Published in final edited form as:

Am J Med Qual. 2015 ; 30(1): 94–95. doi:10.1177/1062860614548210.

Does laboratory testing decrease during scheduled downtime of an electronic order entry system?

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Reducing overuse of laboratory testing remains a challenge.^{1,2} Recent efforts to reduce overused services have called for active clinician engagement.³ If clinicians can actively engage in identifying such services *a priori*, it may help to reduce their use and improve patient care.^{4,5}

At a New York based comprehensive cancer center, there was a weekend-long scheduled downtime of the system-wide electronic order entry system to implement upgrades (Friday evening, September 7, 2012 through Monday morning, September 10, 2012). It created a unique natural experiment to assess the impact of added work burden on test ordering. Clinicians received advanced notice. During the downtime, clinicians recorded orders in a workbook and informed a named staff member of urgent orders. Some clinicians informally reported more active engagement in decision-making.

The study objective was to assess the extent to which there was active clinician engagement, as reflected by a decrease in test orders, during the downtime. We hypothesized that ordering decreased significantly, due to increased work burden.

Methods

We conducted a retrospective assessment of inpatient laboratory testing over seven consecutive weekends surrounding the planned downtime. We included tests for all non-surgical patients ages 18 years and over who were in the hospital during a study weekend. For each admission, we calculated the number of test orders per hospital day, based on the

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Conflicts of Interest

The authors report no conflicts of interest.

patient's total number of orders over the entire stay. We assessed use of all tests, and the top ten most commonly ordered tests. This study was considered exempt research by the IRB of Memorial Sloan Kettering Cancer Center.

Results

There were approximately 2,200 eligible hospital admissions during the study period, averaging 315 admissions per weekend (range: 277 – 335). Patient case-mix was not significantly different across weekends in terms of cancer type, stage, marital status, age, sex, race, reason for admission, vital status, or length of stay. Over the study period, test orders averaged 6.7 orders per patient per day.

We observed no differences between the intervention weekend and the comparison weekends in average or median number of laboratory tests ordered per patient per day. We also did not observe differences when stratifying by type of service or for the top ten most commonly ordered tests. We did observe increases in orders immediately before and after the downtime.

Discussion

Despite anecdotal reports of active engagement, we did not observe differences in test orders at a summary level during the downtime. Individual behavior changes, included those reported to us, may not have been considerable enough to influence the aggregate. Another possibility is that since the downtime was temporary, it did not trigger changes. We saw increases in orders immediately before and after, which may have compensated for any differences during the downtime. Alternatively, clinicians may have been more actively engaged in decision-making, but largely viewed orders as appropriate. In this single-institution study, we observed that temporarily moving from an electronic to paper system did not have the expected reduction in orders. A more comprehensive understanding of actively engaging clinicians to help reduce overuse is warranted.

Acknowledgments

Funding

This work is supported in part by the Cancer Center Support Grant [P30 CA 008748].

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