CHAPTER 2

Accountable care organizations

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Chapter summary

As part of a broader discussion of options for reforming Medicare's health care delivery system, the Commission and others have introduced the concept of holding a set of providers responsible for the health care of a population of Medicare beneficiaries (CBO 2008, Fisher et al. 2009a, MedPAC 2008). We refer to this set of providers as an accountable care organization (ACO).

In our model, the ACO would consist of primary care physicians, specialists, and at least one hospital. It could be formed from an integrated delivery system, a physician–hospital organization, or an academic medical center. The defining characteristic of ACOs is that a set of physicians and hospitals accept joint responsibility for the quality of care and the cost of care received by the ACO's panel of patients. The goal is to create an incentive for providers in the ACO to constrain volume growth while improving the quality of care. If the ACO achieves both quality and cost targets, its members receive a bonus. If it fails to meet both quality and cost targets, its members could face lower

In this chapter

Medicare payments. These financial incentives may lead to slower growth in Medicare spending.

This chapter provides an overview of two variations on the ACO model—one in which providers volunteer to form an ACO and one in which participation is mandatory. To induce physicians and hospitals to volunteer to form an ACO, Medicare would have to provide the physicians with a significant upside reward and very little (if any) downside penalty. For that reason, the voluntary ACO model we discuss is a bonus-only design. The current Physician Group Practice (PGP) demonstration provides an example of how a bonus-only voluntary ACO design might work. The demonstration has achieved quality objectives, but whether the demonstration has actually generated savings for the Medicare program is debatable. Generating savings may require larger incentives to constrain capacity and volume growth.

Implementation of a voluntary, bonus-only model would require bonuses large enough to offset the current incentive in the fee-for-service (FFS) payment system to increase volume. To fund bonuses of this magnitude, FFS rate increases would have to be constrained. By constraining FFS Medicare payment rates to fund larger ACO bonuses, Medicare would create an environment in which providers would want to form ACOs and would be rewarded when they constrained volume growth and improved the quality of care.

A mandatory model could have both bonuses for good performance and penalties for poor performance. In this model, shared savings and the penalties could fund the bonuses.

On the basis of our work developing an ACO model, we arrive at the following conclusions:

- ACOs would have to be fairly large (at least 5,000 patients) to make it possible to distinguish actual improvement from random variation on a reasonably consistent basis.

- Each ACO should have a spending target set in advance. One approach is to set the ACO's spending target based on its past experience plus a national allowance for spending growth per capita (e.g., a fixed dollar amount of $500). This proposal differs from some others in that the growth allowance is not affected by the ACO's historical level of spending. Over time using a single national growth allowance could compress regional variation in spending per capita. An alternative approach is to set a lower allowance in high-service-use areas and a higher allowance in low-service-use areas. This alternative would place greater pressure to constrain volume on areas with historically high utilization.
- Savings would result primarily from ACOs' incentive to change overall practice patterns and eventually constrain capacity. Therefore, successful ACOs will need to have a formal organization and structure that allows them to make joint decisions on capacity.
- To overcome incentives in FFS payment systems to expand capacity and volume, a large share of the patients in a physician's practice would need to be in an ACO. To achieve this critical mass, private insurers may have to join Medicare in providing ACO-type incentives to constrain capacity.
- In a voluntary, bonus-only ACO model, some providers will receive bonuses for "shared savings" stemming from favorable random variation rather than from the ACO's efforts to reduce spending growth. Currently, in the absence of ACOs, Medicare keeps all the "savings" from favorable random variation. Unless Medicare's share of true savings from ACOs' efforts to reduce spending exceeds the cost of bonuses paid due to random variation, Medicare spending will not be reduced. In part for this reason, under a voluntary, bonus-only model, FFS Medicare payment rates will likely have to be constrained.

- Under a mandatory, bonus-and-penalty model, the bonuses could be funded by the combination of true shared savings and a penalty assessed on poor performers. Under this model, ACOs with high cost and low quality scores would lose their withhold and in effect receive lower Medicare payment rates.

ACOs should be viewed as just one tool that can be used to induce change in the health care delivery system. The ACO's role is to create a set of incentives strong enough to overcome the incentives in the FFS system to drive up volume without improving quality. The degree to which ACOs will succeed in counterbalancing the current incentive for volume growth is uncertain. However, there is no uncertainty in the need to create a new set of incentives. The current unrestrained FFS payment system has created a rate of volume growth that is unsustainable. ■

As part of a broader discussion of options for reforming Medicare's health care delivery system, the Commission and others have introduced the concept of holding a set of fee-for-service (FFS) providers responsible for the health care of a population of Medicare beneficiaries (CBO 2008, Fisher et al. 2009a, MedPAC 2008). We refer to this set of providers as an accountable care organization (ACO).

In this chapter we first outline why Medicare may want ACOs. Next, we discuss two potential models: a voluntary, bonus-only model and a mandatory model with bonuses and withholds. We then outline some challenges and design issues common to both models. We conclude by discussing how ACOs relate to other Commission policy initiatives.

Why Medicare may want accountable care organizations

The current trajectory of Medicare spending is unsustainable. By definition, something unsustainable cannot continue. The question is: What mechanisms should Medicare use to change the spending trajectory? The establishment of ACOs could provide Medicare with an additional mechanism to help achieve sustainability in concert with other reforms.

ACOs will create a system of incentives that tie provider payments to quality and resource use. The objectives are to improve the quality of care, enhance the sustainability of the Medicare program, and reduce the regional variation in care by lowering the use of unnecessary services in high-use areas. The system of incentives in an ACO system should encourage cooperation among physicians and hospitals and could be structured to give providers in high-use areas a strong incentive to constrain capacity growth and reduce the volume of unnecessary care. For example, ACOs could provide health care systems that are currently operating at full capacity an incentive to improve outpatient care and reduce unnecessary hospital admissions rather than spend their capital on expanding hospital capacity.

Under our ACO concept, a group of physicians teamed with a hospital would have joint responsibility for the quality and cost of care provided to a large Medicare patient population.[1] By making providers jointly responsible for quality and cost metrics, ACOs would be expected to improve the coordination of care and reduce duplication of services. Because ACOs would take responsibility for resource use, Medicare could constrain health care spending by using a system of bonuses and, in some cases, withholds. This system would be designed to counterbalance the incentives under FFS payment to increase volume.

Constraining Medicare spending growth will always be difficult. Slower growth in Medicare spending means slower growth in provider revenue. However, reduced revenue growth does not have to mean reduced net income. Providers could compensate for slower revenue growth by restraining their costs (e.g., not purchasing an MRI machine) and by sharing in the savings from reductions in Medicare spending. By giving physicians and hospitals a way to increase their income through ACO-wide quality improvement and reducing unnecessary services, the Medicare system would gain a way to constrain spending other than through the blunt instrument of lowering FFS updates. We look at two models to accomplish this goal: a voluntary, bonus-only model and a mandatory, bonus-and-withhold model.

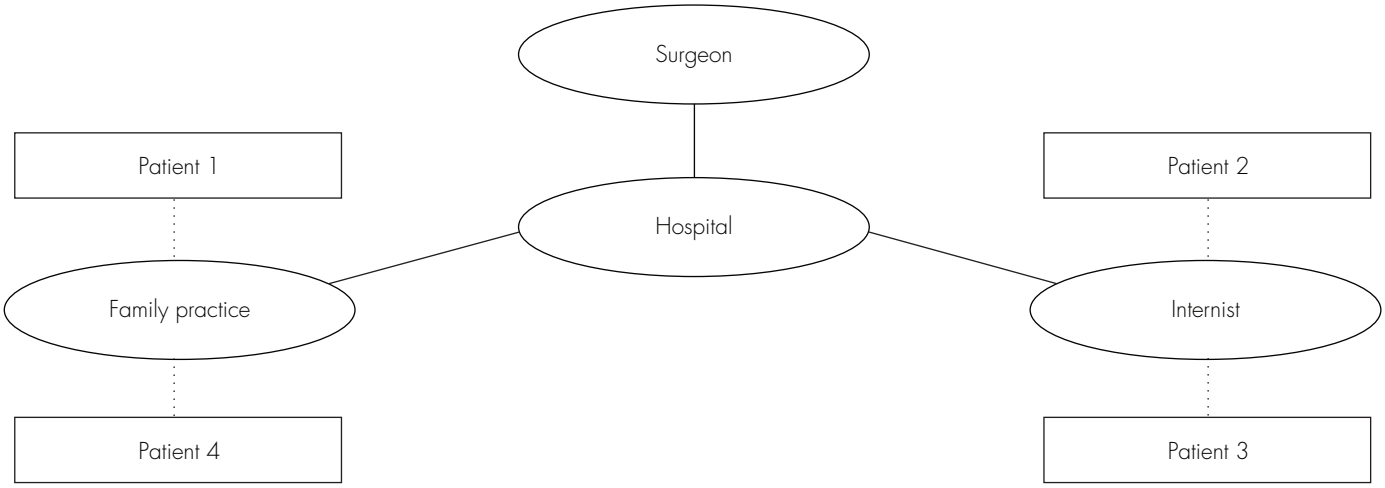
A voluntary, bonus-only ACO

We define an ACO as a combination of a hospital, primary care physicians, and specialists. The ACO should be able to provide primary care as well as basic medical and surgical inpatient care. Potential ACOs include: integrated delivery systems, physician–hospital organizations, a hospital plus multispecialty groups, and a hospital teamed with independent practices. While ACO models proposed by others have some differences (they may omit the hospital), in all ACO models the providers in the ACO are held accountable for total Medicare spending and quality of care for a defined patient population while continuing to be paid on a FFS basis.

In a voluntary ACO model, Medicare would inform all physicians and hospitals of their current relationships based on Medicare claims data. Physicians and a hospital could then organize and choose to be considered by Medicare as an ACO. Medicare would assign patients to the ACO based on the primary care physician who provided the plurality of the patient's office visits (Figure 2-1, p. 44). Primary care physicians would volunteer to associate with a hospital and other physicians who they believe could most improve the value of the care their patients receive. The physicians and hospital would then

FIGURE 2–1

Assignment of patients to an ACO via primary care providers



Note: ACO (accountable care organization).

be eligible for bonuses based on their ACO's performance, and their incentives would be aligned. Hospitals and physicians that were already part of an integrated delivery system or a physician–hospital organization would find it easier to become ACOs. Other hospitals would have to join with multispecialty groups or independent practices. Medicare would not prejudge which structure works best.

In Figure 2-1 we illustrate the assignment of four patients to an ACO. The two primary care physicians, the surgeon, and the hospital have agreed to form an ACO. By doing so, they agree to be held responsible for the quality of care and all the Medicare spending for the ACO's patients. The patients can see any physician they choose. However, if they mainly use primary care physicians in the ACO, then they will be assigned to that ACO. (The patients may have to be assigned by the affiliation of the specialists they see if they have not seen a primary care physician in recent years.) Using a similar system, Elliot Fisher and colleagues found that patients' assignment to an ACO was relatively stable; in the year following assignment, 83 percent of patients continued to see physicians affiliated with the same ACO (Fisher et al. 2009a).

Providers in voluntary ACOs would continue to be paid standard FFS Medicare payment rates.[2] Bonuses would depend on meeting both spending and quality targets, which would be set as discussed later.

Setting spending targets for ACOs

In setting ACOs' spending targets, Medicare would need to address geographic variation in spending per beneficiary. Use of Medicare services is substantially higher in some regions of the country than in others. To allow providers in all regions (high- and low-use areas) to potentially benefit from the ACO model, the financial incentives would need to be based on changes in spending rather than on levels of spending. However, in measuring changes in spending, low-resource-use ACOs could be disadvantaged, as they would have fewer opportunities for efficiency gains.

To address this concern, every ACO could have an allowance for spending growth per capita that is adjusted for area wage rates—but not for regional differences in utilization. A fixed allowance (e.g., $500 per capita) would represent a larger percentage change in annual spending in low-spending areas than in high-spending areas. For example (assuming that quality targets are met), an ACO with per capita spending of $7,000 and a spending growth allowance of $500 would receive bonuses if spending growth were below 7 percent ($500/$7,000). In contrast, an ACO that was spending $10,000 per patient would have to bring spending growth to below 5 percent ($500/$10,000) to obtain a bonus. Adjustments could be made for area wages, patient severity, and other

TABLE 2–1

Potential method for setting ACO-specific Medicare spending targets

	National average	Spending targets for ACOs with different base spending levels		
		Low-use ACO	Average ACO	High-use ACO
Base spending per capita	$10,000	$7,000	$10,000	$12,000
Dollar allowance for spending growth	500	500	500	500
Target spending	10,500	7,500	10,500	12,500
Percent increase	5.0%	7.1%	5.0%	4.2%

Note: ACO (accountable care organization). For purposes of illustration, the example's input costs and average risk scores for the beneficiaries in the ACOs are assumed to be the national average of 1.0. A $500 spending allowance is used purely for illustrative purposes.

factors outside the ACO's control, but no adjustment for regional differences in utilization would affect the fixed dollar allowance (Table 2-1). For purposes of illustration, the example's input costs and average risk scores for the beneficiaries in the ACOs are assumed to be the national average of 1.

The purpose of the low-use ACO having a higher percentage increase than the national average is to reward the ACO for its historically low resource use. The fixed dollar allowance puts the high-use ACO under greater pressure to meet its target through efficiency gains. Reductions at the high-use ACO should be possible given the ACO's high starting level of resource use. An alternative approach, which places even greater pressure on high-utilization areas to constrain volume, is to set a lower dollar allowance in high-service-use areas and a higher dollar allowance in low-service-use areas.

The Congress would retain control over the growth allowance, just as it now controls updates to prospective payment rates. The allowance could be adjusted based on the need to constrain Medicare spending. Lowering the spending growth allowance could be seen as an alternative to the more blunt approach of cutting payment rates.

Setting quality targets for ACOs

Medicare would also give ACOs a financial incentive to maintain or improve the quality of care provided to beneficiaries for whom they are responsible. While initial sets of quality metrics may be primarily process measures with a limited set of outcomes, quality metrics could eventually include mortality, hospital admissions that could have been avoided through better ambulatory care, readmissions, patient satisfaction, additional clinical outcomes, and improvements in functionality. The quality targets could be aggregated into a weighted quality score. The ACO bonus structure could require that both quality and spending targets be met to achieve bonuses. These targets would be used in the voluntary, bonus-only ACO model described previously and the mandatory, bonus-and-withhold ACO model we describe next.

A mandatory, bonus-and-withhold ACO

In a mandatory model, CMS would assign physicians and patients to a hospital, and that set of providers would define the ACO. On the basis of Medicare claims, all physicians would be assigned to an ACO according to which hospital the physician primarily worked in or which hospital the plurality of the physician's patients used if the physician did not do any inpatient work (the extended hospital medical staff model) (Fisher et al. 2009a). CMS would also assign each patient to the primary care physician who provided the plurality of the patient's office visits. Because the physician would be linked to an ACO, the patients assigned to the physician would be linked to the ACO as well. The providers in the mandatory ACO might not have any contractual or other relationship and may be unaware of their status until Medicare informs them. In a sense, they would be a virtual ACO—a construct, not an actual entity. Nonetheless, they would be subject to bonuses and penalties based on their joint performance as an ACO.

FIGURE 2–2

Potential bonus and penalty criteria for mandatory ACOs

Quality over three years

Resource use over three years	Meets target in all three years	Mixed performance on target	Fails target in all three years
Meets target in all three years	Return withhold and share of savings (bonus)	Return withhold	Withhold not returned (penalty)
Mixed performance on target	Return withhold	Return withhold	Withhold not returned (penalty)
Fails target in all three years	Return withhold	Return half withhold	Withhold not returned (penalty)

Note: ACO (accountable care organization).

Providers in mandatory ACOs would continue to receive FFS payments, subject to a withhold. Providers in the ACO would get their withhold back and receive a bonus only if they met quality and resource use targets. (These targets would be set in the same manner as described above for the voluntary, bonus-only ACO.) Figure 2-2 shows the conditions for receiving bonuses and withholds. If an ACO consistently (for three straight years in this design) met its quality and resource use targets, it would recover the withhold and receive a share of Medicare savings as a bonus. If its results were mixed for both quality and resource use over those three years, the withhold would be returned. If the ACO failed to meet its quality target all three years, the withhold would not be returned, which would be a penalty.

An example of how the incentive to maintain quality and restrain resource use may work is shown in Table 2-2. Essentially, ACOs with higher quality and lower growth in resource use would be paid more than those with lower quality and higher growth in resource use. In the Table 2-2 example, the net Medicare payment differs by only $200 per capita, but the difference in practice income would be

TABLE 2–2

Illustrative example of ACO withholds and bonuses

Quality of care	ACO base spending in 2011	Target spending in 2012	Actual 2012 FFS billing	Withhold (10 percent)	Bonus of 80 percent share of savings	Net Medicare payment
Good	$7,000	$7,500	$7,000	$700 (returned)	$400	$7,400
Poor	7,000	7,500	8,000	$800 (not returned)	0	$7,200

Note: ACO (accountable care organization), FFS (fee-for-service). Spending is per capita.

TABLE 2–3 **A comparison of two types of accountable care organizations**

	Voluntary	Mandatory
Organization characteristics	Physicians and hospitals choose to form ACO and be held jointly responsible for the quality of care and the level of spending on their Medicare patients.	All physicians and hospitals are assigned to virtual ACOs and held jointly responsible for the quality of care and the level of spending on their Medicare patients.
	Model is dependent on physicians and hospitals agreeing to form PHOs.	Physicians and hospitals are assigned to virtual ACOs.
	Model requires waiting for PHOs to form.	Implementation could encourage PHOs to form.
	Physicians and hospitals agree on how to share revenues, or the government mandates a bonus structure.	Medicare administers a system of withholds and bonuses.
	ACOs have capability to make joint decisions. Unorganized providers would remain outside the system.	Some ACOs have structures that allow joint decision making. Unorganized providers face financial incentives to develop structures for joint decision making.
Incentives	Only those that expect to gain from bonuses would be likely to join.	Everyone is subject to withholds and bonuses.
	Bonuses are given to top performers, while poor performers face no penalties (or they will not join).	Bonuses are given to top performers and penalties are applied to performers with low quality and high costs.
	Difficult patients could be dropped or transferred to non-ACO providers.	ACOs could drop patients, but another ACO would continue to be responsible for cost and quality.
Implications	Providers face no risk.	Providers face some risk.
	Medicare continues to depend on restraining FFS payment rates to make the system sustainable.	ACO incentives provide Medicare a strong lever—possibly instead of restraining FFS rates—to induce sustainability.
	ACO bonuses would be funded with shared savings and by restraining FFS rates. This would result in relatively lower FFS rates than under a mandatory system given any set level of Medicare spending.	ACO bonuses would be funded by shared savings and penalties for providers with poor quality and high costs.
	There could be an increase in the ACOs' market power engendering antitrust issues.	There could be an increase in the ACOs' market power engendering antitrust issues.

Note: ACO (accountable care organization), PHO (physician–hospital organization), FFS (fee-for-service).

much greater. The practice with consistently poor quality delivers more services for less payment than the practice with good quality. Presumably, the poor-quality ACO has incurred higher costs in providing the higher volume of services than the good-quality ACO. Therefore, the income of the poor-quality ACO (lower revenue – greater cost) is much less.

The spending growth allowance could be set based on consideration of both the national projected rate of spending growth and the need to restrain the level of spending growth.

Comparing the voluntary and mandatory ACO models

The characteristics and implications of the two ACO options are summarized in Table 2-3.

On the one hand, voluntary ACOs have to be organized before they can volunteer; thus, a voluntary model could take some time to get going and may never incorporate all hospitals and physicians. On the other hand, mandatory ACOs would include everyone but they would not

necessarily be organized and could have difficulty reaching joint decisions. ACOs under this model would have a strong incentive to organize if they wished to be successful. Under either model, Medicare could decide how bonuses would be shared among the participants in the ACO. For example, to avoid conflict over how to divide bonuses, Medicare could give all providers a fixed percentage add-on to their FFS payments. The add-on percentage would be set so the aggregate of bonuses paid by Medicare to providers in the ACO would equal the ACO's share of savings.

The incentives would differ in the two models. Most proposals for voluntary ACOs have bonus-only incentive structures without penalties for poor performance; otherwise, few would be likely to volunteer. But for the very reason that voluntary ACOs might be more appealing—no downside risk—they may be less effective in achieving savings and changing inappropriate clinical practices. Some providers may form ACOs without any real structure for joint decision making and simply hope that their costs will be below target due to random variation or existing regional practice patterns. The incentives for the mandatory model can be stronger (e.g., include a withhold) because those ACOs do not have any choice; they are automatically included.

The implications of the two designs are very different. Remember that one motivation for talking about ACOs is to find a way to slow the growth in Medicare spending. The governing equation is:

Medicare spending = price × volume

This equation means there is a trade-off between the two. Price, or volume, or both have to be constrained to constrain spending.

Under the voluntary model, there are weaker incentives to control volume because the program has to have weak or no penalties to attract volunteers—and even then, not all hospitals and physicians will join. Without strong incentives to restrain volume, there would need to be stronger restraint on FFS Medicare payment rates to reach a sustainable level of Medicare spending.

On the other hand, mandatory ACOs—because their incentives would include withholds—have stronger incentives to control volume. Penalties could be stronger and all hospitals and physicians are included, so incentives for volume control apply to everyone. As a result, there could be softer restraint on FFS Medicare payment rates in the mandatory model.

Reducing the growth of Medicare spending will involve either weak ACO incentives and relatively lower FFS Medicare payment rates or stronger ACO incentives and relatively higher FFS rates. Given a choice, if controlling volume means eliminating unnecessary care, that would be preferable to harsh constraints on FFS rates for all providers without regard to their efficiency or quality. Research on geographic variation suggests that the volume of supply-sensitive services could be lowered in high-use regions without harming the quality of care Medicare beneficiaries receive.

The Physician Group Practice (PGP) demonstration, as described in the text box, is one example of how a voluntary ACO program could be designed. It has achieved quality objectives, but there are questions as to whether the demonstration has generated savings for the Medicare program. Two limitations on the PGP incentives cited by PGP participants are that the PGP demonstration covered only a fraction of their patients and the initial demonstration period was only three years. (This period has been extended.) These considerations limit the participants' willingness to permanently change practice patterns and restrain capacity growth.

Common design issues for voluntary and mandatory ACOs

All ACOs would be required to have a panel of primary care physicians, specialists, and at least one hospital. In this section we address:

- how large an ACO's population of patients would need to be to distinguish actual improvement in ACO performance from random variation,
- what implications ACO size would have for the effectiveness of individual and joint incentives,
- why successful ACOs would need the ability to make joint decisions, and
- conditions that are necessary for ACOs to reduce overall Medicare spending.

ACOs must include a large number of physicians to reduce volatility

Per beneficiary spending is expected to vary across ACOs for two reasons. One reason is that random variation exists due to differences in patients' health not captured

The Physician Group Practice demonstration

The Physician Group Practice (PGP) demonstration is one example of how a voluntary accountable care organization (ACO) program could be designed. The groups in the PGP demonstration are large, averaging 500 doctors and 22,000 beneficiaries. They also tend to be tightly managed groups that have the ability to take joint actions to change care protocols, improve quality metrics, and constrain capacity growth. Through the first two years of the program, the quality metrics have improved for all practices in the PGP demonstration. Many PGP sites improved in all four areas of care they monitor: diabetes, congestive heart failure, coronary artery disease, and preventive care (CMS 2008).

In contrast to the clear improvements in quality, it is questionable whether the PGP demonstration has saved money. While 4 of 10 PGP sites had low enough growth in risk-adjusted cost to qualify for bonuses, the finding of lower growth in cost depended on the accuracy of the risk adjuster.[3] After 2 years, 5 of the 10 PGP sites had unadjusted cost growth that was materially higher than their comparison groups, 4 had roughly equal cost growth, and only 1 had lower cost growth (RTI 2008). At 9 of the 10 PGP sites, patient risk scores grew faster than at the comparison sites, accounting for the difference between the unadjusted and risk-adjusted cost growth. There are three possible explanations for the relative increase in risk scores at PGP sites. One possibility is that, after the PGP sites joined the demonstration, they attracted a greater share of the regions' very sick patients than previously. A second, unlikely, reason is that PGP sites did less to keep their patients healthy than the comparison sites. A third, perhaps more plausible, reason is that the increase in risk scores was due to better detection and coding of illness at the PGP sites.

PGP sites have an incentive to improve the completeness of their coding, and as patients visit physician offices for their preventive care—such as blood pressure screenings, foot exams, pneumonia vaccinations, cholesterol screening, colorectal screening, and mammography—physicians have the opportunity to detect and code additional conditions. When these screenings are increased, quality scores improve, but risk scores may also increase. Because the increased risk scores of patients at the PGP sites may be due to improved detection and coding of acute and chronic conditions, the evidence that the PGP demonstration has reduced the costs of care during its first two years is not definitive. CMS is aware of how rising risk scores could influence results and plans to limit how much changes in risk scores can alter spending targets for the fifth year of the CMS demonstration (Pilotte 2009). ■

by risk adjustment. The second reason is that differences are expected to exist among ACOs in improvements they make in practice patterns and capacity in response to incentives in the ACO payment structure. A successful ACO policy would enable physicians who improve their practice patterns and restrain capacity to have an effect on resource use that is large enough to be distinguished from random variation. Bonuses based on shared savings would then reflect actual earned changes in performance—and not just random variation.

Random variation is substantial

To evaluate how much random variation there is in overall Medicare spending for pools of Medicare beneficiaries, we examined data on extended hospital medical staffs (EHMSs) that were compiled by researchers at Dartmouth. Under the EHMS model, each hospital is assigned an extended medical staff and a Medicare beneficiary population based on Medicare claims.[4] Our objective was to see how much random variation existed in spending for patients treated by an EHMS from one year to the next. We found that even for EHMSs with 5,000 beneficiaries (which usually include more than 50 physicians) spending growth varied often from 5 percent above the national average growth rate one year to 5 percent below the national average the next. Even using a three-year moving average, we found that year-to-year spending for more than 15 percent of ACOs differed by more than 2 percent, presumably due to random variation.[5] The spending data we used were not risk adjusted.[6]

TABLE 2–4

Illustrative example of how ACOs would not have a material effect on a surgeon's financial incentive to conduct surgery

	Incentive to perform an additional surgery
Assumed payment for the surgery	$1,000
Minus assumed value of surgeon's time, practice expense, other costs	–$600
Direct profit per physician	**$400**
Effect of the action on the ACO bonus per physician	
Cost of the surgery to Medicare (physician and hospital)	$5,000
Divided by number of physicians in the ACO	÷ 50
Multiplied by the probability of the practice meeting a bonus threshold	× 50%
Multiplied by the share of savings given to practices meeting threshold	× 80%
Expected reduction in bonus per physician	**$40**
Net incentive for surgery	**$360**

Note: ACO (accountable care organization). We assume that whether or not the practice will get a bonus is not known at the time of the decision and is assumed to be 50 percent by the decision maker. Also, we assume a design in which the physician practice would receive 80 percent of any shared savings, but other percentages for both numbers would yield similar results.

Measuring cost over three years could reduce random variation

While spending typically oscillates between a rise in one year and a drop in another, EHMSs rarely stay below average spending growth for three years in a row due to random variation. Therefore, one way to significantly reduce the effect of random variation on bonus payments is to give bonuses only to ACOs that meet quality and spending targets every year for three years and assess penalties only on ACOs that fail to meet quality or bonus targets for three straight years. Each ACO would be evaluated annually to see if it is eligible for a bonus. The bonus would be a rolling average of its past three years' share of savings. From 2002 to 2004, only 5 percent of EHMSs had spending growth that was 2 percent above or 2 percent below the national average for three straight years. In the future, if ACOs have strong incentives to constrain costs, we would expect a larger share of providers to consistently have spending growth lower than the national trend. Any consistent change in spending growth that we observe after instituting ACO incentives is likely to be due to the effect of the incentives and not to random variation in costs.

One objective of an ACO is to promote care coordination and a shift to interventions that create long-term benefits for the patient. Ideally, to achieve this objective, an ACO policy would be designed to encourage physicians to maintain a relationship with their patients and make clinical decisions aimed at improving the patient's short-term and long-term health. Under such a policy, a physician's bonus could be based on shared savings over a three-year period. For example, the bonuses a physician received in 2010, 2011, and 2012 would in part depend on the Medicare spending in those years for the patients assigned to that physician in 2010. The physician would be responsible for the patients assigned in 2010, even if the patients switched physicians (although not if the patient moved to a different market area). This arrangement would have several benefits, including:

- an incentive to maintain long-term relationships,
- an incentive to invest in health care interventions with long-run benefits,
- a reduced incentive to drop difficult patients, and
- a smoothing out of random variations in the ACOs' per capita Medicare expenditures.

Large ACOs have small financial incentives for individual actions

If Medicare policy required ACOs to have 5,000 or more patients to limit random variation, any financial incentives in these large ACOs would be split among at least 50 physicians. The result is that individual physicians would

TABLE 2–5

Illustrative example of ACOs' effects on capacity decisions

	Individual action: A physician in a 50-person practice orders an MRI	Capacity decision: A 50-physician practice leases an MRI machine
Payment per MRI (all payers)	$500	$500
Practice revenue from the action	$500	$500,000[a]
Minus practice marginal cost	–$200	–$450,000[b]
Profit	$300	$50,000
Divided by number of physicians in the ACO	÷ 50	÷ 50
Profit per physician	**$6**	**$1,000**
Effect of the action on the ACO bonus per physician		
Change in Medicare spending for ACO's patient population	$500	$250,000 annually[c]
Divided by number of physicians in the ACO	÷ 50	÷ 50
Multiplied by the probability of the practice meeting a bonus threshold	× 50%	× 50%
Multiplied by the share of savings given to practices meeting threshold	× 80%	× 80%
Expected reduction in bonus per physician	**$4**	**$2,000**
Net incentive per physician	**$2**	**–$1,000**

Note: ACO (accountable care organization). We assume that whether or not the practice will get a bonus is not known at the time of the decision and is assumed to be 50 percent by the decision maker. Also, we assume a design in which the physician practice would receive 80 percent of any shared savings, but other percentages for both numbers would yield similar results.
a. Assumes 1,000 MRIs per year.
b. Includes lease and operating costs.
c. For illustrative purposes, assume a 50-physician practice would bill Medicare for 500 more MRI scans per year and bill private insurers for 500 scans for every additional MRI machine leased by the practice. Laurence Baker has estimated that the number of Medicare MRI scans increases by 733 for every additional MRI machine installed (Baker 2008). Therefore, an increase of 500 scans may be viewed as conservative.

have very little direct financial incentives to restrain volume because they would receive 100 percent of the revenue from increases in their patients' volume but only 2 percent (1/50th) of the ACO bonus from restraints in their patients' volume. This is a standard "tragedy of the commons" problem. Consider, for example, an ACO's interventional cardiologist who has a choice of performing a nonemergent surgical procedure (insertion of a stent) or treating stable angina medically (Weintraub et al. 2008). In the illustrative example in Table 2-4, the financial incentive to perform the surgery would be $400—the interventional cardiologist's assumed direct profit on the surgery, net of opportunity costs. The surgery would also result in a reduction in the ACO's expected bonus. However, because the bonus reduction would be spread across the ACO's 50 physicians, the surgeon's loss would be only $40, much less than the direct incentive to perform the surgery. Hence, the financial incentive in large ACOs for physicians to change their individual decisions affecting a single patient would be small.

Large ACOs have large financial incentives for joint actions

The ACO bonus structure is designed to affect group practices' joint decisions, such as those involving purchasing equipment or recruiting specialists. In a second illustrative example, we examine how the ACO bonus structure could reduce a practice's incentive to purchase or lease an MRI machine. Table 2-5 shows that for a physician in a group that owns an MRI machine, ordering an MRI for one patient results in a profit of $6 for the physician, which is not fully offset by the reduction in the expected ACO bonus of $4. For a physician in this group, a $2 incentive exists for ordering an MRI. In other words, once a practice has sunk the fixed costs into a machine or a service, it is very difficult to counterbalance the financial incentive to use that machine as much as possible. However, it may be possible through the ACO bonus structure to reduce a practice's incentive to purchase or lease an MRI machine. In the second column in Table 2-5, we look at the decision to lease an MRI machine for

the practice. In this case, the direct profit to the physician for leasing an MRI machine would be $1,000, but it would be more than offset by the expected reduction in the ACO bonus of $2,000 per physician. Hence, the physicians in the ACO would have an incentive to not lease the additional machine in this example. Creating this type of financial incentive for physicians to constrain capacity could generate shared savings for physicians and for the Medicare program and thus bend downward long-term trends in spending growth.

ACOs would also create incentives to improve coordination of care and management of chronic diseases. By maintaining the health of beneficiaries the ACO could prevent unnecessary admissions and relieve the need to build new capacity. Unlike the current FFS system, providers in an ACO would receive a financial reward for working together to maintain health and reduce the level of medical services needed.

If all payers adopted an ACO model, the potential for it to constrain capacity growth could be maximized. The state of Vermont is currently attempting to test this type of incentive system for both public and private payers. Without private payer involvement, the risk is that physicians' incentives to increase capacity for their privately insured patients would more than offset any incentives that the Medicare ACO provided to constrain capacity.

Shared savings stem more from joint than from individual decisions

One lesson from our illustrative examples is that the formation of ACOs should not be assumed to change an individual physician's behavior directly. The financial incentives would have to change joint practice-level decisions to be effective. Joint practice-level decisions that could be influenced by an ACO incentive include care protocols, equipment purchases, recruitment strategies, and incentive structures offered to physicians (e.g., do not tie physician income to increased revenue generation). For an ACO to have joint decision making, there would be a need for some type of formal organizational structure. For voluntary ACOs, such a structure would mean that individual physicians would have to give up some autonomy and make clinical practice and technology acquisition decisions jointly. An investment would likely need to be made in better data and collection systems to inform those decisions. For mandatory ACOs, a joint decision-making structure would need to be preceded by efforts to educate providers about how their compensation depended on their ACO's collective results. For both voluntary and mandatory models, formal contracts, decision systems, and data systems would be critical to the ACO and its constituent providers' success.

Given the random variation in costs for small providers, we expect ACOs would need to have more than 50 physicians and more than 5,000 patients. In some cases, a large group practice would serve 5,000 or more patients. However, in small communities several practices across a region would need to band together to form an ACO organization to reach the 5,000-patient threshold.[7] It would be possible for ACOs to encompass large geographic areas or to encompass nonproximate areas. For example, hospitals that form a system and their associated physicians may all want to be considered part of the same ACO. In a state with only a few hospital systems, there could be just a few ACOs in the entire state. Agreements would have to be reached with most of the providers associated with those hospitals, whether or not there were existing contractual relationships, for the ACOs to be able to make joint decisions.

Under what conditions will an ACO policy reduce Medicare spending?

One goal of the ACO model is to create an incentive for providers to reduce their rate of spending growth by restraining capacity and improving care protocols. These behavioral changes will generate a certain amount of savings. Medicare would pay providers bonuses equal to their share of the savings: 80 percent of the savings in our examples.

Spending may also change due to random variation. For an ACO with a small number of patients, it will be difficult to determine whether a reduction in spending trends is due to active efforts on the physicians' part or to random fluctuation in their patients' health. In a bonus-only model, an ACO policy will reduce Medicare spending only if Medicare's share of savings from behavioral changes is larger than the bonuses Medicare pays due to random variation. From a budgetary standpoint, volume constraint is the benefit of ACOs, and payments for random variation are the cost.

Currently, when a group of patients' use of services declines below national trends due to random variation, Medicare spends less—resulting in savings. For example, if a group of providers' payments were $1 million below

the expected level due to random variation, then Medicare would save $1 million. However, under the ACO model, if random variation drives down spending for an ACO's patients (a low-illness year), then the ACO and Medicare will share those savings. For example, a $1 million random reduction in spending in an ACO shared-savings model could result in Medicare paying providers 80 percent of shared savings ($800,000) purely for random variation.[8] That $800,000 is the cost of the ACO model to Medicare. Because of the asymmetry of incentives in a bonus-only model, Medicare would not receive any offsetting revenues from penalties for random increases in an ACO's costs. The necessary condition for a bonus-only ACO policy to result in reduced Medicare expenditures can be stated as follows:

> Savings from behavioral change × (1 – ACO share of savings) > bonuses paid due to random variation

To increase the odds that an ACO policy saves Medicare money, the ACO needs to be designed to maximize the odds of positive behavioral changes and minimize the amount of bonuses paid for random variation. Several actions can be taken. First, random variation can be reduced by increasing the size of the pool of patients in the ACO. Second, performance can be calculated over multiple years to smooth out random variations. A third option is to reduce the share of the bonuses going to ACOs. However, reducing bonuses may not increase Medicare savings because reduced bonuses also may diminish the incentive for behavioral change.

One option that will almost certainly increase the odds that the program generates savings is to fund the bonus via a reduction in the update of FFS Medicare payment rates. This strategy would create immediate savings and could result in offering providers a larger share of savings (bigger bonuses), which would increase the odds of providers choosing to restrain capacity and volume growth.

How much uncertainty is there in projections of savings?

Work by researchers at Dartmouth has shown that there are large regional variations in Medicare costs and cost growth (Fisher et al. 2009b). Because high costs do not appear to be correlated with better quality, there is room for improvement in efficiency; that is, costs could be reduced without harming quality. While it is easy to conceptualize savings, it has historically been difficult to achieve them.

Research has shown that when an integrated delivery system is paid capitation it can reduce hospital admissions and the overall costs of care (Baker et al. 2000, Newhouse 1994). However, these examples often represent situations in which the incentive to restrain costs is strong (i.e., capitation) and a large share of a practice's patients are under this incentive.

Attempts to reduce costs with more modest incentives via paying for improved preventive care, care coordination, and disease management have had mixed results at best. They may improve care, but a reduction in overall government expenditures appears to be a difficult objective to achieve (see Chapter 8 in this report) (Cohen et al. 2008, Damberg et al. 2009, Russell 2009). While the literature often finds that the interventions improve health and are worth the additional cost, they nevertheless find that these interventions cannot be counted on to reduce health care spending. Several hypotheses for why spending constraint goals were rarely met have been cited, such as the small size of bonuses, the small share of a practice's patients affected by the programs, the lack of active involvement of physicians, and a lack of clear spending targets. Even the PGP demonstration, which has active physician involvement, has not definitively shown savings in its first two years (see text box, p. 49).

Any projections of savings from the formation of ACOs are subject to a high degree of uncertainty. Given the uncertainty surrounding the savings from ACOs, the ACO should be viewed as one of a series of initiatives that could improve the efficiency of health care delivery.

How would ACOs relate to other MedPAC policy initiatives?

MedPAC made several policy recommendations last year that could intersect with the ACO model, including recommendations on medical homes, bundling, readmissions, and informing physicians about resource use. The ACO concept is consistent and in some cases complementary with these initiatives. It is possible for CMS to explore several of these options through pilots or demonstrations and ultimately design payments around a subset of the various options.

Medical homes as ACO building blocks

In our June 2008 report, the Commission recommended a pilot project to test the concept of "medical homes" (MedPAC 2008). In our vision, a medical home is a medical practice that is paid a fixed monthly fee in addition to FFS payments. It is expected to furnish primary care, conduct care management, have a formal quality improvement program, have 24-hour patient access, maintain advance directives, and maintain a written understanding with each beneficiary that it is the patient's medical home.

Given the large number of solo and small primary care practices in the United States, many medical homes would have far fewer than 5,000 Medicare patients, so annual Medicare spending per patient would vary widely. The effect of random variation on spending would be too large to be offset by savings achieved through more efficient clinical practices. Hence, paying bonuses based on changes in spending growth would be difficult for medical homes. However, because average spending per Medicare patient becomes more stable as the number of patients increases, an ACO formed around a set of multiple medical homes could effectively earn a bonus or absorb a penalty based on resource use. (Resource use would include any per member per month medical home payment.) The state of Vermont plans to test this type of ACO—patients are assigned to medical homes and sets of medical homes are coupled with a hospital to become an ACO. The primary care physician receives one payment for serving as a patient's medical home and shares in the ACO's bonus or penalty, depending on the collective quality and spending results achieved by the entire ACO.

Bundling

In our June 2008 report, the Commission recommended a pilot to test the feasibility of bundling physician and hospital payments associated with a hospitalization episode (MedPAC 2008). The intent of bundling is to align provider incentives around a costly episode of care to encourage greater coordination of care and reduce the use of low-value services. One potential difficulty with a bundling proposal is that physicians will have a new incentive to increase low-severity admissions. They would profit because the payment amount they received would cover a patient with average resource needs, whereas the low-severity patient they admitted would require low time commitments from the physician. The incentive to keep marginal cases out of the hospital would decrease. In contrast, the ACO creates an incentive to reduce unnecessary admissions. Therefore, the ACO may be seen as a necessary counterweight to the effect that bundling would have on the number of admissions.

Readmissions

ACO incentives complement the incentive in the Commission's readmission policy recommended in June 2008 (MedPAC 2008). The readmission recommendation creates a penalty for hospitals (but not physicians) with high readmission rates. Under the ACO model, physicians as well as hospitals are rewarded if a reduction in readmission rates leads to lower annual spending per beneficiary. By aligning physician and hospital incentives to reduce readmissions, the ACO policy coupled with a readmission policy could have a larger effect than either policy on its own.

Resource use reporting

In 2005 and 2008, the Commission also made a recommendation for CMS to inform physicians of their resource use over time (MedPAC 2008, MedPAC 2005). A crucial first step in any ACO model would be for CMS to inform the physicians and the hospital of what claims data say about their historical relationships with other providers, their patient population, and Medicare payments and quality measures for that population. Under a voluntary model, hospitals and physicians could use this information to decide if they wanted to volunteer to be considered an ACO. Under the mandatory model, in which CMS assigns physicians to a hospital and patients to physicians, the physicians would be made aware of whom they were associated with and the ACO's cost and quality levels relative to targets. Physicians might then change their referral patterns or affiliations.

Some maintain that simply informing physicians of where they stand in relation to other physicians and their affiliated hospitals could have a salutary effect. If informed that their assigned ACO was providing poor-quality care, the physicians might want to change the ACO they were affiliated with or take initiatives to improve the care provided by the ACO to which they were assigned. However, others may argue that the effects of information alone may be transitory and will not result in large permanent changes in practice patterns.

How do ACOs fit along the continuum from FFS to Medicare Advantage plans?

FFS Medicare has an inherent incentive to increase the volume of service provided to each patient and represents

TABLE 2–6

The continuum of incentives to control volume

	Type of payment system			
Characteristics	**FFS**	**Voluntary ACO (bonus only)**	**Mandatory ACO (bonus and withholds)**	**MA plan**
Incentive to constrain cost	Rewards increases in volume	Limited rewards tied to cost and quality	Limited rewards and penalties tied to cost and quality	Plans are rewarded for lower volumes
Patient choice	Patients free to choose physicians	Patients free to choose physicians	Patients free to choose physicians	Plans can constrain choice
Physician control over referrals	Limited influence	Limited influence	Limited influence	Plans can control referrals
Insurance functions	None	None	None	Negotiates rates Processes and pays claims
Provider risk	No financial risk for providers	No financial risk for providers	Limited financial risk for providers	Full insurance risk
Medicare funding	Standard FFS	Bonuses funded by shared savings and restraining FFS rates	Bonuses funded by shared savings and withholds	Based on administratively set benchmarks and the plan "bid"

Note: FFS (fee-for-service), ACO (accountable care organization), MA (Medicare Advantage).

one end of the payment spectrum. Medicare Advantage (MA) plans are fully capitated, have a strong incentive to constrain volume, and represent the other end of the spectrum. ACOs lie in the middle of the spectrum. ACOs still receive FFS payments per unit of service but would face a separate system of incentives to improve quality and constrain volume, potentially resulting in lower overall Medicare spending. ACOs differ from MA plans in that ACOs would not take substantial actuarial (or insurance) risk and would not be burdened by the insurance functions of negotiating rates and paying claims.

Because ACOs would still be paid on a FFS basis, the financial risk of very sick (costly) beneficiaries would not be borne solely by the ACO. In the bonus-only model, Medicare takes on all the risk; in the model with withholds, the provider's risk is limited to the loss of a withhold. The distribution of payment models along the spectrum of incentives to constrain volume is shown in Table 2-6.

As Table 2-6 illustrates, ACOs would be able to incorporate some incentives to restrain volume without constraining patients' choice of physician. They also would be easier for providers to operate because the providers in an ACO would not have to negotiate prices or pay claims.

ACOs' relationship with private insurers

The main mechanism for ACOs to achieve savings is through constraining capacity. The incentive to constrain capacity will hinge on whether physicians face similar incentives from private payers. If private payers continue to pay on a FFS basis without the carrots and sticks of an ACO to lower resource use, Medicare may not have sufficient market power to offset the inducements afforded by the private sector's unencumbered FFS payments. Therefore, the ACOs should be structured so that private insurers find it attractive to set up bonuses based on ACO resource use.

The ACO bonus structure would create incentives for building systems, and systems would come with enhanced

market power. One danger is that physician groups consolidate into larger entities and use this negotiating power to increase prices charged to private insurers. There would need to be some protections for the privately insured patients when their insurers negotiate with large, dominant integrated providers.

Conclusions

ACOs could create incentives for improving quality and constraining costs, but they will not be a simple solution to Medicare's quality and budgetary problems. Providers in a successful ACO will need a mechanism to jointly decide on care protocols and capacity building. They will also need to develop a degree of coordination and systems thinking that is currently lacking in many health care markets. We are concerned that this level of joint decision making may be difficult to achieve in a mandatory model in which providers are placed together without having agreed on a system of common governance.

ACOs' incentives are tied to quality and spending targets. The spending targets will have to be based, at least in part, on a given ACO's spending history. On the one hand, if targets were based purely on national averages, there would be few participants from high-cost areas, and Medicare spending would have a substantial likelihood of increasing for participants in other areas. On the other hand, using an ACO's historic spending alone would raise questions of equity. One approach to balance these concerns is to set an ACO's spending target equal to the sum of the ACO's historical spending and an allowance for spending growth. Medicare could set a single national growth allowance, or Medicare could set lower allowances in high-service-use areas and higher allowances in low-service-use areas. This approach could allay the equity concerns to some extent and eventually compress regional variation in spending per capita.

The PGP demonstration has shown that ACO-type incentives can lead to improved quality scores, but it has also illustrated the difficulty of restraining Medicare cost growth. However, the success of ACOs over time could be greater than early PGP results might indicate. If incentives to constrain volume growth were implemented by more payers and offered nationally, innovations that reduced the cost of care might be more actively developed. So far, because providers do not have a strong incentive to control volume growth, there is no market for innovations that do so. ACOs could supply the stimulus for such innovations.

ACOs' odds of success could also be improved by giving providers clear spending targets, increasing the share of patients subject to the incentive (e.g., by involving private payers), and increasing the size of the incentives for meeting targets (by restraining FFS rates and putting some of the savings toward bonuses). The latter step will especially be needed in a system of voluntary, bonus-only ACOs both to ensure Medicare savings in light of random variation and to create bonuses large enough to induce significant change.

One of the ACOs' primary mechanisms for restraining spending growth could be limiting the growth in the supply of specialists and expensive capacity. Research shows that supply-sensitive services (e.g., those services that are correlated to the supply of specialists and health system capacity) account for much of the difference between high- and low-spending areas of the country (Dartmouth 2009). If ACOs can limit the growth in capacity and reduce unnecessary services, they might be able to create efficiency gains, which could be shared by providers and the Medicare program. ACOs that prove they can generate bonuses for physicians through efficiency gains and high-quality care for patients will attract physicians and increase their market share. However, ACOs would have to be evaluated over the long term, because capacity changes will not happen overnight. Given the track record of various interventions, we need to project the success of future interventions with an acknowledgment of uncertainty and with a certain amount of humility.

For Medicare to become sustainable, the delivery system has to change. ACOs could prove to be an important catalyst for delivery system reform by creating incentives for increased organization and joint decision making. However, several issues must be resolved in creating an initial set of incentives that are strong enough to overcome the existing incentives in the FFS system to drive up volume. Long-term sustainability may require refining ACOs' incentives as they evolve. ■

Endnotes

1 In the past, we have considered ACOs without a hospital as an option. We include hospitals in the ACO definition here for three reasons. First, care coordination will require hospitals and physicians to work together. Second, we think joint decisions will be important for ACOs' success, and hospitals may have the convening power to bring parties together. Third, a significant amount of anticipated savings would be expected to come from reducing preventable hospital admissions and reducing readmissions. Hospitals will face these revenue losses and will want to share in the savings. Otherwise, they might raise strong objections to any ACO program.

2 Under a system of voluntary ACOs, it would be imprudent for Medicare to set higher base FFS Medicare payment rates for providers in ACOs than for other providers, as the higher rates would encourage providers to join an ACO, even if they were not committed to improving the efficiency of care.

3 To qualify for bonuses, PGP sites had to have risk-adjusted cost growth that was more than 2 percent lower than the comparison group.

4 Physicians with inpatient work are assigned to the hospital where they do the most inpatient work. Physicians without inpatient work are assigned to the hospital where most of their patients are admitted. Patients are assigned to physicians according to which physician provides the plurality of their primary care visits.

5 The amount of variation might diminish over time as ACOs were held accountable for their population's Medicare spending. Current patterns reflect today's FFS system; no population is assigned, no measurement is made, and there is no accountability.

6 The risk adjustment is not expected to significantly reduce volatility because we are examining changes in average cost per beneficiary from one year to the next in the same ACO. Because the pool of patients is not expected to change significantly, we do not expect significant shifts in risk scores that could explain significant shifts in costs. In contrast, if we based penalties and rewards on cross-sectional comparisons of ACOs, risk adjustment would be more important.

7 According to the Dartmouth data analysis, 4,658 single hospital EHMSs could be defined, of which 1,736 would have an assigned patient population of 5,000 or more and could meet our definition of ACOs. Those large ACOs would account for about 78 percent of Medicare beneficiaries (Dartmouth 2009). The number of large ACOs and the share of Medicare beneficiaries in ACOs could increase if the physicians and hospitals in several small communities banded together to become "system ACOs."

8 In our examples, we assume providers retain 80 percent of shared savings, while others have suggested a 50 percent shared-savings model. Providing a larger share of the savings to physicians and hospitals increases the magnitude of the incentive to change capacity and care protocols.

References

Baker, L. 2008. Expanded use of imaging technology and the challenge of measuring value. *Health Affairs* 27, no. 6: 1467–1478.

Baker, L., J. Cantor, S. Long, et al. 2000. HMO market penetration and costs of employer-sponsored health plans. *Health Affairs* 19, no. 5: 121–128.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2008. *Medicare physicians group practice demonstration: Physicians groups continue to improve quality and generate savings under Medicare physician pay for performance demonstration*. Baltimore: CMS. August.

Cohen, J., P. Neumann, and M. Wienstein. 2008. Does preventive care save money? Health economics and the presidential candidates. *New England Journal of Medicine* 358, no. 7: 661–663.

Congressional Budget Office. 2008. *Key issues in analyzing major health insurance proposals*. Washington, DC: CBO. http://www.cbo.gov/ftpdocs/99xx/doc9924/12-18-KeyIssues.pdf.

Damberg, C., K. Raube, S. Teleki, et al. 2009. Taking stock of pay-for-performance: A candid assessment from the front lines. *Health Affairs* 28, no. 2: 517–525.

Dartmouth Atlas of Health Care. 2009. *Supply sensitive care*. Lebanon, NH: Dartmouth Center for the Evaluative Clinical Sciences. http://www.dartmouthatlas.org/topics/supply_sensitive.pdf.

Fisher, E., M. McClellan, J. Bertko, et al. 2009a. Fostering accountable health care: Moving forward in Medicare. *Health Affairs* 28, no. 2: w219–w231. Published online January 27.

Fisher, E., J. Bynum, and J. Skinner. 2009b. Slowing the growth of health care costs—lessons from regional variation. *New England Journal of Medicine* 360: 849–852.

Medicare Payment Advisory Commission. 2008. *Report to the Congress: Reforming the delivery system*. Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2005. *Report to the Congress: Medicare payment policy*. Washington, DC: MedPAC.

Newhouse, J. 1994. *Free for all? Lessons from the RAND health insurance experiment*. Cambridge, MA: Harvard University Press.

Pilotte, J. 2009. E-mail message to author, February 27.

RTI. 2008. *Physician Group Practice demonstration selected results from performance year two*. Research Triangle Park, NC: RTI.

Russell, L. 2009. Preventing chronic disease: An important investment, but don't count on savings. *Health Affairs* 28, no. 1: 42–45.

Weintraub, W. S., J. A. Spertus, P. Kolm, et al. 2008. Effect of PCI on quality of life in patients with stable coronary disease. *New England Journal of Medicine* 359: 677–687.