

Coding Practices Affect the Cost of Distal Radius Fracture Care

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Abstract

The purpose of this study was to determine the impact of an Emergency Medicine Department's billing practices on the total cost of care for distal radius fractures.

This study identified patients by International Classification of Diseases, Ninth Revision (ICD-9) billing codes treated by the Department of Orthopaedic Surgery (DOS) and Department of Emergency Medicine (DEM) at the University of Arizona. In every case, the surgical modifier 54 was used. The billing records in each case for the DEM and the DOS were reviewed.

When the fracture was manipulated and the DEM was the attending of record for the initial visit, the total cost of fracture care was increased by \$500. When the fracture was not manipulated, the total cost of fracture care was increased by \$270. Although more than one-third of patients had surgery by the DOS, the DEM used a global billing code that indicates "restorative" treatment.

This is an example of the manipulation of Current Procedural Terminology coding to enhance revenue generation with increased cost to the healthcare system, and no added value to outcome.

Distal radius fractures are a common injury in both the pediatric and adult population.^{1,2} Malunited fractures may result in poor outcomes, therefore appropriate management is important.^{3,4} For the initial management of displaced fractures, the current standard of care is to perform a closed manipulation in the emergency room to restore length and alignment, and have the patient follow-up with an orthopedic surgeon in an outpatient setting. In an academic setting, such as the University of Arizona, manipulation and the application of a splint are routinely performed by a junior orthopedic resident without onsite supervision of an orthopedic attending physician. In these cases, the emergency department physician, whether physically present or not, is the physician of record. In follow-up with the orthopedic surgeon, radiographic evaluation is obtained, alignment is assessed, and a determination of definitive treatment is made. Patients are routinely followed until fracture union is complete and function returns.

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There are 2 allowable methods for an emergency room physician to bill for fracture treatment administered in the emergency department. An evaluation and management (E/M) code, along with a splint code, which must be applied by a physician, may be used by the emergency department physician, or a global fracture code with a surgical modifier indicating a procedure was performed may be generated. In the first method, the global fracture care code is generated after the patient has received initial management in the emergency room with follow-up care given in the orthopedic clinic. In the second method, the emergency department physician codes for global fracture care and the orthopedic surgeon can bill the postsurgical care modifier and receive 10% of the total global fee or elect to code for individual office visits in order to treat the fracture until treatment of the patient is completed. According to the American College of Emergency Physicians website, "Fracture/dislocation (F/D) codes are surgical 'global care' procedures. Use of these codes is only appropriate if the emergency physician is providing at least partial 'restorative' care (eg, reduction of the F/D)."⁵

The purpose of the present study is to determine the effect of the coding practices of the Department of Emergency Medicine (DEM) on the cost of the treatment of distal radius fractures.

MATERIALS AND METHODS

This study received approval from the University of Arizona internal review board. The coding and revenue information from the DEM and the Department of Orthopaedic Surgery (DOS) was collected retrospectively from January 1, 2007 to December 27, 2008. International Classification of Diseases, Ninth Revision (ICD-9) code 25605 for global fracture care of an isolated distal radius fracture, which requires manipulation, and 25600 for global fracture care of an isolated distal radius fracture without manipulation were identified. In all cases, the 54 modifier, which indicates only the procedural aspect of global treatment performed, was used by the DEM. The attending of record was identified, the department billing for service, and demographic information such as age and insurance status were also collected. The billing information also was collected for the patients that went on to follow-up in the DOS clinic. No information was collected for the DEM revenue generated from the emergency room visit (eg, E/M code) or the administration of conscious sedation in the treatment of these fractures.

Table I. Differential Revenue Generated by DEM and DOS for Distal Radius Fractures With Manipulation**A. Initial Management for Distal Radius Fractures Requiring Manipulation in the Emergency Room**

Attending of Record	Total Fractures	Revenue	Average Revenue Per Patient	Range of Reimbursement
DEM	149	\$77,228	\$518	\$270-\$868
DOS	20	\$11,093	\$555	\$181-\$1,293

B. Fractures With DOS Follow-Up/DEM Attending of Record Treated Closed (n = 56)

Attending of Record	Average Revenue Per Patient	Visits	Average Revenue Per Visit
DEM	\$490	1	\$490
DOS	\$324	3.5	\$92

C. Fractures With DOS Follow-Up/DEM Attending of Record Treated Surgically (n = 32)

Attending of Record	Average Revenue Per Patient	Visits	Average Revenue Per Visit
DEM	\$526	1	\$526
DOS	\$1,213	5.2	\$235

Abbreviations: DEM, Department of Emergency Medicine; DOS, Department of Orthopaedic Surgery.

Table II. Differential Revenue Generated by DEM and DOS for Distal Radius Fractures Without Manipulation**A. Initial Management for Distal Radius Fractures Without Manipulation in the Emergency Room**

Attending of Record	Total Fractures	Revenue	Average Revenue Per Patient	Range of Reimbursement
DEM	3	\$11,681	\$272	\$228-\$625
DOS	2	\$854	\$427	\$118-\$839

B. Fractures with DOS Follow-Up/DEM Attending of Record Treated Closed (n = 10)

Attending of Record	Average Revenue Per Patient	Visits	Average Revenue Per Visit
DEM	\$277	1	\$277
DOS	\$331	3	\$110

C. Fractures with DOS Follow-Up/DEM Attending of Record Treated Surgically (n = 6)

Attending of Record	Average Revenue Per Patient	Visits	Average Revenue Per Visit
DEM	\$262	1	\$262
DOS	\$1159	3.5	\$331

Abbreviations: DEM, Department of Emergency Medicine; DOS, Department of Orthopaedic Surgery.

RESULTS

There were a total of 213 isolated fractures of the distal radius seen in the emergency room at the University Medical Center on the University of Arizona Health Sciences campus during the time period of the study, and billed by the DEM using the closed fracture codes. Overall, 168 fractures were treated by manipulation and splint, and 45 by splint alone.

Fractures With Manipulation in the Emergency Room

We identified 168 patients (79%) with isolated distal radius fracture with the code 25605 and manipulation of the fracture was performed in the emergency room. Nineteen

patients had a DOS faculty member as the attending of record. The DOS collected \$11,093, an average of \$555 per patient. There was no additional revenue generated for follow-up care of the patients with an orthopedic surgeon identified as the attending of record. These patients were seen in a total of 54 visits, or an average of 2.8 additional encounters in the DOS clinic, or \$198 per visit.

We identified 149 patients with the attending of record a DEM faculty member. DEM revenue was \$77,228 for the treatment of these patients, an average of \$518 per patient for this single encounter.

Of the 149 patients with a DEM physician of record, 61 patients were lost to follow-up and 88 patients completed treatment in the DOS clinic. Fifty-six of these 88 patients

were treated nonoperatively. These patients generated \$18,124 in revenue for the DOS, or \$324 per patient. This group of patients was seen a total of 201 visits, an average of 3.5 encounters per patient, or \$93 per visit.

Thirty-two of the 88 patients (36%) were treated surgically to achieve maximum medical benefit. This group was seen a total of 165 visits, or an average of 5.2 encounters per patient to reach maximum medical benefit. This treatment generated \$38,818 in revenue, an average of \$1,213 per patient, or \$213 per visit.

In every instance where a comparison could be made, the DEM billing practice added about \$500 to the care of the fracture. This information does not include the E/M coding done by the DEM and the revenue for the conscious sedation, if used (Table I). Small differences in averages in Tables I (A-C) were due to differences in payer mix (ie, insurance) for the groups.

Fractures Without Manipulation in the Emergency Room

There were 45 patients (21%) treated for isolated distal radius fracture that did not require manipulation, for which the global fracture care code 25600 was used.

Two patients with DOS attending of record were identified. The DOS generated \$854 these for these 2 patients, or \$427 per patient, for an average 3 encounters in the clinic, or \$142 per visit. No additional cost in revenue was generated for patients with a DOS attending of record.

A DEM physician was identified as the attending of record in 43 cases. The emergency department collected \$11,681, or \$272 per patient for this single encounter. Of the 43 patients with a DEM physician of record, 27 were lost to follow-up and 16 patients completed treatment in the DOS clinic.

Ten of the 16 were treated nonoperatively and generated \$3,314 in revenue, or \$331 per patient. These patients had an average of 3 additional encounters, or \$110 per visit. Six of the 16 patients (38%) went on to require surgery to achieve maximum medical benefit. For these patients, \$6,957 in revenue was generated, or \$1159 per patient. These patients were seen an average of 3.5 times, or \$331 per visit.

In every instance where a comparison could be made, the DEM billing practice added about \$270 to the care of the fracture. This information does not include the E/M coding done by the DEM and the revenue for conscious sedation, if used (Table II). Small differences in averages were due to differences in payer mix for the groups.

DISCUSSION

Ward and Rihn⁶ recently examined the billing of the treatment of pediatric distal radius fractures. The conclusion was that if a goal of treatment is to include direct supervision of manipulation by a board certified orthopedic surgeon, then the current reimbursement mechanism is inadequate.⁶

In the American Academy of Orthopaedic Surgeons

(AAOS) monthly newsletter AAOS Now, LeGrand and colleagues⁷ discussed the current situation which is examined in this study. In the article, they pointed out the Current Procedural Terminology policies suggest that the physician who provides “restorative” treatment and is “responsible for the initial cast, follow-up evaluation(s) and the management of the fracture until healed” should use the global code. The article goes on to suggest that the DEM physician bill for the visit and application of splint, if appropriate.⁷ In this instance, once a bill was submitted by the DEM, the DOS could not bill for the same services. There were instances when the DOS attending was present for a manipulation and billed for the services, thus preventing the DEM from submitting a global bill.

The question is whether the single encounter in the emergency room by the DEM physician meets the definition of “restorative treatment” and provides “a significant portion of the global fracture care” to permit the DEM physician to use the global code with the 54 modifier.⁸ The use of a global fracture code is intended to decrease healthcare cost, not to allow a provider who does not affect the quality of care or outcome to increase revenue.

The treatment of distal radius fractures by the DEM is an example of the law of “unintended consequences” in the current application of coding policy. This law has been noted by economists and social scientists to result in perverse unanticipated effects of policy and has been cited by Adam Smith, John Locke, and others as human nature to try to circumvent the intended purpose of a policy to find some way to generate personal gain.⁹ Norton,⁹ in 1936, described a source of unintended consequences as “imperious immediacy of interest.” Someone wants the intended consequence—in this case, a source of revenue from fracture care—so much, he purposefully chooses to ignore the unintended effects and the increase in total costs of care in revenue for a fracture.¹⁰ The coding system was meant to determine a relative value for services provided by physicians, but the current system can be manipulated, as demonstrated here to provide revenue to a physician not responsible or accountable for the overall care of a patient or for the ultimate outcome of the injury treated.

When manipulation of a fracture is performed by the DEM physician, there is no specific code to denote this treatment. According to the American College of Emergency Physicians,¹¹ if a fracture/dislocation is manipulated by the DEM and follow-up care is not provided, a 54 modifier is appended to the appropriate code to communicate that initial care was provided. Further, when manipulation is not performed, the preferred method of billing is of a cast/strap procedure code and evaluation and management code.

When the global code is generated by the DEM, the DOS should use the 55 modifier, indicating postsurgical care. In this case, DEM would collect 90% (ie, 10% for

preoperative management and 80% for the manipulation) for this single encounter, and the DOS would collect 10% and follow the patient 3.6 to 5 additional encounters, or until the global period of 90 days is completed. However, as our study indicates, the DOS, to cover the costs of this care, generates a bill for an office visit as a result of these additional visits. In addition, the DEM here used the 54 modifier for fractures not manipulated, a practice not recommended by the American College of Emergency Physicians or the AAOS.

Based on this review, splinting a fracture without manipulation and sending the patient to follow-up with an orthopedic surgeon does not constitute global fracture care by the recommended coding principles. Fractures treated without manipulations and coded as global fracture care by the DEM do not meet the definition of “restorative care.”¹¹

The incidence of distal radius fractures in North America has been noted to be 264/100,000 population.^{12,13} The population of the United States as of August 2009 was 307,000,000.¹⁴ If 79% of distal radius fractures were manipulated and 21% not manipulated as documented in this study, then one could predict 81,000 fractures with manipulation and 17,000 without manipulation, on a national scale per year. The increased cost in revenue for these 2 sets of fractures based on DEM coding practice documented in this study would be \$32,000,000 for the manipulated and \$4,600,000 for those not manipulated, or a total increased cost of \$36,600,000 for this isolated fracture. The billing for a distal radius fracture is one example of DEM upcoding the closed treatment of a fracture, but there are many other analogous situations which should be examined for their value to patients’ care and outcome. This analysis and extension of the data in this study is not unreasonable since the American College of Emergency Physicians encourages these practices by the provision of information on its website to facilitate such an approach to billing.

The limitations of this paper are that the study did not include information about the total cost in revenue of care of these fractures by the DEM. As noted earlier, information was not collected on billing related to the DEM encounter or participation in conscious sedation for the treatment of these isolated fractures. The second issue is the variability of revenue based on the different payers (ie, insurance or self) for these cases. The payer mix would affect the absolute dollars in this study. However, it is more likely that this study may have underestimated the total cost to the healthcare system, because the payer mix at the University Medical Center is weighted towards Medicare and Medicaid. This study may appear as though it cannot be extrapolated to include a national perspective, because the data do not address any facility

except the one at which the study was done. However, as noted above, the American College of Emergency Physicians endorses this approach on their website, so it is highly likely such upcoding is being used in other institutions and hospitals. Finally, there were a small number of cases in some subgroups which may exaggerate the variability in revenue for the DEM and the DOS.

The strengths of this paper are that it does demonstrate increased cost to the healthcare system in revenue without added benefit to the patient given the manner in which coding was accomplished for these fractures. It also points to the unintended consequences of current acceptable billing practices and policies. For this one instance, there is an increased cost of \$270-\$500 per patient, which could be saved from current healthcare costs. This paper evaluated revenue rather than billing as an accurate estimate of these savings.

As demonstrated by this study, the patient is billed for global treatment by the DEM and then the DOS bills for follow-up office visits until treatment is completed. This manipulation of coding policy by the DEM produces unintended consequences of increased cost without added value to patient care or outcome.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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This paper will be judged for the Resident Writer's Award.
