The Financial Imperative of Physicians to Control Demand of Laboratory Testing

Abstract

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It is an integral component of doctors duty of care to understand the significant impact laboratory testing has on the expense and ultimate quality of healthcare patients receive, yet the costs of these tests are poorly perceived. Utilising semi-structured interviews and questionnaires, we assessed surgeons perceived costs of two commonly encountered clinical scenarios requiring out of hours laboratory testing. Of the 35 participants only 23.3% (n=7) accurately estimated the overall cost. The most expensive test was Type and Screen at €83, with 77.3% (n=17) underestimating the cost. Non-consultant hospital doctors qualified for 3 years were more likely to underestimate on-call costs (p=0.042). It is of utmost importance to improve the knowledge of all surgeons of the financial implications of investigations. Through education we can potentially reduce un-warranted costs and fulfil our duty of care in the most cost efficient manner.

Introduction

The number of laboratory tests ordered by doctors is rising, the costs of these tests are poorly perceived despite their significant impact on the expense and ultimate quality of healthcare. Our fragile economic circumstances necessitate that the Health Service Executive (HSE) organisation delivers evidence-based practice, in the most cost-effective manner possible. Although multiple factors contribute to excessive use of laboratory tests physicians are the single most important factor in the expansion of laboratory test utilization. Eighty percent of healthcare costs are accounted for by physicians have been shown to over-utilise, under-utilise, and mis-utilise laboratory tests. Given that reducing inappropriate testing improves quality and patient experience, it is our responsibility as doctors to reduce unnecessary blood tests therefore reducing costs. The aim of this study was to assess clinicians knowledge of the costs of commonly requested out of hours laboratory testing and to develop a strategy to reduce the financial drain attributable to laboratory testing.

Methods

Utilising semi-structured interviews and questionnaires, we assessed the perceived costs of two commonly encountered clinical scenarios requiring out of hours laboratory testing. Scenario one involved the investigation of upper epigastric pain requiring full blood count (FBC), urea & electrolytes(U&E), troponin, Ca²⁺, Amylase and liver function tests(LFT’s). Scenario two required the investigation of right iliac fossa pain utilising a FBC, U&E, coagulation profile and a type and screen. Surgeons from three hospitals (Beaumont Hospital Dublin, Saint Luke’s Hospital Kilkenny, and Waterford Regional Hospital) along with final year medical students from the Royal College of Surgeons in Ireland were surveyed. We compared perceived costs with the actual costs as per the Beaumont laboratory service. Costs estimated by survey respondents were considered accurate if they were within 10% of the actual cost. Statistical analysis was performed using SPSS v15 with p<0.05 considered significant. Concluding our study we hosted a focus group amongst doctors (surgical interns, SHOs registrars and consultants) to ascertain methods to improve ordering and raise awareness of the financial burden of laboratory tests.

Results

Of the 35 participants the majority (62.8%; n=22) were female and of Irish nationality (68.5%; n=24). Surgical non-consultant hospital doctors (NCHDs) accounted for 60% (n=21) of respondents, with 56.7% (n=17) of doctors surveyed having been qualified for three years or less (Table 1). In 23.3% (n=7) overall cost was accurately estimated (p=0.042). 20% (n=6) of respondents underestimated the cost of laboratory blood tests, with the majority (56.7%; n=17) of those surveyed overestimating cost. With regard to common individual blood test costs, 33.3% (n=10) correctly estimated the cost of a full blood count, with 10% (n=3) correctly estimating the cost of a renal profile and 20% (n=6) correctly estimating a coagulation screen (Figure 1).

Figure 1
The cost of a type and screen which itself was the most expensive test was underestimated by more than three quarters of surgeons. SHOs and surgeons qualified less than three years predominantly order this test as part of their role preparing patients for theatre and dealing with out of hours emergencies. Importantly our study reveals this group to be statistically the most likely to underestimate the type and screen cost. Before ordering a test, physicians should be aware of the cost of the test, have a good reason for the test, ensure it is consistent with established guidelines, and that the results will be useful (have the potential to change management). Selective preoperative testing ordering by staff anesthesiologists by increasing our numbers of preoperative clinics may be an effective method to reduce the number and cost of preoperative studies compared with usual practice without a resulting increase in complications.

Interestingly, gender is a significant factor in relation to knowledge of investigative cost. Female surgical trainees within our group were more likely to estimate laboratory costs correctly, with males most likely to overestimate cost (p=0.043). Previous studies have shown that there is a preponderance of males in surgical jobs concerns when we consider that males are less likely to have accurate knowledge of costs. This stresses the importance of surgical training to be statistically the most likely to underestimate the type and screen cost. Before ordering a test, physicians should be aware of the cost of the test, have a good reason for the test, ensure it is consistent with established guidelines, and that the results will be useful (have the potential to change management). Selective preoperative testing ordering by staff anesthesiologists by increasing our numbers of preoperative clinics may be an effective method to reduce the number and cost of preoperative studies compared with usual practice without a resulting increase in complications.

Within the laboratory, minimum retest intervals should prevent duplicate testing. Minimum retest intervals adopted by many laboratories are based on criteria such as analyte half-lives and analytical variability. HbA1c, retesting within two months is not warranted since biological changes are dependent on the red cell half-life (120 days) and current analytical methods are insufficiently precise to detect the resultant small change in this marker expected in an individual patient within this time period. However, these laboratory-based assessments have not been validated in clinical situations. It is possible, therefore, that there is a case for a frequent testing based on effects on patient outcomes, quality-of-life and prescribing patterns.

Many previous studies have shown the importance of the audit cycle in ensuring optimal patient care. Teams should review the impact of the test results on the patient pathway. This can comprise: (i) assessment of results not reviewed by the requestor or clinical team, (ii) results reviewed but which had no impact on clinical management and (iii) results reviewed and changed management, but did not affect patient outcome. Assessing these aspects can be challenging, as there may be many non-clinical reasons for results not impacting on patient management, but they are nevertheless important. Variations in clinical practice are an important determinant of expenditure for laboratory tests, with further increase in the financial cost. We subjectively identified significant regional variations in test ordering and cost between the three hospitals. No obvious rationale laid behind the variations, and they most likely resulted from habits and traditions. A unique advantage in Ireland is our centralized governance from the Health Service Executive (HSE) and auditing through the Health Information and Quality Authority (HIQA). This opens the possibility for significant savings that could be achieved through a standardized test ordering system and consolidation of testing. Managed care guidelines on laboratory tests would lead to a streamlining of the testing process and significant economies of scale.

An additional feature of any intervention is the inclusion of nurses as well as physicians. Unlike the house staff, the nursing staff does not change substantially from month to month. As a consequence, eliciting the support of the nurses and ensuring their understanding of the guidelines is an integral element of any intervention. With this in mind we have developed ward-based posters, placed prominently at the test ordering computers highlighting the costs of the investigations with time. These posters are visible to all members of the multidisciplinary surgical team, both surgical and nursing. It is of utmost importance to improve the knowledge of all surgeons of the financial implications of investigations. Through a focused educational initiative amongst surgeons, we hypothesized that this would potentially reduce un-warranted costs and fulfill our duty of care by the appropriation of resources in the most cost efficient manner.

The importance of the timely use of the correct test for the right patient is indisputable. However, the cost of inappropriate investigations includes not only direct costs, but also additional consultations, treatment and further investigations to rule-in or -out further intervention. On-call laboratory personnel costs for both medical and surgical departments in Beaumont Hospital amount to €1,514,240 a year. As this figure includes direct costs only, the potential for savings are huge across all hospitals. Knowledge of the costs of laboratory tests among the surgeons we surveyed was overwhelmingly poor; only one percent estimating the costs incorrectly. Over ninety per cent of the respondents did not know the correct cost of a renal profile and sixty six per cent incorrectly estimated the cost of full blood count. Eighty per cent incorrectly estimated the cost of a coagulation study. Yet all of these tests form the basis of preoperative testing. Preoperative medical testing for all types of surgery accounts for approximately $30 billion in US health care costs annually. Abnormal test results increases with age, and the more tests performed, the more likely a false positive will occur, further driving up costs.

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