

Do No Harm Project
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March 2017

Story From the Front Lines

A man in his 30s was found to be lethargic at an airport during a flight connection and was brought to the ED via ambulance. The patient admitted to taking excess benzodiazepines prior to the flight. In the ED, the patient's mental status returned to baseline within a few hours. As part of the initial work up, a routine chest X ray was obtained, which showed multiple diffuse small pulmonary nodules. It was then decided the patient would be admitted to the hospital for further work up given the chest X ray findings, and a CT scan was also ordered. The patient reported no respiratory complaints, but did recall having a history of "a lung condition many years ago". His work up was underway when records obtained from the patient's prior hospitalizations were obtained, showing a history of histoplasmosis that was successfully treated a few years prior. Therefore, no further work up or treatment was necessary. The patient was discharged after two days in the hospital and recommended follow up to address a possible substance abuse disorder.

Teachable moment

This patient presented to the emergency room with altered mental status after taking excess benzodiazepines, and his mental status improved within a few hours of presentation. He did not have respiratory complaints to warrant a chest X ray. Studies have shown that radiographic examination of the chest is performed in about 34% of all ED visits¹. This includes both chest X ray, as well as CT scans. Over the last few years, there has been an increase in the number of imaging obtained in the ED. In fact, between 1996 and 2006, the utilization of imaging grew more in the emergency department than in any other setting². Although this increase in imaging utilization could be partially attributed to an increase in the number of patients seen in the ED, it is also due to increased imaging ordered by ED physicians². Furthermore, patients who get unnecessary chest X rays that lead to incidental findings such as our patient's, are more likely to undergo further chest imaging such as a CT scan. This, in turn, increases the radiation exposure by a significant amount. Given the large number of patients that undergo chest X ray and subsequently undergo CT, the redundancy of such tests has been studied in the literature. One study showed that in non-trauma patients, 86% of patients having a normal CXR were found to have also a normal chest CT¹. Therefore, even when patients have an indication for a chest X ray, most the time this will suffice without the need to obtain CT imaging. Another factor that contributed to this patient's prolonged hospitalization was the lack of communication between different electronic medical records, given he had been treated for histoplasmosis at another hospital. In a study performed recently in a selected population of patients, it was shown that duplicate testing occurred in 32% of the patients by two near-by hospitals, and 50% of these had more than one test duplicated³. Knowing this patient's prior medical history on admission to the ED, would have perhaps prevented an unnecessary chest X ray, CT scan and a delay on his discharge. We should therefore take a step back, and ask

ourselves whether patients warrant imaging upon presentation to the ED based on their signs and symptoms.

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2. Rao VM, Levin DC, Parker L, Frangos AJ, Sunshine JH. Trends in utilization rates of the various imaging modalities in emergency departments: nationwide Medicare data from 2000 to 2008. *J Am Coll Radiol.* 2011 Oct;8(10):706-9. doi: 10.1016/j.jacr.2011.04.004. PubMed PMID: 21962785.
3. Stewart BA, Fernandes S, Rodriguez-Huertas E, Landzberg M. A preliminary look at duplicate testing associated with lack of electronic health record interoperability for transferred patients. *Journal of the American Medical Informatics Association : JAMIA.* 2010;17(3):341-344. doi:10.1136/jamia.2009.001750.