
ADMINISTRATIVE COSTS

Peering Into The Black Box: Billing And Insurance Activities In A Medical Group

Standardizing benefit plans and billing procedures might help reduce complexity and billing/insurance costs—but only if applied strictly.

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ABSTRACT: Billing and insurance-related functions have been reported to consume 14 percent of medical group revenue, but little is known about the costs associated with performing specific activities. We conducted semistructured interviews, observed work flows, analyzed department budgets, and surveyed clinicians to evaluate these activities at a large multispecialty medical group. We identified 0.67 nonclinical full-time-equivalent (FTE) staff working on billing and insurance functions per FTE physician. In addition, clinicians spent more than thirty-five minutes per day performing these tasks. The cost to medical groups, including clinicians' time, was at least \$85,276 per FTE physician (10 percent of revenue). [*Health Affairs* 28, no. 4 (2009): w544–w554 (published online 14 May 2009; 10.1377/hlthaff.28.4.w544)]

ADMINISTRATIVE FUNCTIONS IN MEDICAL GROUPS encompass a wide variety of activities, including transaction processing, credentialing providers, regulatory compliance and reporting, and improving quality.¹ Previous studies estimate that medical groups expend 27 percent of their revenue on administrative activities.² A recent study found that physicians' offices in California spend 14 percent of their operating revenue performing billing and insurance-related functions: managing the process of getting paid by third-party payers and patients.³ However, the cost data used for that estimate were collected at an administrative department level (for example, medical reception and business office)

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rather than for specific functions such as eligibility verification or billing, and from an American Medical Association (AMA) survey of overall physician administrative effort. The authors relied on professional judgment from key informants to estimate the proportion of administrative effort devoted to billing and insurance activities, introducing uncertainty into the estimates. Furthermore, this study did not examine the impact of dual-function activities—sets of tasks and activities performed to satisfy multiple needs in addition to reimbursement and billing/insurance tasks.⁴

This paper expands understanding of billing and insurance-related costs by describing and quantifying in detail the activities performed at a multispecialty medical group to get paid for clinical services. It complements work by Larry Casalino and colleagues, which presents nationwide estimates of clinicians' time spent on categories of activities interacting with health plans.⁵ Ours is limited to a single multispecialty medical group in California, but it provides much greater detail on the clinician and nonclinician resources dedicated to performing specific administrative tasks. Our findings permit scrutiny of specific tasks within broader billing and insurance-related functions, potentially informing policy changes to reduce administrative costs.

Study Data And Methods

■ **Setting.** We conducted our study using data from a multisite, multispecialty California medical group with more than 500 physicians in three geographically separate divisions, each having independent administrative operations.

■ **Data collection.** Information on the billing/insurance activities and associated costs performed by nonclinical personnel were collected using semistructured interviews with key informants in business offices, direct observation of work flows, and review of department budgets for salary and other expense data. We conducted sixty interviews, largely between January and May 2006, with selected follow-up thereafter. Interviews started with senior management, proceeding to supervisors and concluding with staff representing all of the functional positions in the business/patient accounting offices. Interviews with management and supervisors addressed the departmental organizational structure, roles, and responsibilities, while the staff interviews gathered detailed information on typical weekly and daily activities, including time dedicated to specific tasks. We identified other people engaged in activities of interest by asking business office staff to specify who outside their units performed billing/insurance tasks needed for their work, and we interviewed these people. All interviews and work-flow observations were conducted by one investigator (Sakowski) with participation by another (Kahn) in selected interviews.

Information on clinicians' billing/insurance effort was collected using a Web-based survey. A survey tool asking participants to estimate the minutes per day spent preparing and submitting reimbursement claim information, addressing

drug formulary issues, seeking prior authorization, and providing second opinions was sent to all of the medical group's physicians, clinic-based nurses, medical assistants, and physician assistants. Physicians were also asked to specify the time dedicated to compiling and submitting materials for credentialing. Follow-up telephone interviews were conducted with ten physicians by one investigator (Kahn) to provide context for the results.

We received 179 physician responses and 281 nurse/medical assistant responses, resulting in a 25 percent response rate. The follow-up interviews suggested that in general, clinicians' responses were consistent with the questions' intent. However, thirty-four respondents (7 percent) reported inordinately large time allocations for billing/insurance tasks; these allocations appeared to represent misinterpretations of the questions or overly broad definitions of the activities.⁶ To reduce the impact of these outlier responses, responses more than two standard deviations above the mean were truncated.⁷

■ **Calculation of costs.** We calculated the total costs of performing activities associated with obtaining payment for clinical services: salaries and benefits, supplies, purchased services, and equipment. Health information technology (IT) costs were allocated to billing and insurance based on assessments by IT personnel of the effort to develop and maintain programs, forms, and databases for these purposes. We added overhead at the medical group's standard percentage for indirect administrative costs, including human resources, finance, facility costs such as rent and utilities, and infrastructure.

Business office staff and nonphysician clinicians' wages, benefits, and other expenditures were based on 2006 budgets and financial reports. To increase generalizability and minimize local price effects, costs were adjusted to account for differences between local and regional mean wage levels.⁸ Physicians' salaries were based on the mean reported by the Medical Group Management Association (MGMA) for large multispecialty group practices in the western region.⁹

Costs for long-term investments in billing and insurance-related IT systems were estimated using straight-line amortization over three years, consistent with medical group accounting practices. Since partial upgrades of these systems occur approximately every two years, we believe that this amortization schedule is a reasonable approximation of IT investment costs.

Some activities were not captured in our cost estimates. The medical group we studied is affiliated with a large network of not-for-profit community hospitals and aligned physician groups. Network personnel perform certain billing and insurance functions, such as contracting and credentialing activities, on behalf of the medical group. However, we believe that the billing and insurance costs incurred by the network on behalf of the group are small compared with those incurred by the medical group, and their exclusion has an immaterial effect on our estimates.

■ **Categorization of activities into functional groupings.** All of the activities

described in this study are billing and insurance-related functions. Many serve multiple functions, however, and would be performed even in the absence of the need for interacting with insurers. For example, insurance verification is solely related to billing and insurance, but collecting patient demographic information for the medical record would remain (a dual-purpose task). Similarly, physician coding of procedures is needed both for clinical documentation and to file payment claims, although billing and insurance obligations may require more complex code combinations. We classified billing and insurance-related activities into three categories based on our understanding of operational and regulatory needs for group practices: billing and insurance only; dual-purpose that, given the right circumstances, might be reduced if the need for billing or third-party billing/insurance functions were eliminated; and dual-purpose that would probably remain in similar magnitude regardless of billing/insurance needs.

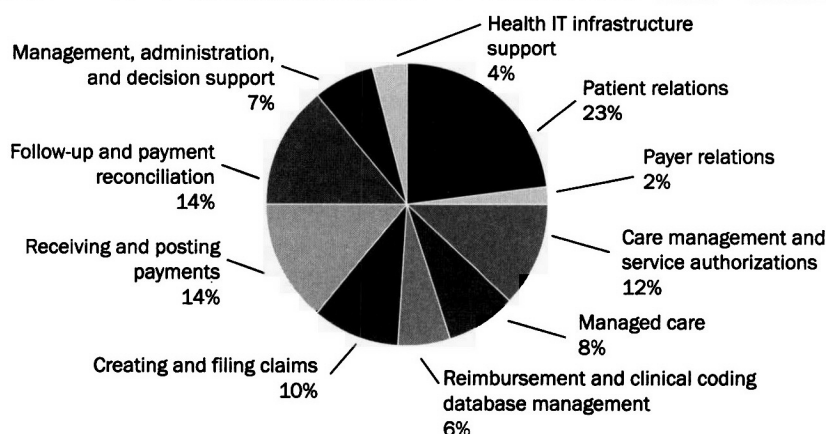
■ **Billing and Insurance cost measures.** We calculated the burden of billing and insurance using two measures: cost per FTE physician, and percentage of operating revenue. The numerator for both indices is total cost for billing and insurance, as described above.

The physician FTE denominator facilitates comparisons across medical groups of any size. The revenue denominator expresses the billing/insurance cost as a percentage of net clinical revenue. Because net revenue may be influenced by local and group-specific payment levels, we adjusted revenue to regional averages. Specifically, we used revenue per physician from the 2006 MGMA survey for large multispecialty medical groups in the western region.¹⁰

Study Results

■ **Personnel dedicated to billing/insurance activities.** A total of 0.67 non-clinical FTEs were dedicated to billing and insurance-related activities per FTE physician. This included both personnel working full time on these activities and those who have other primary responsibilities but perform some billing/insurance tasks, such as accounting personnel who processed bank deposits. FTEs by functional area are reported in Exhibit 1. The largest area is patient relations, with one-quarter of nonclinical billing/insurance staffing, encompassing gathering patient billing information, insurance verification, creation of patient charts, and answering patients' account and procedure cost questions. Activities directly related to collecting payment—creating and filing claims, receiving and posting payments, and payment follow-up—accounted for 38 percent of nonclinical billing/insurance staff.

Clinical staff devote substantial effort to billing and insurance-related activities. On average, physicians reported spending thirty-five minutes per day clarifying claim information, addressing formulary issues, securing referral authorizations, and providing second opinions required for authorizations (Exhibit 2). In addition, it has been estimated that clinicians may spend 8–29 minutes per day recording encounter information needed for billing.¹¹ Other clinical staff, including

EXHIBIT 1**Allocation Of Nonclinical Full-Time-Equivalent Staff Performing Billing And Insurance-Related Activities, 2006**

SOURCE: Authors' calculations based on key-informant interviews.

NOTE: IT is information technology.

nurses and medical assistants, reported spending thirty-eight minutes per day on billing/insurance activities.

■ **Billing and insurance costs.** The cost of billing and insurance-related activities performed by nonclinical personnel in 2006 was \$51,221 per FTE physician—6.0 percent of operating revenue per FTE physician (Exhibit 3). The majority of non-clinician billing/insurance spending (70 percent) was for salaries and benefits; 20 percent went for operating expenses, purchased services, and allocation of overhead; and 10 percent, for the purchase and operation of IT systems.

We estimated that 56 percent of the costs associated with nonclinical personnel performing billing/insurance activities were for tasks performed only for these purposes and did not contribute to other administrative objectives (Exhibit 3).

EXHIBIT 2**Clinician Time Devoted To Billing And Insurance-Related Activities: Average Minutes Per Day Per Clinician In A California Multispecialty Group Practice, 2006**

	Clarifying claims data	Formulary issues	Referral authorizations	Second opinions required for authorizations
Physicians (n = 179)	6 (8.8)	14 (11.3)	9 (8.8)	6 (15.4)
Other clinicians (nurses, medical assistants, physician assistants; n = 281)	5 (8.9)	14 (20.2)	17 (23.7)	2 (5.2)

SOURCE: Authors' calculations based on clinical survey results.

NOTE: Standard errors are in parentheses.

EXHIBIT 3**Billing And Insurance-Related (BIR) Tasks Performed By Nonclinicians And Associated Spending In A California Multispecialty Group Practice, 2006**

Patient relations	Spending per FTE physician (\$)^a	Percent of spending	BIR status^b
Collect patient billing information, create patient charts	2,212	4.3%	DP
Insurance verification	2,212	4.3%	DU
Answer patients' account and cost questions	3,761	7.3%	BIR
Supervision/management	901	1.8%	DU
Payer relations			
Contracting with payers	555	1.1%	BIR
Provider credentialing	561	1.1%	DU
Processing payer requests for additional information	91	0.2%	BIR
Care management, service authorization			
Service review and authorizations (for procedures, referrals, and inpatient level of care)	7,665	15.0%	DU
Supervision/management	177	0.3%	BIR
Managed care			
Maintenance of capitated patient enrollment lists	420	0.8%	BIR
Payment for services provided outside the group	2,121	4.1%	DU
Supervision/management (health plan department)	525	1.0%	DU
Supervision/management (managed care department)	490	1.0%	BIR
Reimbursement and clinical coding database management			
Coding support and updating of coding rules and regulations	319	0.6%	DU
Clinician coding training and compliance auditing	1,232	2.4%	DU
Updating plan database for allowable charges and covered services	647	1.3%	BIR
Supervision/management	907	1.8%	BIR
Creating and filing claims			
Entering charges	1,480	2.9%	BIR
Claims review and edits	994	1.9%	BIR
Filing claims	1,146	2.2%	BIR
Creating and mailing patient statements	1,205	2.4%	BIR
Data entry and payment processing management	772	1.5%	BIR
Receiving and posting payments			
Collecting payments and posting to patient account	3,933	7.7%	BIR
Depositing checks and payments	1,554	3.0%	BIR
Account reconciliation, discrepancy research, follow-up, and write-offs	431	0.8%	BIR
Receiving and allocating capitated payments	40	0.1%	BIR
Posting refunds	216	0.4%	BIR
Payment follow-up and reconciliation			
Follow-up on denials, underpaid or nonresponsive claims	4,571	8.9%	BIR
Filing for stop-loss and other contractual payments	384	0.7%	BIR
Filing for shared risk-pool payments	181	0.4%	BIR
Follow-up supervision	909	1.8%	BIR

This includes contracting with payers, entering charges, and collecting and posting payments. Dual-purpose activities, which could be reduced but would probably remain to some extent even if the need for third-party billing/insurance activities ended, accounted for 40 percent (these included service authorizations,

EXHIBIT 3**Billing And Insurance-Related (BIR) Tasks For Nonclinicians And Associated Spending In A California Multispecialty Group Practice, 2006 (cont.)**

Management, administration, and decision support	Spending per FTE physician (\$)^a	Percent of spending	BIR status^b
Business office management	1,466	2.9%	DU
Clerical and administration support	2,286	4.5%	DU
Credentialing and NCQA reports, plan audit info, clinical staff stats	227	0.4%	DU
Charge analysis reports, other ad hoc reporting	736	1.4%	DU
Health IT Infrastructure support			
Electronic BIR application special projects	136	0.3%	DU
Electronic administrative and medical record system BIR support	3,758	7.3%	BIR
Total	\$51,221		

SOURCE: Authors' calculations.

NOTES: FTE is full-time equivalent. NCQA is National Committee for Quality Assurance. IT is information technology.

^a Expenditures reported are adjusted to regional levels (see text).

^b BIR status: BIR = BIR-only; DU = dual-use, might be reduced to some (unknown) extent without the need to satisfy BIR objectives; DP = dual use, but would probably remain even without the need to satisfy BIR objectives.

physician training in coding, and business office management). A small number (4 percent) were dual-purpose activities such as collecting patient information and creating charts, which would probably continue to be performed, regardless of billing/insurance need.

Excluding the time spent on recording procedure and encounter codes used in billing, the value of clinicians' time and overhead dedicated to billing/insurance activities was \$34,052 per FTE physician (4 percent of revenue), including \$19,672 for physicians' time and \$14,381 for the time of other clinicians.¹² Total adjusted billing/insurance spending was at least \$85,276 per FTE physician (10 percent of estimated operating revenue). The amount of clinician time spent recording billing information is uncertain, but including that in our calculations could increase our annual billing/insurance cost estimate by \$4,000–\$20,000 per FTE physician, representing an additional 0.5–2.3 percent of revenue.

■ **Variation across divisions.** The cost of nonclinicians' billing/insurance activities varied between \$43,359 and \$59,425 per FTE physician across the three divisions of our study site (Exhibit 4). These divisions varied in size (divisions 1 and 2 had more than double the number of FTE physicians as division 3) and degree of automation, and they used different billing/insurance work flows and processes. For example, division 1 appeared to focus more effort on creating automated payer databases and claim processing tools, apparently reducing the need for manual review of claims. Divisions 2 and 3 concentrated on personal interactions with patients and third-party payers to gather the necessary coverage information and follow up on claims. The results suggest economies of scale in billing and insurance-related administration; billing/insurance costs as a proportion of operating revenue were in-

EXHIBIT 4**Variation In Per Physician Billing And Insurance-Related Tasks Performed By Nonclinical Staff In Three Divisions Of A Large Multispecialty Group Practice In California, 2006**

	Division 1	Division 2	Division 3
Patient relations	\$5,423	\$13,461	\$10,708
Payer relations	1,394	534	2,020
Care management and service authorizations	5,934	8,004	12,960
Managed care	2,944	4,402	3,951
Reimbursement and clinical coding database management	3,825	2,094	3,085
Creating and filing claims	3,904	6,646	8,275
Receiving and posting payments	4,963	6,813	8,250
Follow-up and payment reconciliation	6,179	7,283	3,220
Management, administration, and decision support	4,034	6,260	3,563
Health IT infrastructure	4,759	2,921	3,393

SOURCE: Authors' calculations.

NOTE: IT is information technology.

versely related to the number of FTE physicians in the division. It should be noted that the largest division (division 1) also had the greatest degree of automation and the most intensive use of health IT, so we cannot differentiate economies of scale and economies from automation.

Discussion And Policy Implications

Our detailed approach to investigating the costs of billing and insurance-related tasks for a large multispecialty group practice identified the contribution of certain high-cost components, particularly patient relations and securing service authorizations. A granular assessment such as this may help direct future efforts to reduce administrative burden to activities with the most potential for savings.

The total billing/insurance burden was lower (10 percent) than in an earlier study (13.9 percent). The nonclinician component in our study was much lower (6.0 percent versus 9.8 percent), but the clinician component was similar (4.0 percent versus 3.7 percent).¹³ It is unclear how much of these differences are attributable to an overall downward trend in billing/insurance expenditures, differences between our single study site and the sample of medical groups included in the previous work, or differences in methods of data collection and analysis.

Because of measurement concerns, our base cost estimates do not include clinicians' effort for one billing/insurance task: recording procedure and diagnosis codes needed for billing. This potentially understates our estimates for the clinician-time component. Our physician survey respondents reported spending an average of twenty-nine minutes per day entering procedure codes—much more

than reported by other studies. One recent observational study found that physicians spend eight minutes per day recording billing codes.¹⁴ If we incorporated that figure in our cost calculation, physician time costs for billing/insurance would increase by \$4,253 to \$23,925; this would increase total billing/insurance costs from 10 percent of revenue to 10.5 percent. However, incorporating the additional twenty-nine minutes reported by our survey respondents in our cost calculation increases the value of clinicians' time to \$53,996 and total billing/insurance costs to 12.3 percent of revenue.

One possible explanation for this discrepancy is that the physicians at our study site use an electronic medical record (EMR) system for both billing and clinical record keeping. This may make it difficult for users to distinguish the time spent entering codes simply for billing from the rest of the charting process. Some felt they spent extra effort adding documentation that was needed only for billing. Others seemed to feel that nearly all of that information was needed for accurate clinical records. Further work needs to be done to fully assess the clinician effort needed for recording billing information and other billing/insurance activities in an EMR environment.

■ **Comparison with Casalino study.** Although the study methods and data sources were quite different, our estimates of resources devoted to billing and insurance are consistent with the findings presented by Casalino and colleagues. Their estimate of \$68,274 for interacting with insurance companies does not include overhead, supplies, technology, and other costs included in our estimate of \$85,276 per FTE physician.

■ **Impact of complexity.** Previous reports have suggested that the complexity inherent in the current multipayer financing system is responsible for increasing the administrative burden associated with medical groups' transaction processing.¹⁵ During our interviews, informants frequently described the contributions of complexity in the payment system to billing and insurance burden. For example, the patient population of our study site is covered by hundreds of insurance plans, each with its own rules about benefits covered and under what conditions, payment rates, and often billing procedures. This complexity adds burden to billing and insurance tasks, including procedure coding, drug formulary authorizations, discussions with patients, submission and appeal processes, and receipt of payments. The complexity also increases the chance for error and dispute, increasing the likelihood of payment follow-up and collections. Even high-deductible plans, which might appear to avoid administrative burden for initial services during the year, impose billing/insurance costs because each service, including those within the patients' deductibles, must be evaluated and processed.

■ **Implications for measuring billing and insurance impact.** The broad and inconsistent scope of billing and insurance-related administrative processes presents major measurement challenges. Even across three divisions within the same organization, billing/insurance procedures varied widely. Each division used differ-

ent work flows, placed responsibility for a given function in different departments, and often called the same activity by different names. The divisions differed in the degree of process automation, such as the use of decision-support tools and acceptance of electronic payment. This variation in processes and even nomenclature within the same medical group highlights the challenges of developing surveys for measuring billing and insurance-related activities and spending for use with many respondents.

■ **Study limitations.** We note several limitations to this study. We focused on a single, relatively technologically advanced medical group located in California. Other medical groups may have very different results because of differences in size, payer and patient mix, administrative processes, and the use of electronic systems. Billing/insurance costs may be affected by California's "delegated authority" laws allowing medical groups to contract on behalf of individual providers. Clinicians in states without delegated authority must negotiate their own contracts, which increases their administrative burden. Our data relied on self-reported billing/insurance effort; we did not conduct time and motion studies, potentially compromising precision and validity. The 25 percent clinician survey response rate raises concerns about potential response bias, but the impact of this bias is unknown. We are reassured, however, because our results are similar to those of other national surveys.¹⁶ This single-practice case study provides more-detailed information on the spectrum of billing/insurance activities performed and the associated costs. Our findings provide a foundation for future studies exploring opportunities to increase administrative efficiency.

■ **Policy implications.** It has long been recognized that significant resources are spent securing payment for clinical services. This study adds nuance to that observation. But which direction should efficiency-focused interventions take? In our study site, automation appeared helpful in reducing claims denials, ensuring coding compliance, and reducing days in accounts receivable. However, much remains to be understood about how well automation translates to billing/insurance savings without further burdening clinicians. Much more work is also needed to assess whether these results are generalizable to smaller medical groups and for different automation strategies.

Standardization of benefit plans and billing procedures appears to offer great potential to decrease complexity and thus billing/insurance costs. However, to yield efficiencies, such standardization must be strict. Our respondents reported that even with standard coding and claims guidelines, the lack of consistency and transparency in payers' interpretation of those guidelines requires considerable resources to manage. In theory, a single-payer health system may present opportunities for standardization, simplicity, and efficiency in billing/insurance tasks, but minimization of such tasks is not the only goal for health care system reform. Within a multipayer system, adopting fully standardized plan features and procedures offers the best hope of major efficiencies in billing/insurance administration.

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11. Truncating the outliers resulted in a 14 percent decrease in mean values. Without adjusting the survey results for these outliers, we estimated that physicians spend forty minutes per day on clarifying claim information, formulary issues, obtaining authorizations, and providing second opinions. Eliminating rather than truncating outliers resulted in an estimated thirty minutes per day spent on these activities. Without adjusting the survey results for outliers, we estimated that clinic-based nurses, medical assistants, and other nonclinicians spend forty-five minutes per day on clarifying claim information, formulary issues, and obtaining authorizations and second opinions. Eliminating outliers from the sample reduces this estimate to thirty-three minutes per day.
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