The Cost of Defensive Medicine on 3 Hospital Medicine Services

The overuse of tests and procedures because of fear of malpractice litigation, known as defensive medicine, is estimated to cost $46 billion annually in the United States, but these costs have been measured only indirectly. We estimated the cost of defensive medicine on 3 hospital medicine services in a health system by having physicians assess the defensiveness of their own orders. We hypothesized that physicians who were concerned about being targeted by litigation would practice more defensively and have higher overall costs.

Methods | This study was approved by the institutional review board of Baystate Medical Center. We studied hospitalists at 1 tertiary care (Baystate Medical Center) and 2 community hospitals (Baystate Franklin Medical Center and Baystate Mary Lane Hospital). All hospitalists (n = 42) were invited to complete a survey regarding demographic information and attitudes toward defensive medicine. We then showed physicians their orders placed the previous day and asked them to indicate the extent to which each represented defensive medicine—tests, procedures, or hospitalization ordered primarily because of concern about malpractice liability—using a 5-point scale from 0 (not at all defensive) to 4 (completely defensive). Itemized order costs including daily room and board costs were obtained from the hospital’s cost accounting system.

The outcomes were the percentage of orders and hospital costs due to defensive medicine. We examined the percentage of orders rated defensive (≥1) and completely defensive (4 only). The defensiveness score for each order was converted to a proportion (eg, 1 of 4 = 0.25) and multiplied by the order’s cost to estimate the cost attributable to defensive medicine. Defensive costs were summed and divided by the total cost of all rated items.

We examined the relationship between physicians’ cost due to defensive medicine and expressed attitudes about lawsuits. Using multivariable regression, we examined the association between higher levels of defensiveness (>10% of orders considered defensive) and order volume and costs.

Results | Of the 42 physicians, 39 agreed to participate; 36 (92%) completed surveys and rated 4215 orders for 769 patients. The median number of orders was 3 per patient (interquartile range, 2–7) and 97 per physician (interquartile range, 61–141). Of the orders, 28% were defensive (Figure). Four physicians identified no defensive orders, and 21 physicians rated at least 1 as mostly defensive (range, 1%–77%). Compared with physicians with fewer defensive orders, physicians with 10% defensive orders or more placed a similar number of orders (5.4 vs 4.9; P = .68) and generated similar costs per patient ($1679 vs $1700; P = .89).

The mean cost was $1695 per patient (95% CI, $1566–$1824), of which $226 (13%) was defensive. Completely defensive orders represented 2.9% of costs, primarily through additional hospital days (Table). Physician factors—sex, training, litigation concerns—were not associated with defensive orders or costs (data not shown).

Discussion | In this study of hospital medicine services at 3 institutions in a health system, 28% of orders and 13% of all hospital costs were defensive. We compared physicians’ ratings of their own orders with the defensive cost and found that 36% of orders were rated as defensive, which is consistent with previous studies. Physicians who were concerned about being targeted by litigation rated more defensive orders, and these physicians incurred higher defensive costs. We also found that defensive orders were associated with higher order volume and costs. These findings suggest that defensive medicine is a significant contributor to hospital costs and that interventions to reduce defensive behavior could have a substantial impact on overall hospital costs.

The Table below shows the proportion of hospital costs that were at least partially defensive, categorized by order type.

Table. Proportion of Hospital Costs That Were at Least Partially Defensive

<table>
<thead>
<tr>
<th>Orders</th>
<th>% of Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not defensive</td>
<td>87 a</td>
</tr>
<tr>
<td>Defensive</td>
<td>13 a</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>82 b</td>
</tr>
<tr>
<td>Diagnostic testing</td>
<td>15 b</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>2 b</td>
</tr>
<tr>
<td>Monitoring</td>
<td>1 b</td>
</tr>
</tbody>
</table>

*Percentage of hospital costs.

b Percentage of defensive medicine costs.
costs were judged to be at least partially defensive, but only 2.9% of costs were completely defensive. Most costs were due to potentially unnecessary hospitalization. Defensive medicine practices varied substantially, but physicians who wrote the most defensive orders spent less than those who wrote fewer such orders, highlighting the disconnect between physician beliefs about defensive medicine and their contribution to costs.

In 2008, Massachusetts internists reported that 27% of computed tomographic scans, 16% of laboratory tests, and 14% of hospital admissions were ordered owing to concerns about liability.2 We allowed our physicians to offer a graded response, which revealed that defensiveness is not absolute. Compared with the previous study, our respondents reported higher percentages of defensive medicine but lower percentages of completely defensive medicine (2% of radiology, 6% of laboratory testing, and 2% of hospital days).

Limitations of our study include its subjective nature, lack of anonymity, small sample size, and the inclusion of only hospital medicine services at 3 hospitals in 1 health system.

In conclusion, although a large portion of hospital orders had some defensive component, our study found that few orders were completely defensive and that physicians’ attitudes about defensive medicine did not correlate with cost. Our findings suggest that only a small portion of medical costs might be reduced by tort reform.

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Underrepresentation of Women, Elderly Patients, and Racial Minorities in the Randomized Trials Used for Cardiovascular Guidelines

The American College of Cardiology/American Heart Association (ACC/AHA) guidelines are frequently used to guide cardiovascular care. Randomized controlled trials (RCTs) are considered to be the highest level of evidence and are cited in these guidelines whenever available. However, RCTs can have limited external validity. To examine their generalizability, we examined the percentage of enrollment and reporting of sexes, races, geographic distribution, and age groups in the RCTs cited in the ACC/AHA guidelines for atrial fibrillation (AF),1 heart failure (HF),2 and unstable angina/non–ST-segment elevation myocardial infarction (acute coronary syndromes [ACS]).3

Methods | All guidelines’ references were screened for RCTs. Meta-analyses, review articles, guidelines, articles in a language other than English, abstracts, studies reporting follow-up results, or subgroup analyses of already included RCTs and other non-RCT references were excluded.

Data extracted from the RCTs included sample size, mean age, percentage of male and female patients, racial category when reported, trials’ publication year, whether it was a single or multicenter trial, and continents from which subjects were recruited. Elderly patients were defined as those 75 years or older because this is the cutoff used in ACC/AHA guidelines.3

Results | Randomized controlled trials constituted the highest proportion of HF references (28% [230 of 814]) compared with AF (25% [229 of 910]) and ACS (20% [195 of 970]). The majority (72%) of the 653 RCTs from all 3 guidelines were multicenter trials. Mean sample size across all studies was 2047 patients. There was a continuous trend toward increase in study sample size over time.

Female representation was highest in AF RCTs (33%) followed by ACS (29%) and HF (29%) (Table), which is lower than that of US registries of AF (55%),4 ACS (42%),4 and HF (47%).4 Reporting of study patients’ sex has increased over time (Figure, A). After excluding trials with sex-specific intervention (therefore necessitating single-sex inclusion), female representation across all trials was 30%. This increased from 24% in the 1980s, to 28% in the 1990s, and to 31% for the years 2000 through 2009. Inclusion of women in HF and ACS clinical trials improved, while that in AF RCTs decreased steadily over time (Figure, B).