Cost-Conscious Utilization of Diagnostic Tests

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Background: In 2011, national health care expenditure rose to $2.7 trillion from $2.53 billion in 1980 and accounted for 17% of the Gross Domestic Product1. An estimated 33 % of all expenditure was on unnecessary tests, approximately $810 billion dollars per year2. One strategy at reducing health care waste includes educating practitioners about cost-conscious care, particularly residents3,4. We implemented an educational intervention and studied its impact on the utilization of laboratory tests and phlebotomy services in an academic institution.

Methods: The study was conducted in the inpatient internal medicine (IM) wards at a tertiary-level academic medical center where five IM teams, rotate every three weeks. The study extended over two three-week periods: the pre-intervention period and the post-intervention period. IM team utilization of basic metabolic panel (BMP), complete blood count (CBC), liver function tests (LFT), international normalized ratio (INR), individual components of the aforementioned panels, and timing of test draw as surrogate of phlebotomy demand was measured.

Results: Statistically-significant reductions in the proportion of unnecessary tests were observed, including: all tests of interest (24.7% to 17.8%, p<0.001), BMP (30.85% to 23.6%, p=0.027), magnesium (23% to 7.8%, p<0.001), phosphorous (40% to 15.8%, p=0.001) and INR (27.5% to 16.8%, p<0.001) [Figure 2, Figure 3]. Additionally, a 26.85% (p=0.005) reduction in improperly-timed tests and thus, a two reduction of improperly timed test was made. An improved understanding of the degree of health care waste, but interestingly, a decreased perception of cost knowledge. The more residents knew about test charges, the less they felt they truly knew. Additionally, there was a statistically-significant improvement in the objective knowledge of test charges [Figure 4].

Conclusion: These results demonstrate that cost-conscious curriculum in residency is both desired by housestaff and rapidly yields tangible benefits via reduced test utilization and spared health care dollars. If the statistically-significant savings were extrapolated for the length of the five IM teams alone could save over $108,000 annually. Readily available cost data to physicians can potentially result in significant cost savings.

References:

Figure 1. Reference Handout.

Figure 2. Comparison of Pre- and Post- Intervention Periods.

Figure 3. Unnecessary Utilization, by Lab Test.

Figure 4. Survey Results.

OUTCOMES

INFORMATION

SURVEY

• Cost knowledge
• Waste knowledge
• Perceived self-cost-effectiveness
• Barriers to cost-effective ordering
• Perceived need for cost-conscious education

BASELINES ASSESSMENTS

• Total and component laboratory testing
• Clinical Necessity Assessment
• Standard Clinical Necessity Criteria for Stable Patients
• Labs 2 every 48 hours
• No repeat labs for observation visits
• No labs on day of planned discharge
• Components for serial monitoring
• Grouping of non-urgent labs

INTERVENTION

• Educational Content Presentation
○ Impact of increasing costs
○ Cost of common tests
○ Hidden costs (e.g. phlebotomy)
○ Techniques to reduce unnecessary expenditures

• Provide Cost Reference Handout (Figure 1)

SURVEY

• Repeat Knowledge Survey
• Total and component laboratory testing
• Appropriateness assessment (Criteria)

Amount of panel components were compared between the two periods.

• Proportion of unnecessary labs was compared utilizing Fisher’s exact and two-sample test of proportions.