

System analysis of an intervention to improve opioid prescribing in emergency medicine

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Abstract

In this study, we conducted a pre and post sociotechnical system analysis in order to understand an emergency department and the system elements that impacted the effectiveness of an opioid prescribing intervention. The importance of safe prescribing practices is due to an unprecedented epidemic of opioid addiction and death due to opioid overdose in the United States. Currently, analgesic medications are the most frequently prescribed class of drug in United States Emergency Departments (Niska R., 2007; Rui P., 2013). Federal interventions are being developed to decrease inappropriate prescription of opioids. However, the prevalence of both acute and chronic painful conditions seen in the Emergency Department (ED) setting necessitates that emergency physicians continue to prescribe opioid analgesics. In this intervention, physicians prescribing opioids optimized their prescribing workflow to maximize the educational opportunity to counsel patients about the proper use of opioid analgesics.

Implementing an ED workflow intervention makes a broad impact on a health system. The study intervention includes an EMR system stopgap when patients were prescribed an opioid, an EMR prompt for a physician to counsel the ED patient on opioid risks prior to discharge, and a printed opioid “MedSheet” that was given to a patient along with their opioid prescription. Sociotechnical systems modeling illustrates the complexity of designing interventions for emergency medicine that affect multiple patients, providers, work systems, technologies, and processes. This study uses a sociotechnical systems analysis following the SEIPS 2.0 model as a method to demonstrate the effectiveness of ED prescribing intervention (Holden R.J., 2013). The pre intervention system analysis shows inconsistencies and failure points in the ED prescribing process. The post intervention systems analysis illustrates a streamline and strengthening in the prescribing workflow. The analysis also illuminates that several elements external to the emergency department environment impact the effectiveness of the intervention.

We propose that the study data supports systems analysis as an effective tool to illustrate the opportunities for design solutions that can robustly address the challenges of evaluating health system interventions. Sociotechnical systems analysis is an effective tool to illustrate the opportunities for designing and re-designing health system interventions and evaluating the fidelity of such interventions. Furthermore, we propose that sociotechnical systems analysis may be employed to streamline the patient experience and result in improved opioid prescribing outcomes.

References

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