall average age was 39.7 years (SD 15.5 years). The expected death group was older (56.2 years) while the mean age at death was similar and younger for the possible error related unexpected (48.8 years), the non-error related unexpected (47.9 years) and the unrelated unexpected cases (48.5 years).

Four common themes emerged:

- abnormal vital signs,
- chronic disease with decompensation,
- atypical presentation of an unusual problem, and
- psychosocial issues reducing likelihood that the patient would return for worsening symptoms.

All patients had at least 1 of the themes identified above: 5 had 1, 34 had 2, 17 had 3, and 2 had all 4 themes. Abnormal vital signs occurred in 83% of cases (48/58), including 83% (29 of 35) of the possible error cases; chronic disease with decompensation occurred in 60% (35 of 58), including 60% (21 of 35) of the possible error cases; atypical presentation occurred in 38% (22 of 58), including 54% (19 of 35) possible error cases; and mental illness or substance use occurred in 41% (24 of 58), including 29% (10 of 35) of the possible error cases.

Abnormal vital signs were defined as a pulse rate greater than 99 or less than 60 beats per min, a systolic blood pressure greater than 179 or less than 90 mm Hg or a diastolic greater than 109 mm Hg, a respiratory rate greater than 24 or less than 12 breaths/min, a temperature above 100.2 F° (37.9°C) or below 95.0 F° (35.0°C) or oxygen saturation less than 90%.

Tachycardia was especially conspicuous, occurring in 83% (48 of 58), including 71% (25 of 35) of the possible error cases while it only occurred in 36% (13 of 36) of the unrelated unexpected deaths who were of similar age. Abnormal vital signs occur commonly in ED and are a sensitive but nonspecific indicator of risk. Abnormal vital signs may be an indicator of decompensated chronic illness or of severe or acute illness presenting early in its course. Abnormal vital signs should trigger a search for an explanation of their cause. Documented explanation for abnormal vital signs or a documented normalization was found to be lacking in the possible error cases, although normalization was found in several non-error cases. Recognition and cautious assessment of abnormal vital signs is an opportunity to prevent unexpected outcomes.

Another common finding in patients dying unexpectedly of a related problem was the presence of chronic disease such as congestive heart failure. Unfortunately it may be difficult to recognize acute decompensation in a patient with chronic compromise.

A third pattern was the atypical presentation of relatively unlikely diseases. In the study there were cases of pulmonary emboli with dizziness but no chest pain or shortness of breath and myocardial infarction with pain in the back of the neck denying chest pain or shortness of breath. Clues such as abnormal vital signs or abnormal laboratory tests were present but the physicians did not appreciate the clues because of the atypical nature of the presentation. However, **atypical presentation of myocardial infarction is a major litigation risk in emergency medicine.**

The fourth pattern was patients with psychiatric or cognitive disability, or substance abuse associated with their medical problem, who failed to return to the ED when their conditions worsened. This would suggest that vulnerable patients with significant psychosocial compromise may need to be considered for observation even if the usual criteria for admission are absent.

The possible error cases included 11 cardiac diagnoses (coronary artery atherosclerotic heart disease [6], congestive failure [1], myocardial infarction [2], endocarditis [1], cardiomyopathy [1]). There were 6 central nervous system deaths (subdural [2], intracerebral bleeding [2], seizure [1], and meningitis [1]). There were 3 pulmonary deaths (pulmonary embolus [2], pneumonia [1]). There were 6 abdominal/gastrointestinal causes (1 each gastrointestinal bleeding, peritonitis, bowel infarct, mesenteric artery infarct, hepatic failure, and abdominal aorta aneurysm). The other deaths were from sepsis, acute respiratory distress syndrome, AIDS, and alcoholic liver disease.