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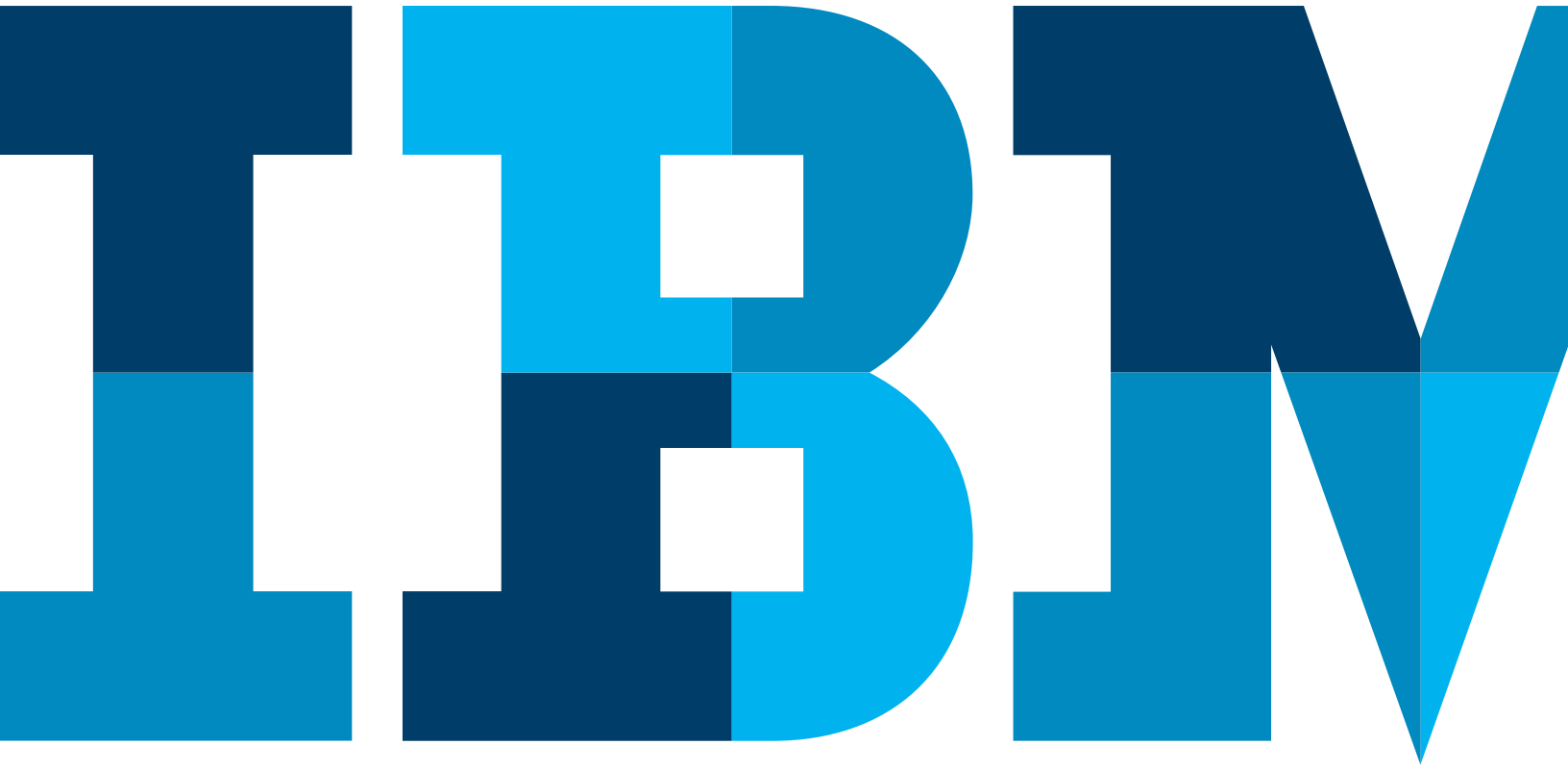
How ACOs can manage population health



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In 2010, the Affordable Care Act authorized a Medicare Shared Savings Program (MSSP) for accountable care organizations (ACOs), and the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015 will continue to advance ACO models. Private payers are also contracting with ACOs. To succeed, ACOs must learn how to manage population health effectively.

- ***The ACO environment:*** Physicians and hospitals must learn how to work together in ACOs, regardless of who runs these organizations. Those ACOs that have mastered population health management are doing well. Though payers don't want to push financial risk on providers too rapidly, some advanced ACOs have already accepted global capitation contracts.
- ***ACO snapshots:*** The history of four large-scale ACO programs shows that this approach can have a significant impact on cost and quality.
- ***Population health management:*** ACOs have strong incentives to improve population health to meet quality goals and reduce costs. To do that, they must stress non-visit care and disease management, build care teams, and work with patients to improve their health behavior.
- ***The role of information technology:*** Population health management requires clinical integration, which cannot exist without a robust information technology (IT) infrastructure. In addition, a range of automation tools is needed for cost-effective care management and patient engagement.

The Patient Protection and Affordable Care Act (PPACA) of 2010 focuses mainly on regulating health insurance and expanding coverage. But the legislation also addresses the role of the healthcare delivery system in health spending growth. In this area, the law's major thrust is to change how providers are paid. Among the approaches that Congress authorized the government to undertake is one that involves accountable care organizations (ACOs), which are healthcare provider groups that are designed to be accountable for the cost and quality of care. Specifically, the PPACA authorized the Centers for Medicare and Medicaid Services (CMS) to launch a shared-savings program with ACOs in 2012. Under this approach, an ACO that meets specified quality goals can split with CMS any savings that surpass a minimum level.1

ACOs that participate in the Medicare Shared Savings Program (MSSP) must consist of providers that "work together to manage and coordinate care for Medicare fee-for-service beneficiaries." Among the ACOs in the MSSP are organizations based on individual practice networks, group practices, partnerships of hospitals and physicians, hospitals and their employed doctors, and federally qualified health centers.

ACOs must meet thresholds on 33 quality measures and cut costs by more than a minimum percentage to qualify for payments equal to 50 percent of savings above a benchmark related to their historical performance. A few ACOs have elected to take downside risk—that is, to take financial responsibility for spending more than the benchmark—in return for a higher percentage of savings.[2]

The MSSP, which is not a pilot, potentially affects all patients covered by traditional Medicare. As a result, the ACO provision has generated strong interest among group practices and healthcare organizations. The ACO initiatives of certain commercial insurers are also attracting attention from providers. Some of the private ACO contracts involve financial

risk, and others are limited to gainsharing. About half of the 700-plus existing ACOs hold private contracts; 36 percent have only Medicare contracts; and 16 percent have agreements with both Medicare and private payers.[3]

In the first performance year of the MSSP, 54 of the 114 participants that joined the program in 2012 had total costs that fell below their budget benchmarks, but only 29 reduced spending enough to qualify for a total of $126 million in shared savings. The other 60 ACOs generated costs above their benchmarks.[4]

The next year, 86 of the 333 ACOs in their second performance year, or 26 percent, earned shared-savings payments. Total savings equaled $777 million, and these ACOs received $341 million. In general, analysts noted, ACOs with more experience in the MSSP were more likely to reap shared savings.[5]

Meanwhile, CMS's Pioneer program, which requires ACOs to take more financial risk, has lost half of the 32 organizations that originally enrolled in it. Some of the 16 dropout Pioneers joined the MSSP; the rest left the CMS program entirely.[6]

Note that the ACO concept dovetails with other new reimbursement methods that payers are piloting, including payment bundling and patient-centered medical homes (PCMHs). Further down the road, shared savings will likely transition to some type of payment bundling and, eventually, global capitation (a fixed payment for all care provided to each patient). A recent study found that 56 percent of health-plan contracts with ACOs feature downside risk of some kind.[7] But the government and private insurers are still proceeding with caution because they know that the vast majority of providers are not ready to assume very much financial risk. Moreover, there are questions about how much limitation on provider choice the public is willing to accept.

The more risk that providers take, the more imperative it is for them to do population health management (PHM). In the case of ACOs, the reasons are transparent: These organizations must manage the full spectrum of care and must be accountable for a defined patient population.[8] Unless an ACO is capable of tracking the health status of, and the care provided to, every one of its patients, it is unlikely to produce significant savings or meet the quality benchmarks of CMS. And when organizations take on financial risk, it is absolutely essential that they learn how to prevent illness and manage care as well as possible. The more risk that providers assume, the better they have to be at managing population health.

The ACO environment

A growing number of healthcare organizations have partnered with health plans to implement ACOs.[9] Though most insurance companies are still reluctant to offer global capitation contracts, they see opportunities in working with ACOs to lower costs and improve quality. Meanwhile, hospitals and doctors that are partnered in ACOs must find ways to share revenue. After emerging from a regulatory deep freeze a decade ago[10], gain-sharing between hospitals and physicians got a shot in the arm from CMS' Bundled Payments for Care Improvement (BPCI) initiative.[11] But those bundled payments cover either inpatient care or hospital and post-acute care, not the chronic disease care that ACOs focus on.

The ownership of practices is another important factor in how revenues are shared and how ACOs are organized. While the percentage of physicians employed by hospitals doubled in the first decade of this century,[12] there are signs that direct hospital employment has leveled off in recent years. According to the latest statistics of the American Medical Association (AMA), 60 percent of physicians practice in doctor-owned organizations, and only 20 percent work in practices owned by hospitals or are direct hospital employees.[13] A 2014 survey by the Medical Group Management Association (MGMA), similarly, found that 68 percent of MGMA member organizations were physician owned and 20 percent were part of a hospital or an integrated delivery system.[14]

Nevertheless, hospitals are still trying to get physicians aligned with them, both for competitive reasons and because they believe that they will need physicians' cooperation when reimbursement methods change. Many healthcare systems are moving toward clinical integration with their physicians, whether or not the latter are employed by the system. The MGMA survey, in fact, found that from 2012 to 2014, 11 percent of MGMA members had integrated clinically with a hospital but retained their clinical independence.[15] The increasing reliance of healthcare on information technology is expected to accelerate this process.[16]

Some observers question whether ACOs can succeed in most areas unless hospitals take the lead in organizing them. Yet nothing in the CMS regulations requires hospitals to lead or to even be a direct participant in ACOs. The only requirements are that ACOs include primary care physicians and serve at least 5,000 Medicare patients each.[17] But, because an ACO must coordinate care across all care settings, it must secure the cooperation of one or more hospitals. So, although both physician organizations and hospitals would prefer to be in charge, they will have to learn how to work together.

Government support

While all of this is happening, the government is increasing its support for the ACO movement. Beyond the MSSP and the Pioneer ACO programs, CMS has established a Next Generation ACO model that offers more risk and reward than either of the other models. The Next Generation program also allows ACOs to prospectively (rather than retrospectively) take responsibility for Medicare beneficiaries, allows patients to choose ACOs, and encourages the use of telehealth and care coordination services. According to CMS, 121 organizations are participating in this program.[18]

In 2015, the Department of Health and Human Services (HHS) announced that by the end of 2016, 30 percent of Medicare payments would go to "alternative payment models" (APMs) such as ACOs, patient-centered medical homes (PCMH), and healthcare organizations that accept bundled payments.[19]

These APMs form one of two Medicare payment tracks that physicians can choose, starting in 2019, under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA).[20] This legislation gives physicians a clear incentive to join an ACO and/or form a PCMH.

ACO snapshots

Some ACOs have done very well in the MSSP. For example, Mercy Health Select, the ACO of Mercy Health, a 24-hospital system based in Cincinnati, saved Medicare $15.4 million and received $6.5 million as its share in 2014.[21] Emboldened by this achievement, Mercy Health Select has switched to track 3 of the MSSP, which includes downside risk and yields a higher percentage of savings. In addition, the ACO has risk contracts with several commercial and Medicare Advantage plans. In total, 20%–30% of Mercy Health's primary care panels consist of patients covered by risk contracts.[22]

Mercy Health Select executives attribute the ACO's success to its ability to manage population health. As Mercy Health was forming the ACO, the healthcare system also started building patient-centered medical homes; currently, 125 of its 200 primary care practices are NCQA-recognized PCMHs. Another key facet of the ACO's approach has been a care management program that is available to—and appreciated by—both the healthcare system's employed physicians and independent doctors who belong to the ACO. The ACO has also worked hard to improve cooperation between its specialists and primary care doctors and is expanding its network to include post-acute-care providers.

Integrating data from multiple EHRs, along with claims data, has been a challenge for Mercy Health Select. Because Mercy's data warehouse recognizes only identification numbers of patients who have records in its own EHR, the organization uses tools from two outside vendors to aggregate and analyze the ACO's data. But the system works well enough that the ACO can present comprehensive, timely data on patient care gaps to providers at the point of care.

On the private sector side, the biggest ACO experiment is the "alternative quality contract" of Blue Cross and Blue Shield of Massachusetts (BCBSM). This is actually a global capitation agreement with two features that differentiate it from the old HMO risk contracts: First, participants can qualify for graduated quality incentives, and second, the insurer pledges not to reduce their budgets in future years. In return, the contract holders promise to gradually cut cost growth to the rate of inflation.[23]

Eighty-five percent of the physician practices and hospitals that belong to BCBSM's Blue Cross HMO network now participate in the alternative quality contract. They range in size from Partners Healthcare in Boston to the physician-hospital organization of Lowell General Hospital in Lowell, Massachusetts.[24] Though these organizations are not ACOs, strictly speaking, the goals they must meet are similar to those of ACOs, and some of them have formed ACOs that participate in the MSSP or the Pioneer program as well.

A Harvard Medical School study found that, compared with a control group of patients in several other Northeast states, patients whose providers participated in the BCBSM alternative quality contract had lower spending growth, and the quality of their care improved more over a four-year period.[25]

Though there has not yet been a comprehensive study of the hundreds of ACOs formed in recent years, some have been quite successful. For example, Hill Physicians, a large IPA based in Sacramento, California, developed an ACO with Dignity Health, a San Francisco-based hospital system, and Blue Shield of California for a two-year pilot that was funded by the California Public Employees' Retirement System (CalPERS). The ACO was formed to provide care to the 41,000 public sector employees and retirees covered by CalPERS and enrolled in Blue Shield's health plan in Sacramento.

Through a combination of approaches, including PCMHs, improved transitions of care, and intensive care management for patients with complex needs, the ACO reduced spending by $20 million in its first year. Of that amount, $15.5 million was used to achieve zero growth in Blue Shield's premiums for CalPERS members. The remainder of the savings was shared among the three ACO partners. At the end of the ACO's second year, premium reductions for CalPERS members totaled $37 million, and the ACO partners shared another $8 million.

Since then, Hill Physicians has formed three more commercial ACOs, some with local partners. In one of these ACOs, it has reunited with Dignity and Blue Shield to deliver care in San Joaquin County, using a population-based payment model that resembles full capitation.[26]

Healthcare Partners, a multistate physician group and IPA based in Los Angeles, engaged in another ACO pilot with Anthem Blue Cross, starting in 2012.[27] This pilot, which used a shared-savings approach, generated an estimated $4.7 million in savings in the first six months of 2013 by shortening hospital stays and reducing the number of ER visits. The ACO managed to do this even though its patients were members of a preferred provider organization (PPO), rather than an HMO, and were allowed to go out of network.[28]

With this success under its belt, Healthcare Partners' ACO contracted to take care of Anthem PPO members with two or more chronic conditions. This initiative produced $1.8 million in savings from July 1, 2013, through June 30, 2014. In addition, the ACO surpassed Anthem's quality benchmarks on several measures.[29]

Population health management

U.S. health care costs much more per capita than the systems of other advanced countries but does not deliver better results.[30] The reasons are well known: The U.S. has a fragmented, chaotic care-delivery system; healthcare providers are incentivized to provide high service volume rather than high-quality care; there are too few primary care physicians and too many specialists; and the system is provider-centered rather than patient-centered.[31]

To turn around this bloated, wasteful healthcare system, policy makers and health policy experts are focusing on population health management. PHM has been defined as a healthcare approach that emphasizes "the health outcomes of individuals in a group and the distribution of outcomes in that group." It addresses not only longitudinal care across the continuum of care but also personal health behavior that may contribute to the evolution or exacerbation of diseases.[32]

Among the key characteristics of health organizations that conduct PHM are an organized system of care; the use of multidisciplinary care teams; coordination across care settings; enhanced access to primary care; centralized resource planning; continuous care, both in and outside of office visits; patient self-management education; a focus on health behavior and lifestyle changes; the use of interoperable electronic health records (EHRs); and the use of registries and other tools essential to the automation of PHM.[33]

As ACOs gain traction, the providers that belong to them are increasingly focusing on PHM. Whether the financial incentive is shared savings or global budgets for all patient care, ACOs have a strong motive to maintain health, prevent disease, and control chronic conditions so that they don't lead to ER visits and hospitalizations. To achieve these goals, ACOs have to stress non-visit care and disease management, including home monitoring of the sickest patients. They have to build care teams that are capable of tracking patients' health status and ensuring that they receive recommended care. And they have to incentivize providers to work with patients to improve their health behavior and their compliance with care plans.

ACOs share many of these objectives with patient-centered medical homes. For example, a physician whose practice serves as a medical home must coordinate care, improve patient self-management skills, track the services provided to patients, and maintain contact with patients between visits. Medical homes also use electronic tools such as EHRs and registries.[34] Patient-centered medical homes are generally much smaller than ACOs and may lack the ability to induce specialists and hospitals to cooperate with them.[35] Nevertheless, a practice that qualifies as a medical home has gone a long way toward being able to function within an ACO.

An effective ACO must not only take excellent care of patients who present for care, but must also try to monitor and stay in contact with people who do not have contact, or who rarely have contact, with healthcare providers. The importance of communicating with this segment of the population is profound because it includes many individuals who are or will become sick and need acute or chronic care at some point. Therefore, an ACO that proactively addresses the health needs of this cohort will be able to control costs better than one that does not.

HOW CAN ACOs MANAGE POPULATON HEALTH

Accountable Care Organizations (ACOs) have strong incentives to improve population health to meet quality goals and decrease costs.

2010

- **The Patient Protection and Affordable Care Act** authorized creation of APOs
- **Medicare Shared Savings Program (MSSP):** ACO participants can include organizations such as independent practice networks, federally qualified health centers, and hospitals and their employed physicians.

2015

- **The Medicare Access and CHIP Reauthorization Act (MACRA)** provides new incentives to join "Alternative Payment Models" like ACOs.
- **More Risk:** Medicare and commercial insurers alike are requiring ACOs to take more financial risk as they manage defined populations through value-based payment arrangements.
- **More Reward:** The better organizations are at population health management, the more they stand to gain in shared savings and incentive payments.

The more risk that providers take, the more important it is that they manage patient populations effectively.

Health IT Drives ACO Success Through:

CLINICAL INTEGRATION
and shared data access

CONTINUOUS RISK STRATIFICATION
and performance measurement

TOP OF LICENSE CARE TEAMS
with electronic
communication channels

DYNAMIC PATIENT ENGAGEMENT
delivered through
multiple modalities

The role of information technology

To be successful, an ACO must be clinically integrated, which means that physicians and other providers must communicate and exchange key clinical information with each other. Until a few years ago, this was quite difficult because most clinical data was locked up in paper files that were inaccessible to providers outside of a particular hospital or practice. Even the delivery of lab results was still done mostly by fax, courier, or mail. Now that EHRs have become widespread because of the government's Meaningful Use incentive program, all of this is changing.

EHRs are crucial to clinical integration. Not only can they make it easier for caregivers to document and retrieve patient data, but they also hold the key to health information exchange with other providers—if and when they become interoperable.

Despite the enormous increase in the amount of digitized health information, however, most EHRs are still incapable of exchanging structured data. The clinical summaries that certified EHRs must be able to exchange in Meaningful Use Stage 2 use a specially formatted document known as the consolidated CDA (C-CDA). EHRs from different vendors can exchange these summaries, but the data in them often cannot flow into the data fields in electronic charts; even when an EHR can extract the data from a C-CDA, it is a laborious, lengthy process for the provider.

The federal government has spent more than half a billion dollars to help states develop health information exchanges (HIEs). Though it is unclear that this effort has substantially improved the ability of providers to exchange patient data, a report shows that in 2013, more than six in ten hospitals exchanged health information with outside providers. Fifty-seven percent of hospitals exchanged data with ambulatory providers outside of their system—although only about a quarter of them notified outside primary care providers when their patients entered one of their ERs.[36]

Meanwhile, regional HIEs are still searching for a business model,[37] and an increasing number of healthcare organizations are building private exchanges.[38] Clinician-to-clinician messaging using the Direct secure messaging protocol—a method of exchanging documents as attachments to messages sent over the Internet—is also growing as the Direct infrastructure evolves.[39]

The Interoperability Roadmap of the Office of the National Coordinator for Health IT (ONC) states that the "movement to alternative payment models will naturally stimulate demand for interoperability." ONC points out that "a supportive payment and regulatory environment must lower real and perceived costs of interoperability," including a loss of competitive advantage among healthcare systems in the same market.[40] Whether that will happen remains unclear.

Automation and analytic tools

EHRs have some drawbacks as tools for performing PHM. Though some vendors are starting to move ahead in this area, most EHRs are not designed for tracking populations, providing actionable reports on care gaps, or sending alerts to patients.[41] ACOs will need not only EHRs but also supplemental applications that automate the work of monitoring, educating, and maintaining contact with the patient population.

These tools, which should be used in conjunction with EHRs, include electronic registries; multiple outreach and communications methods; software that can stratify a population by health status; and health risk assessment programs that trigger alerts and provide educational materials to patients. Automated PHM tools ensure that the routine, repetitive work of managing population health is done in the background, freeing up doctors and nurses to do the work that only they can do.

For example, registries can be programmed to generate reports on the care gaps of patients for care coordinators and care managers in practices. The care managers can use the information to prepare care teams for patient visits and to ensure that patients are receiving recommended services across the continuum of care. By automating patient communications, registries combined with outreach tools also make it easy to send alerts to every patient who needs to be seen for follow up.

These supplemental technologies can also aid ACOs in managing population health at the macro level. A sophisticated rules engine can integrate disparate types of data with evidence-based guidelines, generating reports that provide many different views of the information. For example, the entire patient population could be filtered bypayer, activity center, provider, health condition, and care gap. The same filters could be applied to all patients with a particular condition to find out where the ACO needs to improve its care for that disease.

ACO management could also use this type of information to pinpoint where the coordination of care is breaking down. For example, if an unusual number of patients with a particular condition were being readmitted to the hospital, that might indicate a problem with outpatient follow-up.

Another important determinant of population health is the degree to which patients are coached on improving their health behavior. Automation tools can also help in this area. For example, when a patient fills out a health risk assessment online or in a practice computer kiosk, that person can receive educational materials tailored to his or her condition and can be directed to appropriate self-help programs for, say, smoking cessation or losing weight.

Conclusion

Because of the Medicare shared-savings program and other government and private-sector programs, ACOs are generating excitement among healthcare providers. As ACOs become more widespread, they could be a powerful force for establishing population health management as the primary approach to quality improvement and cost containment in the United States.

To do PHM properly, ACOs must use a range of information technologies. These include not only electronic health records but also supplemental applications that automate the routine work of tracking, educating, and communicating with patients. These tools make it possible to do PHM comprehensively and cost-effectively, allowing ACO members to benefit economically from shared savings, bundled-payment, and global capitation programs.

Many healthcare organizations are setting up ACOs. But only the ACOs that achieve clinical integration and learn how to do population health management will succeed. Therefore, information technologies, including automation and analytic tools, are essential components of ACO success.

Patient-centered medical homes, often considered the building blocks of ACOs, also need EHRs and other health IT tools to perform their primary task of care coordination. The next chapter explains what medical homes are and why health IT is essential to their mission.

Endnotes

1. Kaiser Family Foundation, "Summary of New Health Reform Law," accessed at http://www.kff.org/healthreform/upload/8061.pdf.

2. CMS, "Shared Savings Program," accessed at http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/index.html.

3. Stephen M. Shortell, Carrie H. Colla, Valerie A. Lewis, Elliott Fisher, Eric Kessell, Patricia Ramsay, "Accountable Care Organizations: The National Landscape," *Journal of Health Politics*, Policy and Law, Vol. 40, No. 4, August 2015, accessed at http://jhppl.dukejournals.org/content/40/4/647.abstract.

4. S. Lawrence Kocot, Farzad Mostashari, and Ross White, "Year One Results from Medicare Shared Savings Program: What It Means Going Forward," *Brookings Institution Upfront* blog, Feb. 7, 2014.

5. David Introcaso and Gregory Berger, "MSSP Year Two: Medicare ACOs Show Muted Success," *Health Affairs Blog*, Sept. 24, 2015, accessed at http://healthaffairs.org/blog/2015/09/24/mssp-year-two-medicare-acos-show-muted-success/.

6. Melanie Evans, "Two more Pioneer ACOs exit as new CMS model emerges," *Modern Healthcare*, Nov. 4, 2015, accessed at http://www.modernhealthcare.com/article/20151104/NEWS/151109941.

7. Valerie A. Lewis, Carrie H. Colla, William L. Schpero, Stephen M. Shortell, and Elliott S. Fisher, "ACO Contracting With Private and Public Payers: A Baseline Comparative Analysis," *American Journal of Managed Care*. 2014;20(12):1008–1014.

8. Jordan T. Cohen, "A Guide to Accountable Care Organizations, and Their Role in the Senate's Health Reform Bill," *Health Reform Watch*, March 11, 2010, accessed at http://www.healthreformwatch.com/2010/03/11/a-guide-to-accountable-care-organizations-and-their-role-in-the-senates-healthreform-bill/.

9. Ibid.

12. Laurence C. Baker, M. Kate Bundorf, and Daniel P. Kessler, "Vertical Integration: Hospital Ownership of Physician Practice Is Associated With Higher Prices and Spending," *Health Affairs* 33, No. 5 (2014): 756–763.

13. David N. Gans, "Has the tide of practice acquisition ebbed?" *MGMA Connection*, January/February 2015, accessed at http://www.mgma.com/practice-resources/mgma-connection-plus/mgma-connection/2015/january-february-2015/oe-has-the-tide-of-practice-acquisition-ebbed.

14. Ibid.

15. Ibid.

16. "Online Connectivity: Linking Providers and Patients to Create a Community of Care," *Patient Safety & Quality Healthcare*, January/February 2010, accessed at http://www.psqh.com/januaryfebruary-2010/391-online-connectivity.html.

17. Patient Protection and Affordable Care Act, H.R. 3590, Sec. 3022 (Medicare Shared Savings Program).

18. Department of Health and Human Services (HHS) press release, "New hospitals and health care providers join successful, cutting-edge federal initiative that cuts costs and puts patients at the center of their care," Jan. 11, 2016, accessed at http://www.hhs.gov/about/news/2016/01/11/new-hospitals-and-health-care-providers-join-successful-cutting-edge-federal-initiative.html.

19. Sylvia M. Burwell, "Setting Value-Based Payment Goals—HHS Efforts to Improve U.S. Health Care," *New England Journal of Medicine*, Jan. 26, 2015, doi: 10.1056/NEJMp1500445.

20. American Academy of Family Physicians, "FAQ on MACRA and Medicare Payment Reform," accessed at http://www.aafp.org/practice-management/payment/medicare-payment/faq.html.

21. CMS, "Medicare Shared Savings Program Accountable Care Organizations," accessed at https://data.cms.gov/ACO/Medicare-Shared-Savings-Program-Accountable-Care-O/ucce-hhpu.

25. Zirui Song, Sherri Rose, Dana G. Safran, Bruce E. Landon, Matthew P. Day, and Michael E. Chernew, "Changes in Health Care Spending and Quality 4 Years into Global Payment," *New England Journal of Medicine* 371, no. 18 (Oct. 30, 2014): 1704–1714.

26. Alexander Cohen, Sarah Klein, and Douglas McCarthy, "Hill Physicians Medical Group: A Market-Driven Approach to Accountable Care for Commercially Insured Patients," *Commonwealth Fund Case Study*, Oct. 2014, http://www.commonwealthfund.org/publications/case-studies/2014/oct/hill-physicians-aco-case-study.

27. Josette N. Gbemudu, Bridget K. Larson, Aricca D. Van Citters, Sara A. Kreindler, Frances M. Wu, Eugene C. Nelson, Stephen M. Shortell, and Elliott S. Fisher, "Healthcare Partners: Building on a Foundation of Global Risk Management to Achieve Accountable Care," *Commonwealth Fund Case Study*, January 2012, accessed at http://www.commonwealthfund.org/~/media/Files/Publications/CaseStudy/2012/Jan/1572_Gbemudu_HealthCare_Partners_case study_01_17_2012.pdf.

28. Doug Desjardins, "Anthem, HealthCare Partners ACO Saves$4.7 Million," *HealthLeaders*, June 18, 2014, accessed at http://healthleadersmedia.com/content.cfm?topic=HEP&content_id=305623.

29. HealthCare Partners press release, "HealthCare Partners Saves $1.8 million in Anthem Blue Cross Enhanced Personal Health Care Program," June 1, 2015, http://www.prnewswire.com/news-releases/healthcare-partners-saves-18-million-in-anthem-bluecross-enhanced-personal-health-care-program-300091375.html.

30. The Commonwealth Fund, "Mirror, Mirror on the Wall: How The Performance of the U.S. Health Care System Compares Internationally, 2010 Update," accessed at http://www.commonwealthfund.org/publications/fund-reports/2010/jun/mirror-mirrorupdate.

31. Institute of Medicine, *Crossing the Quality Chasm*. Washington, DC:National Academy Press, 2001.

32. David M. Lawrence, "How to Forge a High-Tech Marriage Between Primary Care and Population Health," *Health Affairs*, May 2010, 1004–1009.

35. Paul A. Nutting, MD, MSPH; William L. Miller, MD, MA; Benjamin F. Crabtree, PhD; Carlos Roberto Jaen, MD, PhD; Elizabeth E. Stewart, PhD; and Kurt C. Stange, MD, PhD, "Initial Lessons from the First National Demonstration Project on Practice Transformation to a Patient-Centered Medical Home," *Annals of Family Medicine* 7 (2009): 254–260.

36. Greg Slabodkin, "HIE Among Hospitals Grows, Still Needs Improvement," *Health Data Management*, May 6, 2014, accessed at http://www.healthdatamanagement.com/news/hie-among-hospitals-grows-still-needs-improvement.

37. Julia Adler-Milstein, David W. Bates, and Ashish K. Jha, "Operational Health Information Exchanges Show Substantial Growth, But Long-Term Funding Remains a Concern," *Health Affairs* 32, no. 8 (August 2013): 1486–1492.

38. Ken Terry, "KLAS: 'Private' HIEs Leaving 'Public' HIEs in the Dust," *FierceHealthIT*, July 8, 2011, accessed at http://www.fiercehealthcare.com/it/klas-private-hies-leaving-public-hies-dust.

39. *HIT Trends* blog, April 2014, accessed at https://www.directtrust.org/directtrust-identifies-six-trends-for-electronic-health-information-exchange-and-interoperability-in-2016-2/.

40. Office of the National Coordinator for Health Information Technology (ONC), "Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap, Final Version 1.0," 2.

41. Rushika Fernandopulle and Neil Patel, "How the Electronic Health Record Did Not Measure Up to the Demands of Our Medical Home Practice," *Health Affairs*, April 2010, 622–628.

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