Death by Running: Root Cause Analysis

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Long QT Syndrome

Over a decade ago the Institute of Medicine estimated that 44,000 to 98,000 Americans die each year from medical errors. Errors include medication errors, surgical errors, discrepancies in the discharge process, and communication issues (Wachter, 2012). The Joint Commission has found communication issues one of the top root causes for sentinel events for more than three years running (Rainer, 2015). Solutions to common communication errors are training for physicians and nurses to facilitate safe patient discharges and safely transition a patient’s care to the next provider (Block, Morgan-Gouveia, Levine, & Cayea, 2014). A hospital culture that supports speaking up and reporting of errors and near misses is necessary in preventing adverse outcomes for patients (Rainer, 2015).

A young 20 year old male, Alex, who aspired to be an Air Force officer, collapsed one day while running. He was taken to the hospital where he stayed for five days with his Dad at his bedside. While in the hospital Alex had multiple tests; electrocardiograms (ECGs), blood work, echocardiogram, and exercise stress test. The results of these tests were interpreted as normal and more tests were ordered. Alex also had a cardiac MRI scan that did not “show what they had hoped” which led the cardiologist to suggest a cardiac catheterization (Johnson, Haskell, & Barach, 2016, p. 85). The cardiac catheterization was traumatic for Alex, physically, because it caused a painful hematoma in his groin and emotionally, because he was concerned to have such an invasive procedure. The results of the catheterization were normal (Johnson, Haskell, & Barach, 2016).

After recovering from the cardiac catheterization Alex was scheduled for an electrophysiology test at a different hospital the next day. The electrophysiologist said the test did not show that anything was wrong. He verbally gave Alex and his father three suggestions
for follow-up. First, Alex should not run until they knew more what was going on. Second, Alex might benefit from having a loop monitor inserted. Last, Alex needed to follow-up with another physician in 5 days. Alex was given written discharge instructions not to drive for 24 hours. So he did not drive for 24 hours. He and his Dad discussed the loop monitor. They decided it might not be beneficial because recording from the monitor only happened when a patient activates it at the time of symptoms. Alex followed-up with a family medicine doctor who told him everything was fine and documented “there was nothing more they could do for him (Johnson et al., 2016, p. 86).” Two and a half weeks later Alex went running alone, collapsed again and went into cardiac arrest. Medics were able to achieve return of circulation but Alex died three days later in the hospital. Pathology report showed Alex had myocarditis and damage to the left ventricular septum (Johnson et al., 2016).

Alex’s father, John, has his PhD in pathology and is a board certified toxicologist. John was concerned something was missed in the care of his son so he used his research skills to review Alex’s medical records. He concluded that the doctors missed the diagnosis of long QT syndrome as a result of low potassium. While in the hospital Alex’s potassium level was 3.4. John asked one of the nurses about Alex’s low potassium and she told him they would replace it. While looking into Alex’s death John discovered a care guideline that stated if a patient’s potassium is below 4 and they have an arrhythmia, potassium and magnesium must be replaced. Alex did not receive this treatment even though he had multiple pre-ventricular contractions (PVCs) and low potassium. John also discovered that Alex did not have the cardiac MRI because the staff was not trained yet how to do it. Alex and his father were not given that information or informed of their options to have it elsewhere. They were led to believe the results “did not show
what they hoped” which prompted the need for the cardiac catheterization (Johnson, Haskell, & Barach, 2016, p. 85).

In reading Alex’s story the root cause of his death was lack of coordination and communication. Alex returned to normal physical activity of running after being told by the follow-up physician there was nothing more to be done. There was no communication between the physiologist, cardiologist, and the family practice doctor regarding a plan of care for Alex. The cardiologist and physiologist suspected there was something wrong that had not been discovered yet as evidenced by the instructions not to run and the suggestion of the loop recorder. Sadly, this was not communicated to the family practice doctor who medically cleared Alex. It is unclear in reading Alex’s story how he came to follow-up with a family practice physician instead of a cardiologist, but it was a contributing factor to his death.

Another communication error occurred when Alex was discharged after his electrophysiology test. Alex’s father did not know until after Alex’s death that he received large doses of Fentanyl and Versed during the procedure and probably would not remember what was said to him afterward. The electrophysiologist gave great verbal instructions, but did not include them in the printed instructions for Alex and his family to refer back to. Important written instructions for Alex would have been no strenuous activity until cleared by a cardiologist; as well as the name, address, and phone number of the specific physician to follow-up with.

Another contributing issue in Alex’s story was his low potassium level and frequent PVCs. His father voiced concerns about his potassium level, but it was not addressed by providers. A concerning mishap in Alex’s care was the cardiac MRI. It was unable to be done correctly due to lack of training. That was not shared with the patient or his father so they could make an informed decision about what to do next. If Alex and his Dad had known the procedure
could not be performed they may have chosen to have it done elsewhere or waited for someone with training to perform it. This information could have prevented Alex from having to go through a costly and invasive cardiac catheterization that was traumatic for him. It was not a contributing cause of his death but it was evidence of a culture of dishonesty to cover up mistakes.

The true root cause of Alex’s death would seem to be a missed diagnosis of long QT syndrome. Alex’s father did bring this concern to the Texas Medical Board twice and both times the Board ruled that the medical treatment given to Alex met the standard of care (Johnson et al., 2016). Alex’s father came to the diagnosis of long QT syndrome after reviewing all of Alex’s medical records and reviewing current cardiac literature. His conclusion could be the result of hindsight bias (Wachter, 2012). The diagnosis seems obvious when all the information is together, but it may not have been obvious during Alex’s care.

The first solution to prevent future errors would be formal training for physicians and nurses regarding thorough discharges and coordination of patient care. According to Block et al. education and training in medical schools for transitions of care and safe discharges is not universal. Seventy-eight medical students at John Hopkins University participated in a discharge skills workshop. At the workshop they identified poor communication and insufficient patient education to be a barrier to safely discharging patients. The students recognized that taking more time with a patient at discharge and writing clear discharge summaries would be good solutions. Students also acknowledged gaps in patient care could occur if proper hand-off to the next physician does not happen. Hand-offs included inpatient physician to outpatient physician or primary care provider. Their solution was to make a phone call to discuss the patient’s case and plan of care (Block, Morgan-Gouveia, Levine, & Cayea, 2014).
Imagine if the electrophysiologists in Alex’s case had called the family practice physician to give them a report or if Alex was given a written report to take to his doctor visit. The report would have included that no diagnosis has been made, a loop monitor has been suggested, and Alex is not to run until more is known. Instead of being told nothing is wrong and there is no more to be done, Alex could have been reminded he should still abstain from strenuous physical activity. Then the physician could have discussed other options besides the loop recorder and included Alex in the decision making process, which is his right as a patient.

Second suggestion for prevention in Alex’s case is improved advocacy on behalf of the patient. A nurse knew of Alex’s low potassium and told his father they would replace it. Alex never received any potassium replacement. According to Ranier 2015 a recent study showed 50% of nurses surveyed reported being in a situation where they felt they should speak up, but only 10% actually did. Reasons nurses do not speak up are time constraints, lack of support from peers or leadership, and medical power. It is important for a hospital to have a culture of safety that encourages nurses to speak up (Rainer, 2015).

If a nurse had spoken up or felt confident to speak up about Alex’s low potassium and PVCs maybe timely intervention and diagnosis would have happened. A thorough assessment of the hospital’s culture should be performed by getting feedback from staff about comfort level of speaking up and incident reporting. Hospital staff should be educated with patient scenarios about the benefits of speaking up and reporting errors and near misses. New policies outlining formal methods of speaking up should be enacted as a resource to staff (Rainer, 2015).

Alex’s story is evidence of how lack of coordination and communication among health care professionals can lead to a sentinel event. Focused training for safe discharges and safe
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transitions of care can prevent medical errors that lead to patient harm and death. Hospitals must foster a culture of safety with education and policies in order to protect the patients they serve.
References

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