over the last 40 years, financial pressures and incentives have reshaped health care delivery in the United States. One important recent change is the implementation of measures to quantify and incentivize physician work.\textsuperscript{1,2} Although implementation of productivity targets has been shown to increase physician work, the impact of these changes on the academic missions of teaching, research, and patient care has not been adequately studied.

See Invited Commentary

Methods. We surveyed physicians in the department of medicine at a large academic medical center to determine the impact of recently implemented work targets on attitudes and behaviors toward teaching, research, and clinical care (response rate 64\%, \textit{n}=137). Responders were asked 29 questions about the impact of work targets on their performance of various academic activities in the years before and after introduction of this policy. Data were analyzed using STATA statistical software (StataCorp LP) and the Prism software (Prism Software Corporation). The \textit{t} test was used for data that were normally distributed, and the Wilcoxon Rank Sum was used for data not distributed normally. We compared proportions between groups using \chi^2 tests.

Results. Nearly half of physicians described themselves as being more inclined to take on clinical activities after work targets were measured (47\%) (Figure). However, increased focus on clinical duties was associated with changes in the ways physicians carried out these activities. Physicians reported being less willing to perform curbside consultations and more likely to continue consulting on a patient after the initial active issue was addressed. Forty-three percent perceived that time spent on patient care declined; (2) the number of tests and/or procedures increased; and (3) patients were worse off after work was measured. Physicians in procedure-based specialties (gastroenterology, pulmonology, and cardiology) reported that they were more likely to perform a procedure for which there was only a marginal indication (23.2\% after vs 15.6\% before target measurement) (\textit{P}= .05).

The impact of work targets on nonclinical activities was unfavorable: 86\% of physicians reported being less inclined to perform activities that did not count toward work targets. Some 75\% of physicians reported a decrease in time spent teaching. Almost half of physicians reported a decrease in interest in research-related activities (48\%), and this was particularly true for physicians who derived more than half of their salary from clinical activities (61\% vs 34\%) (\textit{P}= .01).
Finally, satisfaction with practicing academic medicine decreased after implementing work targets. Eighty-nine percent of physicians said that they had been satisfied with practicing medicine in the years before work was measured, but only 16% described themselves as satisfied after productivity was measured. Many respondents wrote in comments about the model’s harm to physician morale, collegiality, and job satisfaction. Importantly, these findings do not appear specific to this institution, since many respondents stated that colleagues at other institutions, who work in a similar system, have mentioned a negative impact of work targets on their practice. Finally, 94% of physicians were pessimistic about the future of academic medicine under a work-productivity model.

Comment. This study shows that measuring physician work has intended and unintended consequences. While our results confirm previous reports that physicians are more inclined to perform clinical duties,4-6 we also found changes in the ways physicians performed their clinical duties—including some behaviors that boosted measured productivity (decreased curbside consultations, increased up-coding) and others that were possibly not in patients’ best interests (eg, more tests and procedures).

It is troubling that physicians providing primarily E&M visits were much more likely to report drops in physician time per encounter than were physicians performing procedures. This may signal that the productivity metric used at this medical center has the effect of perpetuating the often-criticized undervaluation of physicians’ cognitive services found in both UCR (usual, customary, and reasonable) and RBRVS (resource-based relative value studies) fee schedules.7

Another important finding of this study was the unfavorable impact of productivity measures on teaching and research. Eighty-six percent of physicians admitted being less inclined to perform activities that did not count toward productivity targets. Physicians made it very clear that they were less willing to teach. This was evident from both direct questioning and written comments. Of 86 physicians providing commentary, 35% mentioned a concern over the impact on medical education (n=30). If our findings hold true, medical schools and training programs should begin to monitor trainees to ensure that quality of education is not being harmed.

Satisfaction with practicing medicine decreased dramatically after work was measured. Although we are unable to determine why physicians were so dissatisfied, we suspect that it relates to the way productivity is monitored and enforced; perceived concerns over effects of increased clinical productivity on quality of care, teaching and research, and other factors.

This study is limited. It is a single-center study, so findings may not be applicable to other academic medical centers. It was restricted to the department of medicine, so findings may not apply to physicians in other specialties. The response rate was 64%. While this is an excellent response rate for a nonincentivized physician survey, it is possible that those most affected were more likely to reply, and higher response rates might yield different results.

In conclusion, results indicate that setting work targets does not simply increase clinical productivity but also has many unintended consequences that affect all 3 missions of academic medical centers. As one physician
respondent put it, “while the RVU [Relative Value Units] system undoubtedly increases productivity, it is an anti-intellectual exercise that is anathema to the academic mission.” We believe it would be wise for leaders of academic institutions to closely monitor the impact of work targets on the performance of physicians’ vital clinical and nonclinical tasks.

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INVITED COMMENTARY

Academic Practice—Against All Odds

M

edicine has evolved dramatically over the past half century. We have witnessed the emergence of the National Institutes of Health as a driver of the research enterprise, the advent of Medicare and Medicaid paying for care that used to be either non-existent or deemed charity care, the development of “big pharma,” large hospital companies, venture capital investment in health care, and other similar developments. How has this new reality of health care—the medi-

cal industrial complex—altered the world of academic medicine and the nature of faculty positions?

The idealized “triple threat” academic physician of long ago has ceased to be a viable model. Barzansky and Kenny described the evolution of the full-time clinical faculty member, noting as follows:

In the 100 years since the Flexner Report, clinical faculty have become “full-time” and “salaried.” However, instead of deriving their salaries from the nonclinical resources of the medical school, such as tuition and income from endowment, they are significantly contributing to the institutional financing through their practices.

The new reality of academic practice is one in which faculty are “slotted” into primary research positions, clinical positions, or for a few, primary educational positions. The new multibillion-dollar academic medical complexes have emerged precisely because they have leveraged their clinical income to both expand research and develop more clinical programs. At the academic medical complexes’ associated medical schools, the same focus has developed, with fully 38% of all revenue in 2009 derived from faculty practice plans. Increasingly the flow of dollars determines the nature of faculty positions and has contributed to the explosive growth of nontenured clinical faculty positions.

An issue in academic medicine has always been the opportunity cost for clinical faculty pursuing a faculty position vs private practice. This issue was as true at the time of Flexner as it is today. However, the inherent trade-offs of salary for academic engagement—teaching, research, and perhaps a more measured lifestyle—is becoming, like the concept of the triple threat, a fading memory. The expansion of clinical faculty relative to medical students and the work-hour restrictions for residents have further decreased the opportunities for all faculty to be involved in teaching. As the perks of academic medicine have decreased, there is more need for approximating the financial returns realized in private practice. As a consequence, many centers have embraced objective, clinical, productivity-based compensation models.

Lee Goldman, MD, formerly the Chair of the Department of Internal Medicine at University of California at San Francisco and now the Executive Vice President and Dean of the Medical School at Columbia University, described what he called the “cold hard facts of academic economics” 1015(p13).

There are four categories of faculty: (1) “Taxpayers,” who generate more than they cost and help fuel the academic mission; 2) “Hired Workers,” who get paid to do a job that many people might like to do; (3) “Loss Leaders,” who get short-term investments in the expectation that they will become successful “Taxpayers;” and (4) “Welfare Recipients,” faculty with the most tenuous status. Bottom line, you should strive to be a “Taxpayer.” If you are a “hired worker,” you should strive to be better than the others who would like your job.

The current focus on productivity-based compensation is a natural extension of the hired worker–taxpayer academic positions. Faculty in this category are hired to provide clinical care while generating revenue for their schools and hospitals, with the “opportunity” (as long