Clinical Alert

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Office of Health Care Quality
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Delays in Treatment

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In March of 2004, the State of Maryland began requiring hospitals to report Level 1 adverse events to the Office of Health Care Quality (OHCQ) under COMAR 10.07.06, Patient Safety Programs. A Level 1 adverse event is an unexpected occurrence related to an individual's medical treatment, that is not related to the natural course of the person's illness or disease process, that results in death or serious disability. A review of adverse events reported to OHCQ reveals that, after falls, delay in treatment is the second-most frequently reported adverse event, with 85 events reported between March 2004 and June 2009. Seventy-five percent of reported delays in treatment events were fatal.

The Agency for Healthcare Research and Quality (AHRQ), along with the Department of Veterans Affairs and other patient safety organizations, refer to delays in treatment as "failure to rescue." Failure to rescue is the failure to prevent a clinically important deterioration or complication related to the underlying condition or medical care. Examples include death or permanent disability from a cardiac arrest in a patient with an acute myocardial infarction or a major hemorrhage after thrombolysis for acute myocardial infarction.[1] Most researchers view failure to rescue as a nursing quality measure in that higher nursing education levels and higher nurse-patient ratios are associated with fewer cases of failure to rescue.[1, 2, 3] Most of the delayed events reported to OHCQ are related to failure to prevent known complications. OHCQ has chosen to refer to this phenomenon as delay in treatment. A review of the events reveals that they are multifactorial and multidisciplinary in scope.

COMAR 10.07.06 mandates that hospitals submit RCAs (root cause analyses) to OHCQ within 60 days of reporting the event to the agency. For FY 2008 and 2009, 34 Level 1 delays in treatment were reported. Of these events, 77 percent were fatal. An in-depth review was undertaken in an attempt to identify any commonalities among case characteristics or causality. For this analysis, cases were assigned to one of three causes based on a subjective review of narrative descriptions and timelines of the events, along with review of the hospital's RCAs. Of the fatal events, it was determined that critical thinking failures (inability to grasp the seriousness of a situation) were associated with 50 percent of the events; failure to communicate patient information during transitions in care in 29 percent; and failure to take action on obvious information or symptoms in 21 percent of the cases.

Case Study: Failure to Act

A 50-year-old patient was brought to the emergency department (ED) with chest pain. A portable chest x-ray was done, which the ED physician read as normal. The patient was admitted to the telemetry unit because her chest pain was refractory to treatment. The same portable chest x-ray was read later that day by the radiologist who reported a possible widened mediastinum and suggested a STAT chest CT scan. This result was not reported to anyone as a critical finding, so no CT was scheduled. The patient arrested and died of a ruptured aortic aneurysm later that night.

Case Study: Critical Thinking Failure

A 50-year-old patient was admitted with sepsis. She was on an anticoagulant for a blood clot in her leg and

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pulmonary embolus requiring intubation and eventually a tracheotomy. After three weeks in the ICU, she started having bloody secretions from her tracheotomy while on full dose Lovenox. Over the next week she had five episodes of significant bleeding. Each episode was managed by the respiratory therapist and a physician's assistant (PA-C). The PA-C did not document the first two bleeding episodes which occurred on the same day. The third bleeding episode was documented in an illegible note. The patient became an ICU boarder and at this point the hospitalist began managing her care. When the hospitalist became aware of the fourth bleeding episode, he was not informed about or aware of the three episodes. On the last day of her life, an order was written to type and cross match her for a blood transfusion and to get a pulmonology consult. The patient died before the implementation of these orders. The physician documented that anemia due to acute blood loss contributed to her death. The ICU nurses knew of the bleeding episodes, but did not document it in their notes or mention it to any physician. Neither the respiratory therapist nor the PA-Cs addressed the patient's recurrent and significant bleeding episodes. Because of ineffective written and verbal communication, no one practitioner was aware of the multiple significant bleeding episodes, and no one recognized the seriousness of the bleeding and degree of acute anemia until after her death.

Case Study: Transitions in Care

A 60-year-old patient came to the ED with severe pain after her first dose of chemotherapy for a new diagnosis of squamous cell cancer of the mouth. Her labs were abnormal, with a BUN/Creatinine ten times normal, very low white blood cell count, and an acidotic pH to her blood. The plan was to insert an arterial line, intubate the patient and admit her to the ICU. Instead, after spending eight hours in the ED without any of these interventions, she was sent to a telemetry unit at 3 a.m. with no medical record, no arterial line, and on 2 liters of oxygen. She arrested about 20 minutes after arrival on the telemetry unit; at which time she had a breathing tube inserted and was sent to the ICU with severe acidosis. She arrested again two hours later and could not be resuscitated. The RCA determined that many clinicians made unwarranted assumptions about this patient without seeing her. The nephrologist (who was told about the labs but did not see the patient) felt that the patient could wait until the next day for dialysis. Even though the ED physician requested an ICU bed, the bed control nurse, without seeing the patient or discussing the case with the physician, decided the patient could be managed on a telemetry floor instead of in the ICU. There were also issues with communication between the ED RN and receiving RN as well as inadequate follow-up on the part of the ED physician.

Contributing Factors of Delays in Treatment

Several factors contributing to three causes were identified in the cases reported for FY 2008 and 2009. First was a failure of supervision in which the bedside provider is faced with a critical situation without help from a more advanced practitioner. This may occur because the bedside provider fails to ask for help because of a lack of knowledge or lack of courage to follow up the chain of command. It may also occur if the supervisor fails to fully assess or recognize potential critical situations. In one case, a patient in the ED was being managed by the bedside nurse for a situation that had been deteriorating for several hours. The relatively inexperienced bedside nurse reported that she could not manage her other patients, so the charge nurse shifted the assignments without going into the ED cubicle to assess the situation. When an experienced ED technician went in to see if she could help, she recognized that the patient was in severe distress and called a code blue.

Secondly, problems with electronic monitoring were associated with ten of the reported delays in treatment. Many of the contributing problems were due to the human-machine interface, and some were due to over-reliance on monitoring systems. An 80-year-old patient had uneventful cardiac bypass surgery. She had some non-cardiac post-op

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complications and remained on the telemetry unit a week after her surgery. She was found sitting on the floor at the foot of her bed pulseless and apneic with no monitoring leads on. She was resuscitated, but had no neurological function. She was transferred to the ICU and arrested again. This time she could not be resuscitated. A review of the monitor functioning showed that she had been alarming "leads off" for 30 minutes before she was found on the floor. It turned out that she had gotten out of bed during change of shift. On this unit, the practice was to put all the telemetry alarm beepers on a table for the next shift to take. The monitor technician had paged the nurse, but when no one answered, he did not try again.

Another monitor-mediated fatality occurred when a patient with sepsis arrested on the telemetry unit and there was a delay in resuscitation. This unit had an automated system that would call the nurse's phone with any dysrhythmia alarms. A review of the system after the arrest revealed that the patient's nurse was in another room with her other patient. She happened to take the other patient off his ventilator at the same time that the first patient started alarming. This coincidence enabled the ventilator alarm to cancel out the phone alarm for the first patient's asystole. Since the first patient was in an isolation room with the door closed, it was many minutes before anyone heard the alarm coming from the room. The third redundant alarm system, the audible alarm in the hall, also failed to work because a cord had come loose at the control panel behind the nurse's station.

Thirdly, five of the adverse events associated with delays in treatment happened to patients who were boarding while awaiting beds on another unit. Other than the ICU patient noted above, the rest of the events occurred in the ED. A common practice in many hospitals is that once admission orders are written, the patient is no longer considered an ED patient. These patients may remain in the ED for hours waiting for a bed. It is not always clear whether the ED physician, hospitalist, or intensivist is managing the patient during boarding. In one case, a 40-year-old diabetic patient came to the ED at 7 a.m. in diabetic ketoacidosis. The decision to admit the patient was made by the intensivist and the ED physician via phone consultation. No admission orders or further treatment orders were given. The ED physician stepped back after giving one dose of insulin and did not intervene to treat the patient's severe acidosis and glucose over 1100 mcg/dl, assuming that the intensivist was coming immediately. The intensivist could not see the patient for two and a half hours and had asked the hospitalist to manage the patient. The hospitalist did not see the patient for another two hours, but assumed the ED physician and staff were monitoring the patient. The patient was not placed on an insulin infusion until four hours after arriving in the ED. This severely acidotic patient died not long after the insulin infusion began, while he was still in the ED.

Case Study: Critical Thinking

A 75-year-old patient presented to the ED in the afternoon, complaining of a severe headache that began the night before. He had vital signs taken, was seen by the physician, medicated for pain and left alone to sleep. The nurse thought he was sleeping, even though he documented that the patient was unresponsive to sternal rub. The documentation also indicated that the physician was notified, but she did not see the patient until 6 a.m. and documented that the patient was sleeping, so she did not wake him to examine him. The physician also documented that the patient would be sent home with a diagnosis of sinusitis as soon as his family arrived. The nurse that came in at 7 a.m. immediately noted that the patient was non-responsive and had an ineffective respiratory pattern. He could not be resuscitated.

Where Did Delays of Treatment Occur?

Of the 34 Level 1 delays in treatment cases reported to OHCQ in FY 2008 and 2009, 14 or 41 percent occurred in the ED. The ICU and telemetry units were also well-represented with six cases each. Delays in treatment also occurred in radiology, outpatient areas and obstetrics.

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Conclusions

Delays in treatment are the second-most frequent adverse event reported to the Patient Safety Program. The most frequent location of the events was in the ED. In FY 2008 and 2009, thirty-four level 1 delays in treatment were reported to OHCQ, of which 77 percent were fatal. The root causes include failure to communicate patient information during transitions in care; failure to take action on obvious information or symptoms; and failure in critical thinking and the inability to grasp the seriousness of a situation. Risk factors for delays in treatment include failure of supervision, boarding patients, critical values, chain of command, and monitors. Delays in treatment are multifactorial and are multidisciplinary failures. It is the responsibility of the entire team of healthcare professionals to provide safe, timely, and coordinated health care to every patient.

1. *Available at AHRQ.gov*
2. *Aiken, L.H. et al, Hospital nurse staffing and patient mortality, nurse burnout, and job satisfaction. JAMA 2002;288: 1987-1993*
3. *Aiken, L.H. et al, Educational levels of hospital nurses and surgical patient mortality. JAMA 2003;290:1617-1623.*