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Evolution of an Academic Hospitalist Program: Clinical, Educational, and Financial Value

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The hospitalist model for inpatient care changed the landscape of inpatient medicine, particularly within academic medical centers. The medical community has acknowledged the benefits offered by dedicated inpatient physicians at academic medical centers.¹⁻⁶ Hospitalists may decrease overall cost and length of stay for patients while maintaining referring-physician satisfaction and readmission rates similar to their general internist and subspecialist colleagues.¹⁻³ In addition, studies suggest superior teaching evaluations among hospitalists, with accessibility and provision of immediate feedback cited as strengths.⁴⁻⁶

However, the perceived benefit of physicians dedicated to inpatient care comes at a cost. Hospitalists often do not collect enough revenue from billing to be financially self-sufficient. According to the Society of Hospital Medicine's (SHM's) 2003 to 2004 Productivity and Compensation Survey, 64% of all hospitalist programs received financial support from their institutions.⁷ Three years later, SHM's 2006 survey indicated that 97% of programs received financial support.⁸ The gap between revenue and salary expectation is particularly pronounced in academic medical centers because of a less favorable payer mix and decreased clinical efficiency in the presence of learners.⁹ SHM's 2003 survey indicated that 80% of academic hospitalist programs receive salary support, with a mean of \$85,943 per full-time equivalent (FTE) per year. However, a

literature review did not identify published descriptions of financial support models for academic hospitalist programs. This commentary describes the initial model adopted by the University of Kansas Medical Center (KUMC) to provide financial support for the hospitalist program, discusses principles of measuring clinical productivity, and proposes a methodology to determine fair market value for academic hospitalist work.

CASE STUDY: UNIVERSITY OF KANSAS MEDICAL CENTER HOSPITALIST PROGRAM

In 1999, the hospitalist program in the department of internal medicine at KUMC began with 1 inpatient medicine service, staffed by 3 pulmonary/critical care physicians and 1 general medicine hospitalist physician. The hospitalist team demonstrated the benefits of a hospitalist program, including shortened length of stay, decreased costs per discharge diagnosis, and lower readmission rates. However, more hospitalists were needed as the patient census increased in the medical intensive care unit and inpatient and outpatient settings by 40% to 50%. To meet increased clinical needs, the program hired 3 general internists as designated hospitalists in 2002. The group staffed 2 inpatient services and a consult service on a monthly rotating basis. Clinic-based internists staffed a third inpatient service and provided weekend coverage of 6 to 8 weekends per physician per year. The weekend coverage from clinic-based colleagues allowed hospitalists to be scheduled for 10 to 11 weekends of service each per year, which was viewed as sustainable by the group.

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At that time, hospitalists were providing more days of inpatient care (~266 days) than the SHM average.⁷ However, lower patient volumes led to clinical productivity that approximated the national average reported by SHM's survey at 3100 work relative value units (wRVU) per clinical FTE per year (Table 1). Hospitalists at KUMC spent an average of 6 hours per day on the wards, with an additional 2 to 3 hours of administrative time in the office, and took pager calls approximately 1 to 2 nights per week. At that time, the model was sustainable and suited the department's clinical expectations; however, by 2003, ensuing pressures soon threatened the program's viability.

Patient care responsibilities grew as the hospital census increased, and the department complied with resident duty hour regulations. The length of hospitalist workdays often stretched to 12 hours or more while on inpatient service. At that time, fiscal year (FY) 2004 projections estimated a rapid increase in clinical productivity, with 8000 wRVUs per hospitalist. Projected charges were \$442,943 per hospitalist, but with a collection rate of 42%, projected collections would be only \$186,122. In comparison, SHM's 2003 to 2004 Productivity and Compensation Survey indicated the Midwest region's average annual charges were \$284,165, collection rate was 61.9%, and average collections were \$176,012.⁷

KUMC's payer mix and collection rates necessitated extremely high clinical productivity. As a result, hospitalists devoted less time to teaching, leading to diminished patient satisfaction and job satisfaction. By the end of FY 2004, it became clear that the existing hospitalist model, which had been workable in the past, was unsustainable and at risk for physician burnout and decline in educational quality. In fact, 3 of the 4 hospital-

ists initially hired opted not to continue their positions by the end of FY 2004.

Concurrently, the department implemented the educational value unit (EVU) system to compensate faculty for teaching, including bedside teaching on the wards and time spent in educational administration.¹⁰ The EVU model for mission-based funding provided a means for direct compensation of faculty teaching effort, based on predetermined teaching expectations and faculty teaching logs. Because of their extensive teaching responsibility, hospitalists could benefit from implementing the EVU system, receiving direct compensation for time spent teaching. Each hospitalist in the KUMC program serves as a teaching physician, supervising both students and residents on the inpatient general medicine service. In fact, hospitalists in this program meet the Accreditation Council for Graduate Medical Education qualifications for designation as key clinical faculty for the residency program (at least 15 hours of teaching or residency program administration per week, with direct teaching and resident supervision responsibilities).¹¹

Even with the potential for increased compensation, the problem of an unsustainable patient care workload remained an obstacle to recruiting and retaining hospitalists. A daily patient census of 20 to 24 patients per hospitalist, with a case mix index of 1.43, caused management rounds to monopolize the hospitalists' time, often at the expense of their teaching responsibilities. In an effort to address these issues, hospitalist staffing schedules and workload expectations were constructed to generate a system that improved performance in both teaching and patient care.

At that time, leaders in the department identified the hospital as a key stakeholder and potential ally in the effort to build a sustainable hospitalist program. The department leadership believed the hospitalist service could be valuable in improving the quality of patient

PERSPECTIVES VIEWPOINTS

- Case study of a successful hospitalist program within an academic hospital setting.
- Using wRVUs to measure hospitalist productivity.
- Balancing hospitalist compensation with legislative restrictions and performance measurement.

Table 1 Productivity and Collections

	KU Hospitalists FY 2002	KU Hospitalists FY 2004*	SHM 2003-2004 Survey†
Average yearly wRVU Production/FTE	3100	8000	2925
Average yearly charges	\$182,178	\$442,943	\$284,165
Average yearly collections	n/a	\$182,122	\$176,012
Collection rate	n/a	42%	61.9%

KU, University of Kansas; SHM, Society of Hospital Medicine; FY, fiscal year; wRVU, work relative value unit; FTE, full-time equivalent.

*Projected values in late FY 2003.

†Midwest All Models subset.

Table 2 Median Hospitalist Productivity and Compensation

	2004 Report (2003 Data)	2003 Report (2002 Data)	Percent Change (2003-2002)
MGMA National Data			
Median compensation—Southern region, all practices	177,614	169,007	5.09%
Median retirement benefits—all practices	14,220	12,039	18.12%
Median Physician wRVUs—all practices	3176	3273	-2.96%
Total physician compensation/wRVU	60.40	55.32	9.19%

MGMA, Medical Group Management Association; wRVU, work relative value unit.

care and enhancing referring-physician satisfaction. Initial discussions focused on how to structure the hospitalist-hospital relationship. Department leaders were concerned that if hospitalists were employed directly by the hospital or supplied by contract through a private hospitalist group, the hospitalists would not have sufficient incentive to devote time to teach students and residents. Conversely, hospital leaders sought the ability to align financial support with performance to ensure that quality and efficiency of patient care were not compromised. Ultimately, both sides agreed to develop a professional services agreement (PSA), in which the hospital compensates the department for predefined clinical services provided by the hospitalists. To address the hospital's concerns, the department incorporated specific quality metrics into the agreement and established compensation to a predetermined level of productivity, measured by wRVU totals. By negotiating the agreement in this manner, the department was able to preserve the teaching responsibilities of the hospitalists.

Benchmarking Clinical Productivity and Work Relative Value Units

A useful measure of physician productivity, wRVU standardization allows comparison across institutions and practice environments, which is difficult with other measures of productivity, such as charges or collections. Reports of performance-based compensation using wRVUs for benchmarking have shown favorable results. Some wRVU-based models have incorporated teaching into the compensation structure. For example, one department of internal medicine's performance-based compensation plan for faculty used Medical Group Management Association (MGMA) benchmarks to determine targets for wRVU production for individual faculty members, as well as a benchmark dollar/wRVU amount for each specialty.¹² The department realized a 74.3% increase in mean wRVU production per faculty, per year, after implementation of the RVU-based compensation model. Similarly, implementation of a wRVU-based model in a department of pediatrics resulted in a 20% increase in clinical productivity while maintaining the quantity and quality of their teaching efforts.¹³

On the basis of published reports and the ease of standardization, KUMC chose to use wRVUs as the foundation for reimbursing hospitalist services. After agreement was reached to use wRVUs as the measuring unit for clinical productivity, discussions turned to establishing the appropriate target wRVU production per faculty FTE per year.

Mission-based Structuring and Expectations of Clinical Productivity

The de novo structuring or restructuring of an academic hospitalist program provides an opportunity for mission-based management. Many academic hospitalists also have important teaching responsibilities or research expectations as well. Expectations for clinical productivity must allow for teaching and research missions to be fulfilled. To set reasonable targets for clinical productivity, KUMC contacted a number of academic hospitalist program leaders and reviewed SHM's "Hospitalist Practice Profiles" and 2003 to 2004 Productivity and Compensation Survey.^{7,14} Several conclusions were drawn from these sources. First, most of the academic hospitalist program leaders queried believe quality of patient care and education begins to deteriorate with an average daily census greater than 12 to 15 patients per hospitalist. Second, the hospitalists' 266 days on service per year exceeded the national and local examples, which defined a full-time hospitalist position at 180 to 230 days of inpatient service per year. A KUMC hospitalist average workload of 260 days on service per year, with a daily census of 18 to 24 patients, was unsustainable because of physician burnout and insufficient time for teaching. The target wRVU production for a 1.0 hospitalist FTE was established at 3100 wRVUs per year, the academic median of the 2003 to 2004 SHM survey. Modeling indicated that this level of performance was achievable in approximately 230 service days, with 12 to 15 patient encounters per day.

Derivation of Financial Support in Dollars per Work Relative Value Unit

SHM and MGMA data were used to determine median compensation and clinical productivity (using wRVUs) for hospitalists (Table 2). KUMC chose to use median

Table 3 Calculation of Cost of Hospitalist Program per Work Relative Value Unit Produced

Compensation and Overhead Methodology References: Internal Medicine—Hospitalists

Compensation Methodology			
Description	2004 Report (2003 Data)	2003 Report (2002 Data)	Percent Change (2003-2002)
Median compensation—Southern region, all practices	177,614	169,007	5.09%
Median retirement benefits—all practices	14,220	12,039	18.12%
Median physician wRVUs—all practices	3,176	3,273	−2.96%
Total physician compensation/wRVU	60.40	55.32	9.19%
Overhead/wRVU			
Physician benefit and taxes:			
Physician payroll taxes FICA/Medicare	1.73		
Physicians life insurance	0.66		
Physicians disability insurance	0.92		
Physicians pension benefit	2.15		
Malpractice expense	0.98		
Subtotal physician benefit and taxes	6.44		
Department of Internal Medicine overhead	4.22		
Total overhead/wRVU	10.66		
Total physician compensation and overhead/wRVU	71.06		

FICA, Federal Insurance Contributions Act; *wRVU*, work relative value unit.

data for all hospitalists, rather than benchmarking strictly academic hospitalist standards, to appropriately compensate for clinical work because the department has a separate compensation system (the EVU) for teaching efforts.

The physician compensation per unit of work, or dollars per wRVU, was determined using these data. To determine the true cost of the hospitalist program per wRVU produced, the department also included office overhead and academic costs, as well as the Dean's tax, billing costs, and Practice Group Management Service Organization tax (Table 3). The total cost, including salary, benefits, and overhead, was determined to be \$73.48 per wRVU. This figure represented the fair market value of a hospitalist practicing in this academic environment in 2005 and served as the basis for negotiations among the school of medicine, department of internal medicine, and hospital.

The total cost was forecast to generate a salary of \$177,614 for each clinical FTE, with an expectation that each clinical FTE will work 230 days and generate approximately 3100 wRVUs, assuming an average daily census of 12 to 15 patients.

The average clinical FTE for each hospitalist was 0.74. Other revenue sources included compensation for teaching time through the EVU system, internal medicine residency program leadership (one hospitalist is an associate program director), medical directorship of various clinical initiatives, and research funding. Thus, the average number of inpatient clinical days worked for each faculty member was 171 (0.74×230).

Fair Market Value: Benchmarking Productivity and Compensation

After determining a model in which the hospital would purchase predetermined hospitalist services on a wRVU basis, legal counsel was sought to ensure the terms of the agreement structure complied with Stark regulations and other laws. The Stark regulations were designed to prevent physicians and hospitals from profiting from referral of patients and are commonly described as "anti-kickback" legislation. Specifically, Stark regulations applicable at the time stated that "if a physician (or immediate family member) has a financial relationship with an entity, the physician may not make a referral to that entity for the furnishing of designated health services for which payment may be made under the government programs."¹⁵ Stark law defines specific criteria that must be met in contracts establishing employment relationships between physicians and health care organizations, including hospitals.^{15,16}

Review of the proposed hospitalist services agreement determined that criteria were met. As is customary, legal counsel did not make a determination about fair market value (one of the Stark law criteria) but encouraged the group to base the hospitalist compensation on applicable benchmarks (SHM and MGMA data) and to incorporate relevant standards into the process for determining fair market value compensation for hospitalist work.

Performance Measures

After identifying the financial support and terms of funding, the next step was to establish performance

Table 4 Clinical Performance Standards

Performance Measure	Standard
Readmission rate	Maintain at < 50th percentile of UHC data Decrease by 10% each year
Case mix-adjusted mortality rate	Maintain at < 50th percentile of UHC data Decrease by 10% each year
Patient satisfaction	Greater than 75% (Press-Ganey survey, physician subset)
Referring-physician satisfaction	Greater than 75% (questionnaire developed and administered in partnership between hospitalist director and hospital administration)
Patient throughput	Good faith effort for improvement
Coordination of ancillary services for patients with CHF and pneumonia	Good faith effort for improvement
Joint Commission Core Measures for CHF and pneumonia	Good faith effort for improvement
Physician documentation compliance (eg, signing of verbal orders, dating and timing orders)	Good faith effort for improvement

UHC, University hospital consortium; *CHF*, congestive heart failure.

expectations. The hospitalists themselves provided key input in defining the performance measures, many of which were already being used for quality improvement. The performance measures were subsequently refined in the second year of the PSA, with more specific targets for Joint Commission core measure compliance, patient throughput, and physician documentation (Table 4). Referral-physician satisfaction was removed as a performance measure, and participation in hospital-wide efforts to reduce risk of pressure ulcers and falls was added.

Performance measures were initially assessed quarterly, but in the second year of implementation, hospitalists and hospital leaders agreed to monthly assessments. By reviewing data monthly, the hospital can detect and respond to trends in performance more quickly. Although no percentage of the hospitalists' salary was at risk based on performance for the initial contract years, the inclusion of specific clinical performance expectations in the PSA provided a foundation for developing a true pay-for-performance model by establishing a format for evaluating annual performance against a predetermined list of quality measures.

DISCUSSION

The KUMC hospitalist PSA established the cost per wRVU to provide for inpatient physician services, inclusive of physician salary, benefits, and hospitalist program overhead. Although the dollar-per-wRVU amount will vary by institution, the formula for obtaining the cost per wRVU is applicable to other hospitalist programs. Because the formula uses MGMA standards for clinical salary and benefits, it represents a benchmark calculation of fair market value compensation for hospitalist services in an academic medical center in units of dollars per wRVU. The approach concedes

that, given the poor payer mix at academic medical centers, collections on hospitalist services cannot serve as the sole source of support for their salary and benefits. During negotiation, the department estimated that the PSA would yield \$534,960 net in new financial support, as a result of receiving the contracted rate of \$71.06 per wRVU from the hospital, \$29.42 more per wRVU than the department received before the agreement. Actual experience from the first year of the agreement (July 1, 2005, to June 30, 2006) indicated that the department realized \$559,854 in new funding. Measured in these financial terms, the hospitalist professional service agreement was a success for the department.

Equitable distribution of PSA dollars presents a challenge to the department as it attempts to balance maintaining the quality physician services the hospital expects with supporting mission-critical, but less profitable, faculty work. In fact, a department-wide wRVU-based productivity model for compensation is in development, which will extend the mission-based approach to funding educational effort to clinical compensation as well.

To comply fully with Stark regulations, the compensation for hospitalist services is prospective. Designating the expected wRVU production for the upcoming FY in advance and renegotiating the hospitalist contract yearly ensures that hospitalists are receiving fair market value compensation while satisfying Stark criteria.

Both the hospital and the department perceived a number of benefits to the agreement. First and foremost, the formulas for compensation were viewed as fair and transparent, and the agreement's annual renewal allowed for adjustment to meet evolving patient care and educational needs. To fully comply with Stark exceptions and fit into an anti-kickback safe harbor, the department determined prospective targets for wRVU

production and compensation. As an added benefit, the prospective nature of the agreement decreased uncertainty in yearly budgeting for both the hospital and the department. In addition, aligning hospitalist pay-for-performance results anticipates a growing trend in medicine and places appropriate emphasis on quality improvement and excellence in patient care.

Compensation by wRVU production is one of several potential models for obtaining financial support in an academic hospitalist program. Other models include reimbursement by hour of work, which can be strictly limited to patient care or used to encourage hospitalists to participate in hospital quality initiatives and other key activities. Such a model may be of value should the hospital have the goal of providing continuous onsite coverage. Medical directorship positions are another means by which hospitals may elect to compensate physicians for specific activities. Likewise, hospitalists may be employed directly by a hospital in salaried positions.

The authors found few published descriptions of experience with any model for hospitalist reimbursement. SHM's Practice Profiles provide some anecdotal information, but the rapid evolution of hospitalist programs has outpaced discussions of the most appropriate financial models, particularly for hospitalists practicing in an academic setting. It is not surprising that models that work well for private hospitalists may not be adaptable to academic programs because of educational, research, and administrative responsibilities. This experience suggests that an academic hospitalist program structured similarly to a private practice model leads to high levels of physician turnover and burnout. Conversely, the goal of restructuring is to establish the hospitalist program as a stable foundation for inpatient training, thereby enhancing the ability to recruit faculty members for careers as medical educators.

Negotiations that result in fair market value compensation for hospitalists and align pay-for-performance to quality improvement are beneficial to the hospitalist, hospital, and patient. By providing one example of an academic hospitalist program structure, the authors hope to offer a methodology to academic administrators faced with similar dilemmas in financing inpatient care and training.

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