Level of Billing as a Function of Resident Documentation and Orthopedic Subspecialty at an Academic Multispecialty Orthopedic Surgery Practice

BOBBY DEZFULI, MD; JORDAN L. SMITH, MD

abstract

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Documentation, coding, and billing for physician–patient encounters have evolved over time and have significant variability. Appropriate and complete documentation of these encounters can contribute to the financial viability of private and academic medical centers. The objectives of this study were to assess the financial effect of documentation on billing and to compare the authors’ institution’s distribution of billing level compared with Medicare normative data.

Four orthopedic surgery subspecialty clinics were evaluated at a university outpatient clinic over a 1-year period. A single full-day clinic per week was used for each subspecialty. Residents dictated the majority of the reports. All reports were transcribed by medical transcriptionists and coded by certified professional coders. The sports medicine subspecialty generated the highest volume of patient clinic visits, followed by foot and ankle, trauma, and spine (P<.01). The majority of the reports were billed at level 3 (P<.05). Significant differences existed between subspecialty and percentage distribution of billing level (P<.05). Compared with Medicare normative data, a significantly greater percentage of level 3 reports and a lower percentage of level 2 and 4 reports existed in the orthopedic practice (P<.01). The estimated loss of revenue from the fewer level 4 reports was $81,281.11 for 1 year. These findings highlight the need for greater educational interventions to improve provider documentation, coding, and billing. The effect of new electronic medical record systems that prompt providers to include key evaluation and management components will likely affect practices and warrant further analysis.

Drs Dezfuli and Smith are from the Department of Orthopaedic Surgery, University of Arizona Medical Center, Tucson, Arizona.

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Correspondence should be addressed to: Bobby Dezfuli, MD, Department of Orthopaedic Surgery, University of Arizona Medical Center, 1609 N Warren Ave, Ste 110, Tucson, AZ 85724-5064 (dezfuli@email.arizona.edu).

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United States medical and surgical residents face an increasingly unpredictable fiscal environment when they complete their respective training programs. The business side of medicine has been arguably lacking as a priority in resident education. Several specialties have shown deficiencies in resident knowledge with respect to coding, billing, and documentation.¹⁻³ Several studies have documented underbilling and down-coding with resident encounters.⁴⁻⁵ Techniques of improving resident billing have been described with some success.⁶⁻⁷ Nevertheless, the financial effect of resident documentation can be a burden for some academic programs. No studies have examined this directly.

Where the effect of resident documentation is most visible is during outpatient clinic visits. Using the Evaluation and Management Coding system, outpatient clinic visits coding has changed many times over the past few decades. Orthopedic surgery is unique because it has several subspecialties. The differences between the subspecialties can lead to different levels of billing due to more complex clinical decision making and patient profiles.

The objectives of this study were to survey 1 academic center’s orthopedic surgery billing practices, compare billing level as a function of orthopedic subspecialty, and assess the financial effect of documentation and billing level.

**Materials and Methods**

Four orthopedic surgery subspecialty clinics were evaluated at a university outpatient clinic over a 1-year period, including spine, foot and ankle, sports medicine, and trauma. A single full-day clinic per week per subspecialty was used to normalize data. Residents dictated the majority of the reports. All reports were transcribed by certified medical transcriptionists and coded by certified professional coders.

Clinic visit physician reports for each subspecialty were summarized according to billing level. The total number of reports and percentage distributions were generated for each subspecialty.

Next, the orthopedic surgery practice was compared with Medicare normalized data for orthopedic surgery, and percentage distribution of reports were compared with respect to billing level.

Potential revenue losses for the orthopedic practice were calculated using percent distribution differences for level 4 reports, total annual clinic visits, and reimbursement differences between level 3 and 4 reports.

Fisher’s exact test was used to compare variables. Significance was defined as a P value less than .05.

**Results**

The sports medicine subspecialty had the highest number of reports, followed by foot and ankle, trauma, and spine (P<.01) (Figure 1). All subspecialties were different with respect to percentage distribution of level of billing (P<.05) (Figure 2). The majority of the reports billed at level 3. The statistically significant differences existed when the visits were subdivided to new and established, except for established spine vs trauma and established spine vs sports medicine (P<.01).

Comparison with Medicare normative values revealed significantly lower level 3 report claims and higher level 2 and 4 claims (P<.01) (Figure 3) for new and established visits (P<.01) (Figures 4, 5).
The calculations used to obtain the estimated revenue losses are represented in the Table. For each visit type, the total number of patients seen for the year was multiplied by the difference in average insurance reimbursement between a level 3 and 4 report. This was multiplied by the difference in percent distribution of level 4 reports for the orthopedic surgery practice and average Medicare reimbursement claims. The total revenue loss from the relatively lower number of level 4 reports was $81,281.11.

**Discussion**

To the authors’ knowledge, this is the first study to evaluate the effect of documentation and coding level on billing in orthopedic surgery. Although significant variations existed in patient encounter volumes among different subspecialties, distribution of billing level was similar. Compared with Medicare norms, the authors’ orthopedic surgery practice had a narrower distribution variance for clinic visit billing level. Furthermore, a substantial loss of revenue from documentation existed. Combined, these findings likely represent resident unfamiliarity with or underfulfillment of billing and coding criteria.

This study follows other studies showing a need for improved resident education for documentation, coding, and billing.1,2,4,5 This lack of proficiency is found in primary care fields, emergency medicine, obstetrics and gynecology, and general surgery. To the authors’ knowledge, this is the first study evaluating orthopedic surgery and its subspecialties.

A limitation of this study was its retrospective nature. Furthermore, certified professional coders coded all reports. Some difference in billing level may be the result of the use of a particular group of professional coders. It has been reported that physicians are more likely to overbill than certified professional coders.8 The same report showed only 17% concordance in coding between physicians and certified coders.8

Of note, resident documentation resulted in fewer level 2 coded reports. The estimated calculated revenue loss of $80,000 would be lower if incorporating the fewer lower-coded reports. The purpose of this study was to promote
awareness of current resident-centered documentation outcomes. The authors attempted to emphasize areas of revenue deficiency, namely fewer level 4 and 5 reports. Therefore, they did not include the fewer level 2 coded reports in their calculations.

Further research should evaluate methods to achieve more consistent enhanced documentation and billing, with a goal to consistently document a complete encounter and to code and bill in line with national averages. This may include education, technology, and feedback from coding systems to apprise providers of their practice habits relative to norms. The effect of new electronic medical record systems that prompt providers to include key evaluation and management components will likely have an effect on practices and warrant further analysis.

### Table

<table>
<thead>
<tr>
<th>Clinic Visit Type</th>
<th>No. of Clinic Visits</th>
<th>Reimbursement Diff Between Level 3 and 4 Reports, $</th>
<th>Percentage Diff in Level 4 Billing vs Medicare Norms</th>
<th>Revenue Loss for Patient Clinic Visits, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>New patient</td>
<td>4815</td>
<td>52.17</td>
<td>19.1</td>
<td>47,983.80</td>
</tr>
<tr>
<td>Established patient</td>
<td>7961</td>
<td>29.25</td>
<td>15.5</td>
<td>33,297.31</td>
</tr>
<tr>
<td>Total revenue loss</td>
<td></td>
<td></td>
<td></td>
<td>81,281.11</td>
</tr>
</tbody>
</table>

Abbreviations: Diff, difference.

### Conclusion

Resident documentation has a significant effect on billing and coding in an orthopedic practice. When comparing level of billing and orthopedic subspecialties, patient volume differences account for a greater financial effect than distribution of billing level. This study highlights the need for greater educational interventions to improve provider documentation, coding, and billing.

### References