

An Academic Compensation Plan for an Orthopaedic Department

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The academic orthopaedic department has the primary goal of providing clinical services, educating orthopaedic surgeons, providing advancements through research and technology development, and creating and maintaining the administrative infrastructure that monitors and enables the department's overall mission. Simultaneous reductions in revenues and increases in the cost to practice medicine pose the greatest challenge to maintaining the academic orthopaedic department. Fundamental differences exist between the private practice and academic orthopaedic surgeon. Most importantly, while their value systems may differ, appropriate incentives (tangible and intangible) must exist to promote growth and retention in a non-private practice setting. A proper compensation plan must consider revenue and non-revenue-generating activities within the context of the academic orthopaedic department to maintain the department's mission. This article discusses these issues and provides an overview of solutions available to structure an appropriate compensation plan that encourages academic and clinical productivity yet remains sensitive to divergent goals and values of the department's members.

The mission of the academic orthopaedic department is extraordinarily complex with divergent goals. The primary initiatives include the provision of clinical services, educating current and prospective orthopaedic surgeons, translational advancements through basic science and clinical research, and administering these functions while remaining economically solvent. The burden of these responsibilities is especially challenged by policy and third-

party payers that have substantially reduced reimbursement as practice costs have simultaneously continued to rise.

In the current environment, providing proper incentives to maintain a committed physician base willing to fulfill the department's mission is the greatest challenge in an academic orthopaedic department. Indeed, in order to accomplish its initiatives an academic department must not only first obtain quality faculty, but also retain them. This necessarily results in a competition for quality surgeon resources within the local and regional healthcare environment.

This article provides an overview of how the academic orthopaedic practice differs from the private setting. It includes a construct to develop and implement a proper compensation plan that induces beneficial behavior supporting the department's mission and maximizing physician retention. Notably, the academic orthopaedic surgeon is often committed to striking a balance of revenue and nonrevenue-generating activities that in totality are practically and philosophically difficult to value. Understanding this complexity and implementing solutions that remain sensitive to the needs of both the department and its individuals remain the most reliable means to stay academically productive, facilitate physician recruitment, maximize retention, and create lasting harmony within the complex setting of an academic orthopaedic department.

Basic Economics of Health Care and the Academic Mission of an Orthopaedic Department

The contemporary mission of an academic orthopaedic department can be described as a four-legged stool supporting the departmental role in the academic community (Fig 1). The four key elements (legs) of the mission are (1) clinical services, including those provided to the medical and orthopaedic communities; (2) teaching future orthopaedic surgeons (medical students, residents, and fellows) for society; (3) advancement of new techniques, treatments, and quality care through research; and (4) admin-

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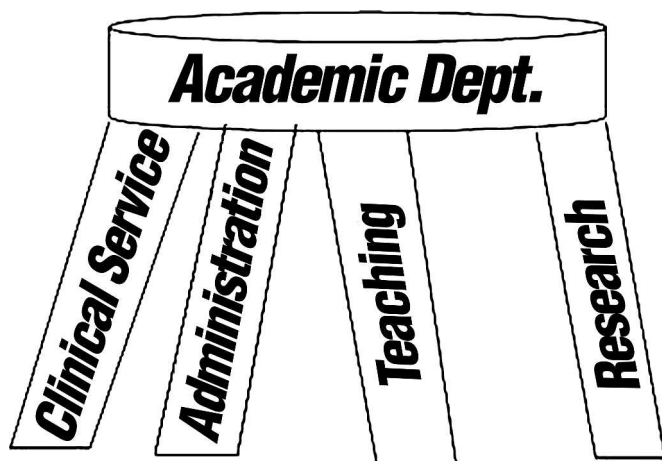


Fig 1. This drawing shows the “four-legged stool” model of the academic mission.

istration of the department. In a healthy department, all four components must be considered equally. However, that four-legged stool may be turned upside down so the foundation of these four initiatives is the base of the stool representing sound financial health of the department. Without adequate finances the department cannot maintain its faculty, who are the clinicians, teachers, researchers, and administrators (ie, the legs) (Fig 2).

This mission has been substantially challenged by financial pressures imposed by a growing economic burden of decreasing reimbursements for clinical services over the past decade. Medicare became an important source of revenue for patient care in the 1990s as managed care reduced the value of services provided by orthopaedic sur-

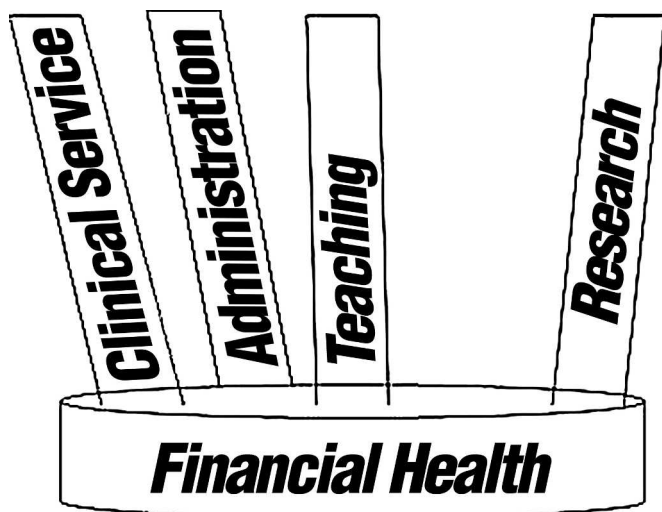


Fig 2. This drawing shows the “upside-down four-legged stool” model of the fiscal mission.

geons.^{8,13,26} Revenues then dropped considerably with the Balanced Budget Act of Medicare in 1997.⁴ Furthermore, there has been a steady growth in uninsured and underinsured patients who usually form a major proportion of cases treated by orthopaedic surgeons working in an academic health center. In a multispecialty hospital environment where financial statements are heavily scrutinized, the financial stability of one department often confers stability to financially ailing specialties. These and other factors have had a major effect on the diminishing margins that have become reality for most academic orthopaedic departments.¹⁵

Academic Full-time Versus Private Practicing Orthopaedic Surgeon

Orthopaedic surgeons who practice their specialty in an academic health center environment differ in many ways from their colleagues in a private practice environment.^{1,2,9,12,15–17,19} These differences lead to inherent advantages and disadvantages relative to issues related to the surgeon’s quality of life. First, the academic orthopaedic surgeon begins his or her career with a clinical and an academic appointment. There is a commitment to teaching medical students, residents and, in some cases, fellows in postgraduate training. Depending on the individual surgeon’s goals and desires, these responsibilities may be perceived as a benefit or burden. The added value of educating future orthopaedic surgeons is not only emotionally satisfying to the academic orthopaedic surgeon but provides a forum for his or her continuing education and a system for checks and balances governing clinical decision making. In addition, resident assistance in the operating room, clinic, and hospital settings is a valuable resource to the academic orthopaedic physician. Alternatively, the educational responsibilities require an additional time commitment in the clinic and operating room greater than required of the orthopaedic surgeon in private practice. Despite academic institutional models, which attempt to compensate academic full-time physicians for this added burden, they are rarely utilized and generally are insufficient to compensate for time lost from activities that generate revenue.²² Adding to this financial compromise, most hospital-based academic orthopaedic programs have a mission to care for indigent patients and this burden generally is considered a shared responsibility among academic orthopaedic physicians. Payer mix can have a substantial impact on orthopaedic practice expenses because of the preponderance of nonvalue-added activity-related expenses.⁶ Finally, an additional burden is contracting with insurance companies, financial registration, charge capture, billing and collection practices often beyond the control of the academic physician.

Second, the academic orthopaedist is often viewed in the community as the referral resource for the most complex and difficult cases. This case load, in addition to an often large primary care physician network, leads to consistent referrals. While conferring some advantages, this case load imposes limitations. Notably, on the physician side, there are often disincentives to treat these complex cases. For example, these cases may require substantial investments of time without proportional increases in relative value units or reimbursement, and given the greater variability in outcomes in managing this difficult patient group, these physicians are exposed to a greater medico-legal risk. Alternatively, the institution may benefit at the “expense” of the physician as these diagnoses and treatments are often associated with comorbidities that have a positive financial impact on Diagnosis Related Groups hospital reimbursement.

There are other examples where the hospital and physician incentives are not aligned. In most states, hospital reimbursement (as measured by the ratio of revenue to charges) is better than physician reimbursement from the State (eg, Medicaid). Moreover, hospitals also have access to the federal Disproportionate Share for Hospitals program that provides substantial revenues for charity services and other undercompensated services. Most hospitals (especially academic hospitals) are reluctant to share these revenues with physicians even though physicians do not have access to such a federal or state program. This has placed a disproportionate burden on faculty physicians and the ability of academic departments to recruit and retain experienced professionals. In addition, some academic practices include salary caps, usually based on benchmarks which are lower than MGMA benchmarks, and there are also limits on outside consulting.

Third, the academic orthopaedist usually has a commitment to basic science and translational research, which supplants available time for patient care and other revenue-generating activities. Clearly, the motivation for this activity is not financial because these activities are rarely supported by salary or financial incentives but rather based on a desire to contribute meaningful information to the advancement of care of musculoskeletal problems. In addition, there is no doubt the academic orthopaedic surgeon finds the peer-review process and respect achieved from the associated publication and presentations particularly intellectually gratifying. Unfortunately, funding for these activities, especially for salary support, has substantially eroded over the last decade and physicians have been forced to turn to industry research support over the public sector (ie, the National Institutes of Health). This burden is associated with inherent conflict that must always be defined at the time of presentation or publication.

Fourth, compared to a decade ago, hospitals have greater demands on liquidity, such as pension requirements and larger capital needs for aging facilities and clinical technologies. Therefore, there are fewer resources available to subsidize physician operations and clinical critical pathways leading to inefficiencies for the academic orthopaedic surgeon. Additional factors contributing to the academic medical center’s inefficiencies are its relatively large size, hands-on surgical training of residents and fellows, and a general lack of incentives for hospital nursing and anesthesia staff. Added to this burden are billing and collection practices often beyond the control of the academic physician. This is especially true if the department has its own billing service as relationships with the hospital infrastructure can be complex and counterproductive to optimum performance of billing activities. Despite these issues, there are clear advantages derived from the depth of resources and the multidisciplinary nature of a typical medical center that provide the academic orthopaedic surgeon substantial opportunities for excellence in patient care.

Fifth, academic orthopaedic surgeons are at times exposed to institutional aspects of their practice including salary caps, limits on outside consulting opportunities, and taxation from the dean of the medical school and/or the department. These taxes are imposed to support the social missions of the department and institution in addition to research and teaching. They may be outside the control of the leadership of the department and the tangible advantages of being a member of the academic community of a university may be difficult to measure. For example, there may be tuition benefits for faculty and their families in some institutions partly underwritten by departmental contributions. In addition, institutional guidelines may prohibit entrepreneurial activities because of perceived conflicts associated with resource utilization. These activities can require substantial time commitments outside of the institution, leading to a compromise in the physician’s ability to teach, perform research, and remain clinically active. Alternatively, the tangible benefits include the provision of institutional research support and a heuristic environment for intellectual exchange and fruitful research.

Because of these differences, it is logical the compensation plans that usually govern the income for academic physicians will differ from those applied in a private practice.¹⁰ Academic compensation plans are varied and seem to be determined by several factors, some of which are driven by institutional concerns and some of which are internal to the department.¹⁵ Not uncommonly, academic orthopaedic surgeons are salaried with some incentive structure that considers clinical and academic productivity, as well as the participation in activities of citizenship. This last component may include committee involvement, other

administrative responsibilities, and teaching. Furthermore, some programs reward academic productivity in the form of extra compensation for research, grants, and published peer-reviewed papers. In other models, physicians are less tied to the academic center and the institution functions more like a “landlord” than an employer. In these scenarios, physicians may be compensated more like private practice physicians while the institution seeks to minimize agency-related issues and their associated liability. Despite the arms-length relationship in this model there often remains some form of taxation, whether through research overhead or direct taxation on behalf of the department or institution.

History of Physician Compensation

During the past decade, the precedent has been academic physician’s salaries are lower than their private practice counterparts. For example, primary care physicians in an academic environment have earned 24% and specialists 51% less than their private practice colleagues.^{1,5,12,18,23,24} Some of this disparity may be explained by the observation private practice physicians are more clinically productive than academic physicians in terms of revenue-generating activities (higher gross charges; greater patient volumes; a larger number of relative value units completed; a paucity of teaching and academic commitments, including conferences and participation in continuing medical education); however, extrinsic market factors also have had a major effect on the net overall decrease in physician earnings during the past decade.¹⁵

These have included greater commitments to managed care, negotiated contracts, uncompensated care, decreasing Medicare payment rates, increased overhead, increasing malpractice premiums, increasing compliance costs for programs such as those mandated by the Health Care Financing Administration (now termed Centers for Medicare and Medicaid Services, CMS) and the Health Insurance Portability and Accountability Act, larger capital investments in technology (ie, the electronic medical record), and higher costs for physician recruitment and retention. For example, in the current complex health insurance system, it is estimated 30% of all initial claims for payment from a physician’s office are initially rejected. An initial claim costs slightly less than \$7 to bill; however, the cost to resubmit a claim is approximately \$25.¹⁵ This adds greatly to the overall cost of a department’s overhead. Moreover, some departments work with a centralized billing service and a failure of resubmission is not uncommon in some circumstances; thus, many services actually go unreimbursed due to lack of followup or appeal, which is critical to the success of the orthopaedic billing process.¹⁵ Lastly, unlike “in-house” billing where physician oversight is consistent and the process generally is a prioritized

administrative function, hospital billing operations are often undercapitalized and have little physician oversight.

In some institutions, academic health centers have increasingly relied on excess revenues from their clinical departments to subsidize the institution’s social mission for charitable and academic work. This can be in the form of taxation or it can be through an institutional-wide practice plan that builds in mechanisms for overtaxation for “richer departments” to subsidize the weaker financial departments in the institution.⁴ In general, a dean’s tax may in part be returned to the academic practice in the form of overhead support (ie, secretaries, academic support staff), and a department tax is more likely to be returned in part to the academic practice when it is an orthopaedic department rather than a division of a department (ie, the department of surgery).

As physicians have felt the pressure from reduced payment for services, they have generally responded through greater work efforts in the absence of a proportional return for this effort. For example, from 1995 to 1999, orthopaedic surgeons as a group had a mean increase in compensation of 2.3% but a mean increasing in billing of 24%.¹² This reflects a substantially larger work effort in the presence of decreased remuneration.

Thus, with declining reimbursements for specific services, a need for higher levels of physician productivity has also developed particularly in practice environments where clinical productivity is a major component of overall income. This increases the pressure to efficiently see patients and perform surgery, which may substantially compromise the remaining three legs of the stool: teaching, research, and administration. These components of the overall mission seem increasingly undervalued in these kinds of environments. Furthermore, competition for patients and resources, such as operating room time, may detract from the overall collegial environment of an academic orthopaedic program in such situations.¹⁵

The challenge that affects most academic institutions is the need to balance the desire for increased clinical productivity with the mission to support medical research and education. In fact, despite their lower academic salaries, academic physicians work longer hours than physicians in private practice (American Academy of Orthopaedic Surgeons-Orthopaedic Practice in the US 2005–2006, Final Report; June 2006).

Physician Recruitment and Retention

Recruitment of young, energetic, and enthusiastic talent and retention of high-performing, dynamic academic orthopaedic surgeons is a major challenge to leading programs throughout the country. Although income is not the only factor in this equation, it is the major factor as shown in many analyses and polls.²⁵ In 2002, a survey of almost

2000 practicing physicians across the United States found approximately 27% indicated they would likely leave their current practice in the next 2 years. Inadequate income was cited as the main reason in groups of fewer than 50 physicians.²⁵ The cost of such physician turnover is difficult to calculate because it involves not only lost billing revenue, but also the added cost of recruiting and orienting new faculty to assume these positions. Furthermore, it disrupts the mission of the department in its teaching and research commitments.

The ideal healthy department retains its members until they have the opportunity to leave for vertical movement into leadership positions in other departments. The fitness of the department also depends on the subspecialists who remain involved in clinical care and focused areas of basic science and clinical research. Emerging interests in outcomes research and health care economics and policy have led to the pursuit of additional areas of expertise for department members (ie, MBA, MPH).

Incentive-based Compensation Plans

Because of changes in the way hospitals and physicians were reimbursed in the past, compensation plans have evolved out of necessity. In the 1970s, physician compensation was based on fee-for-service payment. Most patients paid their physician and received reimbursement from their insurance company.^{5,14} In addition, current contract arrangements prohibit the practice of balance billing, and reimbursements remain well below actual charges in most instances. Due to substantial growth in health care costs, health maintenance organizations and third-party administrators began to evolve in the 1980s, and a large percentage of the United States population is now covered through these organizations.¹⁰ Therefore, physician practices in private and academic health care sectors consolidated to create a greater economy of scale for negotiating contracts and reductions in expenses. Still, reimbursements have declined due to the factors already cited.

Measuring Physician Productivity: Past, Present, and Future

Historically, physicians functioned as separate entities without attending to costly overhead and deteriorating time management. This was understandable as the economic environment was less complex, relatively large surgical fees were rarely questioned and the bureaucracy of administering billing and collections was minimal. As physicians formed groups to navigate the increasingly complex health care system, an attempt was made to align the financial goals and health of the overall organization with its individual members. In academic institutions, a highly variable system of measuring an individual physi-

cian's productivity against his or her expenses evolved, usually in the context of the additional taxation required to support the social mission of the institution and the orthopaedic department. The most common measurement methods used for determining a physician's productivity was physician profiling and benchmarking.^{3,24} Physician profiling involves a combined analysis of cost, utilization of resources, and assessment of treatment outcomes. The goal is to lower costs and improve quality of care.

Benchmarking compares factors such as productivity (number of patient visits) and clinical outcomes among patient groups in an effort to measure the overall success of care. The problem with these measures is methods for measurement have not been clearly established, validated, or objectively tied to a compensation formula.

Economic valuation of intervention is an emerging area of interest that will require high-quality information if policy makers emerge and engage in decision making related to physician reimbursement. Recently the concept of "pay for performance" has been developed in an attempt to improve patient outcomes, increase safety, decrease medical errors, and reduce costs by tying these objectives to physician reimbursement.¹¹ Although this is an evolving metric as it applies to orthopaedics, it is likely to become an accepted method to measure the value and quality of musculoskeletal care in the future. Compensation plans in academic orthopaedic programs will incorporate this into their formula for reimbursement. Elevated standards and measures of quality will provide an important opportunity for academic health centers and their orthopaedic departments to differentiate themselves from the private sector. If this metric becomes incorporated into compensation plans and by insurers, an academic orthopaedic department should be able to prove quality of care is a rationale that fairly values its clinical services. This is a key strategy to achieve and maintain a successful business.²⁵

Another factor being considered for "pay for performance" is the relationship of efficiency to the costs of delivering care. A growing concern is physicians who simply "cost" more to practice will be singled out with ramifications on how patients are referred for treatment. Patient satisfaction scores that include waiting times (in clinic and for surgery), which are typically better in a private environment compared to the academic, may be considered during this process.

Academic Physician Compensation Plans Compared

A compensation plan must be created in the context of the overall mission and vision of the department and it must be framed into the strategy and operations of that department. These concepts are beyond the scope of this article but are central to the concept of fair compensation that motivates productivity and promotes quality of care.

The two main goals of a compensation plan for an academic orthopaedic surgery department are (1) to recruit the best and brightest young orthopaedic surgeons and retain them through their developing careers; and (2) to provide fair compensation that is competitive with private practice colleagues while balancing the overall financial and social mission of the department to provide excellence in teaching, clinical care (regardless of ability to pay), and advancing knowledge through research and education.

The optimal compensation plan must be based on the philosophical commitment expressed above and on the practical business management of the department. This must include a shared goal of management of the costs of the group and a willingness to allocate certain administrative and practice shared expenses. These expenses, whether direct or indirect, must be transparent to all members of the group. For example, a physician cannot be subsidized by the department unless explicitly agreed to or they are knowingly supported by an endowment or institutional tax due their novel role as a clinician-scientist or for assuming a substantial academic or administrative responsibility. A method advocating activity-based costing to evaluate expenses has been proposed by Brinker et al.⁷ This methodology is truly objective and considers all activities in an orthopaedic practice when calculating an overhead profile. The compensation plan must also be constrained by budgetary commitments and future projections for departmental needs. Furthermore, it must also fulfill the following criteria:²¹ (1) motivate through reward for performance on all levels; (2) influence behavior (efficiency, cost management, quality of care, commitment to teaching and research); (3) create and maintain a sense of fairness; (4) be framed in a clear methodology with a transparent architecture; (5) promote the overall financial and academic success of the group; and (6) be true to the four-legged stool model for balanced mission of the department.

Certain extrinsic factors also must be considered: (1) fair balance for individuals who use more resources as a requirement of their practice specialty or commitment to research (eg, support in addition to a mutually agreed upon package of support and services might come from several sources, including the practice income, department taxes, grants, endowments, or a percentage of overhead from research grants); (2) fair support as agreed by the group or subsidization by other means for individuals whose specialty historically reimburses less than other specialties; (3) importance and value of citizenship, such as teaching, community service, and committee responsibilities; and (4) value of time spent conducting research.

Three basic models are relevant to an academic orthopaedic program and the benefits and disadvantages of each are noted.²⁰ (1) Straight Salary: In this model, physician recruitment efforts, retention, job satisfaction, and moti-

vation to teach and conduct research are variable. (2) Production-Based Payment: In this model, physician recruitment, retention, and satisfaction are fair, and the motivation for teaching and research are variable. (3) Salary and Incentives: In this model, physician recruitment and retention are good, and the motivation for teaching and research is variable.

Another model used successfully in academic orthopaedic practices is the "pod" concept where each subspecialty group (eg, spine, sports, arthroplasty, pediatrics, etc) is managed as a separate "pod" with separate financial profit and loss statements. This provides incentives for productivity and accountability while allowing individual pods to capitalize on the strengths of individual pod members (eg, clinical volume, research, administrative skills, and providing care for the indigent).

A Model Academic Orthopaedic Compensation Plan

In a recent article published as a case study in the Harvard Business Review, Barro et al³ reviewed the success of a compensation plan in an academic orthopaedic department. They described the motivations behind this plan as reward for clinical productivity and entrepreneurship, as well as individual accountability for utilization of resources. In this plan, each surgeon was given a base salary based on historical net revenues but with an incentive tied to productivity (ie, case volume and number of office visits completed) and calculated at the half year and end of fiscal year cycle. Overhead was shared (indirect) and individual (direct), and this was transparent so all members were aware of their exact business costs. A departmental tax was created to ensure sufficient funds were made available to satisfy the needs of the department's social and academic mission to perform research and teach.

Base salaries were adjusted annually based on the year's performance (Fig 3) based on a specific set of goals for the compensation plan (Appendix 1).

The details of this compensation plan are relatively straightforward. Some components built into this plan, which may not be self-explanatory, are the shared administrative expense for staff required to perform services that benefit the entire department. These include, but are not limited to, administration of the residency, delegation of teaching responsibilities, participation in the establishment of guidelines for operating room use, and management of the information services (computers, etc) for the department. It also may include overhead payment to the hospital for services such as compliance and legal counsel or billing operations. In addition to this, the department sets a percentage of gross collections as a supplemental tax to place money in a department development fund. This fund is used by the chairperson to support the mission of the

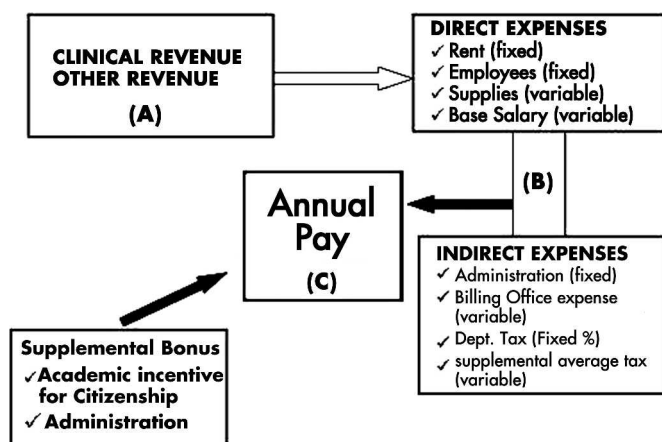


Fig 3. The flow chart shows the organization of physician compensation in a model academic orthopaedic program.

department as supplemental financial incentives in recognition of nonclinical service (Fig 3).

Lastly, because each physician may exceed his or her overhead or expenses at the end of a fiscal year, overage money is subject to a supplemental tax at a variable percentage. The basis for this added tax is to ensure the fiscal health of the department. Departmental expenses are calculated to keep an adequate cash reserve to pay out bonuses and meet needs for added expenses such as recruitment of new faculty. The percentage of this overage money paid as a bonus is then determined based on these factors.

Institutional Oversight

The academic institution oversees the orthopaedic department's compensation plan to ensure it remains true to its mission (previously stated) and is consistent with the guidelines of the institution. It may be determined salary caps are associated with disincentives for productivity; and in the current economic environment this may detract from the department's overall mission if members of the department are not given incentive to work hard to achieve a net-positive bottom line. Thus, the chairperson may negotiate with his or her institution to seek waivers when appropriate. Ideally, salary caps do not make fiscal sense in the current health care environment in which academic compensation has historically lagged behind private practice compensation.

Expected Results: The Bottom Line

The model described by Barro et al³ has been in effect for more than 4 years at its institution. Clinical productivity has increased in all divisions of the orthopaedic depart-

ment; in some divisions, the growth of clinical income has exceeded 20% per year. More than 80% of the department members eligible for bonus pay above their base income have received an annual bonus, and the research component of the department has flourished in its productivity and growth of faculty.

This approach has advantages and disadvantages. On the positive side, clinical productivity and income increase. On the negative side, incentives to teach, lecture, volunteer, and spend time performing research activities such as writing and applying for grants may suffer. The current economic infrastructure must remain sensitive to generational change and its desire for balance. For example, the contemporary academic yet clinically active physician is less likely to spend evenings and weekends away from his or her family to complete the responsibilities of boards, committees, and research.

This case study represents only one of many models for an academic orthopaedic department; however, it describes a success story that may be worth emulating. Each academic health center has its own guidelines, and they all have the same mission to cultivate the best clinicians, educators, and researchers and to retain and develop these individuals. A sound and fair compensation plan is a means to this end.

Private practice orthopaedic surgeons have multiple opportunities to establish revenue centers from ancillary activities, including imaging, ambulatory surgery centers, and physical/occupational therapy. All of these ancillaries will have similar issues related to the specific model deployed by the academic compensation plan. Traditionally, these activities have been forbidden or at least highly discouraged in an effort to avoid direct competition with the institution. This competition may have implications financially and academically. For example, while it might prove financially beneficial for the orthopaedic practice to incorporate radiography and magnetic resonance imaging as a service line and derive revenues from the technical and professional components, the institution not only suffers financially, but should there be a radiology residency program at that institution, it too might suffer due to a drop in the number of examinations requiring a radiologist's interpretation. Contemporary academic orthopedic practices have evolved to include the development of ancillary income-generating activities as well. With imaging, a viable compromise for "in-institution" physician offices might be for the physician practice to bill and collect for the technical component and allow the institution's radiologists to bill and collect for the professional component. Another benefit derived from this compromise is several insurance carriers may require a board-certified radiologist to interpret advanced imaging studies such as an MRI in order to be reimbursed. In addition, CMS policies require a formal

radiology interpretation as part of the medical record to substantiate charges. This interpretation may be given by any physician privileged by the hospital to give such an interpretation. This can include orthopaedic surgeons as well as radiologists. Other areas of compromise might include full implementation of imaging services only at off-site physician offices in an effort to offset the on-site commitment to the institution.

Ambulatory surgery centers offer a substantial financial opportunity and, depending on the region of the country, can have profound benefits on a physician's yearly salary. Historically, facility fees associated with surgical procedures have provided the largest contribution to the hospital's bottom line and are directly related to surgical activity. Not-for-profit hospitals and institutions are reluctant to involve themselves with private for-profit ventures that compromise their share of the revenues. This delicate area can create profound tension between an academic institution and a surgical department. There are several instances where physicians have attempted to vest in outside ventures with their institution responding to these efforts with punitive measures.

Compromise can be achieved with enhanced productivity, reductions in overhead, and surgeon buy-in when joint ventures are established. These arrangements must strictly abide by the Stark regulatory guidelines. Joint management and ownership examples do exist proven beneficial to all vested parties. For example, at Rush University Medical Center in Chicago, the hospital remains the General Partner in a Limited Liability Corporation (51% ownership) and the physicians (49% ownership) have important oversight and decision-making power. This has led to enhanced quality of care, improved morale, a reduction in employee turnover, improved quality of life for physician users, and greater profitability.

Finally, the implementation of physical/occupational therapy creates additional challenges. Alienating referral sources is a potential risk of these ventures but can be mitigated by creating management relationships with therapy vendors that minimize these concerns. Hospitals generally have considerable concerns related to direct competition for these services and often the only opportunity to establish this service line is at off-site offices geographically disparate from the medical center. Even these opportunities will depend heavily on the nature of the relationship between the academic physician practice and the governing institution.

DISCUSSION

To foster academic productivity, facilitate physician recruitment, maximize retention, and create an enduring balance of these factors, there must exist a mutual under-

standing of the respective needs of the orthopaedic department and the academic medical center that houses this department. Unfortunately, guidance is largely lacking in the development of appropriate compensation formulas. Contemporary solutions are varied and often predicated on anecdotal experience. There is a need for the development of basic understanding of how the academic orthopaedic surgeon differs from the private practice orthopaedic surgeon. The infrastructure provided in the academic setting creates a unique environment that fosters the ability to perform research, teach our existing and next generation of orthopaedic surgeons, and provide care that meets the needs of the hospital community. Turning to the literature to answer questions related to physician compensation offers limited assistance in this regard. Thus, adhering to basic principles that foster buy-in from department members is a helpful adjunct to achieve and maintain physician and departmental productivity (clinical and academic) while continuing to serve for the greater good of the institution.

Provision of clinical services is generally a foregone conclusion for department members as most desire some element of clinical activity. An exception to this is the physician who desires to minimize his clinical activity in lieu of maximizing academic or administrative responsibilities. Provisions for this behavior must exist to compensate these individuals for their non-revenue-generating activities. Independent of the system employed, it must be prospective, well-defined, and transparent to department members. In essence, a desire to coexist in an orthopaedic department at an academic institution requires some economic sacrifice on the part of those unwilling to contribute to the academic or administrative burden.

All department members who function in the presence of medical students, residents, or fellows have an obligation to educate. This responsibility, while often a primary reason for an individual's desire to pursue practice outside the private setting, is too often overlooked due to economic concerns and administrative pressures for time and commitment. At some level, departmental enforcement of this responsibility may be required if only to remind physicians of the "give and take" environment that benefits their practice. Arguably, clinical productivity in some aspects of patient care or surgical efficiency are compromised due to this commitment, but the system as a whole benefits from a firm contribution to our future orthopaedic practitioners.

Access to an academic infrastructure enables the academic orthopaedic surgeon to develop new techniques, perform clinical and basic science research, and ultimately, benefit our patients from the translational component of this work. The compensation formula can encourage these activities by protecting some element of remuneration.

neration specifically dedicated to achieving these goals. However, similar to all aspects of the compensation plan, it must remain prospective and transparent to all.

The development and implementation of an academic compensation plan in an institutional setting is obviously complex and challenged by divergent goals. Unifying the department's members can occur by economic and non-economic considerations. Strong leadership in this regard is required, but encouraging contributions from all department members will have the greatest potential to maintain the balance of productivity and commitment to the social good of the department.

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APPENDIX 1. Goals of Compensation Plan

- Achieve production-driven compensation format
- Reward clinical service activities
- Require basic level of clinical, teaching, and research work
- Support and reward academic, research, and teaching activities
- Reward citizenship (committee involvement and department service)
- Require responsibility of individual for expense of doing business
- Use actual dollars as measure of productivity
- Employ modified cost accounting to fairly allocate practice expenses
- Promote teamwork and collegiality
- Assure compensation system is fair and transparent