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Data-Driven Diffusion Of Innovations: Successes And Challenges In 3 Large-Scale Innovative Delivery Models

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Abstract

Failed diffusion of innovations may be linked to an inability to use and apply data, information, and knowledge to change perceptions of current practice and motivate change. Using qualitative and quantitative data from three large-scale health care delivery innovations—accountable care organizations, advanced primary care practice, and EvidenceNOW—we assessed where data-driven innovation is occurring and where challenges lie. We found that implementation of some technological components of innovation (for example, electronic health records) has occurred among health care organizations, but core functions needed to use data to drive innovation are lacking. Deficits include the inability to extract and aggregate data from the records; gaps in sharing data; and challenges in adopting advanced data functions, particularly those related to timely reporting of performance data. The unexpectedly high costs and burden incurred during implementation of the innovations have limited organizations' ability to address these and other deficits. Solutions that could help speed progress in data-driven innovation include facilitating peer-to-peer technical assistance, providing tailored feedback reports to providers from data aggregators, and using practice facilitators skilled in using data technology for quality improvement to help practices transform. Policy efforts that promote these solutions may enable more rapid uptake of and successful participation in innovative delivery system reforms.

The US health care system is experimenting with a range of innovative approaches to care delivery intended to address persistent quality and cost challenges. To work, these experiments require the diffusion of numerous innovations. Diffusing innovation is difficult, and theories such as Everett Rogers's seminal work on the core components of diffusion provide context for barriers and successes. Rogers analyzed how innovations spread in five stages, based on the following common components of diffusion: the innovation, its

The subset of results related to accountable care organizations (ACOs) was presented at the AcademyHealth Annual Research Meeting, June 14, 2015, in Minneapolis, MN.

adopters, communication of the innovation, the time it takes to spread, and the social system in which it spreads.[1]

A common component of innovation is the use of data, information, and knowledge to drive diffusion. One of the stages Rogers identified is *knowledge*, which may be supported by data that help illuminate gaps in current practice and the integration of new knowledge related to those gaps. Other stages of diffusion identified by Rogers may also be influenced by data, including the decision to implement the innovation, monitoring the implementation, and assessing its success. For example, decision making in health care is often influenced by data on social norms,[2–4] and others have shown that communicating to potential adopters the percentage of peers who have implemented an innovation may drive decisions about uptake and individual behavior.[5]

A key motivation for the large public and private investment in health information technology (IT)—technology intended to facilitate the capture and use of data to promote health—over the past decade was the desire to accelerate data-based health care innovations and to more easily and rapidly implement innovative approaches to health care delivery.[6] For instance, significant investment in electronic health record (EHR) systems in the US has led to their adoption by more than 80 percent of ambulatory care practices.[7] This, combined with the increased power and connectedness of information systems, should have enhanced organizations' capability to analyze and share data at high volumes with great velocity.[8–10] In theory, the infrastructure should now exist to provide health care administrators and front-line care teams with data to foster the uptake of innovations.[11] However, knowledge is lacking about providers' ability to use data to fuel innovation and about generalizable domains that can be transferred between innovation efforts of successes and challenges in the data-driven diffusion of innovation.[12–14]

To address these knowledge gaps, we identified a set of diverse, large-scale innovations in health care delivery. We describe the role of data and associated IT functions in the success of each innovation. Then, drawing on existing empirical evaluations of each innovation, we offer new evidence of domains in which data are and are not playing an influential role in supporting its diffusion. By identifying common themes, our findings reveal high-priority areas for strengthening the US data and health IT infrastructure and policies to support the important task of driving health system innovation.

Study Data And Methods

Overview

We selected three large-scale innovations in health care delivery that formally or informally included data-driven components. The innovations were purposively selected to capture a wide range of health care settings and perspectives. We analyzed data from these efforts retrospectively to assess the use of data and other components of health IT and the facilitation and support needed to assist in the uptake of data use capabilities to drive health care innovation.

Settings

The three innovations were accountable care organizations (ACOs), advanced primary care practice models,[15] and EvidenceNOW.[16]

ACOs, administered by the Centers for Medicare and Medicaid Services (CMS) through the Center for Medicare and Medicaid Innovation (CMMI) as well as by commercial payers, are large groups of health care organizations and practitioners who receive incentives to manage both the quality and total cost of care. With these incentives and their size, ACOs use data to drive the diffusion of innovations such as programs to reduce avoidable emergency department (ED) visits and hospitalizations.

In the Comprehensive Primary Care (CPC) initiative and the Comprehensive Primary Care Plus (CPC+) model—both also administered by the CMMI—primary care practices self-nominated if they felt ready to transform the way they practiced medicine to improve access and quality and lower costs using methods such as population health management.

Finally, EvidenceNOW, a large effort to transform quality improvement run by regional cooperatives and funded by the Agency for Healthcare Research and Quality,[15,16] focuses on increasing the use of cardiovascular preventive services among small and medium-size primary care practices having limited experience with quality improvement methods.[15] The cooperatives, similar to primary care extension agents,[17] provide technical and educational tools and other resources to help practices improve their patients' heart health.

Data And Analytic Approach

We analyzed the innovations based on the way data was used to disseminate the innovation lessons learned and challenges faced drawn from retrospective empirical data. These data came from surveys, qualitative analyses, and direct observation. For ACOs, we used data from a national survey that assessed their adoption and intensified use of health IT and performance reporting functions. This survey was conducted by investigators from the Harvard T. H. Chan School of Public Health from the fall of 2013 through the summer 2014,[18] and it targeted all Medicare Shared Savings and Pioneer ACOs (179 of the 252 ACOs responded to the survey).

For advanced primary care practices, we used public reports as well as practice surveys conducted in the fall of 2016 on health IT functions (thirty-seven practices) and experience with technical assistance (sixty-two practices).[19] We analyzed responses to a set of open-ended questions in each survey to understand how the use of data and information drove or limited success and to identify factors that enabled or inhibited providers to make changes like risk stratifying patients or enacting care coordination.

For EvidenceNOW, we used our own observations and interviews with the cooperatives' health IT experts—which we conducted as part of our evaluation of EvidenceNow—to understand the impact of health IT (especially EHRs) in achieving quality improvement and reducing cardiovascular risk.

We reached consensus on common themes related to the domains of success and challenges in the three innovations.

Limitations

Our study had several limitations. First, because we drew on existing data from independent evaluations of the three innovations we studied, we were limited in our ability to compare and contrast identical components and concepts related to the data-driven diffusion of innovation. As a result, not all dimensions of data-driven diffusion could be addressed in each of the innovations. Second, and relatedly, different methods were used in each evaluation, which produced different degrees of detail and nuance in our results.

Study Results

Exhibit 1 summarizes key aspects of the three innovation models' experiences engaging in intensive data-driven diffusion of innovation.

Innovation 1: Accountable Care Organizations

Overview—ACOs are provider-led organizations that agree to shift from fee-for-service payment to accepting some financial risk for overall spending and quality for a defined population. While fee-for-service payment creates pressure for high primary care caseloads and reliance on profitable specialty care, a value-based payment system encourages accountability for spending and quality performance.

How Data Are Used—Health IT, together with performance measurement, can help inform care management strategies that are relevant to ACOs. For example, real-time event notification of primary care providers can help avoid unnecessary ED visits and hospitalizations. Typically, this health IT solution sends some type of alert to primary care providers to tell them which patients are being treated at which hospital, sometimes with details about causes. After receiving these alerts, providers can redirect patients to more appropriate care and engage in follow-up care as needed. Closely related is health information exchange, in which providers can electronically share patient data across settings, to facilitate care coordination.

As another health IT example, ACOs may use personal health records to engage patients and their families in better managing their health. Typically, the personal health record takes the form of an online portal that offers general health education resources and allows patients to view test results, visit summaries, and other clinical data. Some personal health records use secure messaging to allow patients to email their care teams with questions or concerns.

A third type of health IT is the disease registry, which highlights trends in data for populations with specific illnesses and allows ACOs to target population health management efforts (for example, promoting increased screening among people with diabetes to improve their health outcomes). Registries can vary from simple databases to databases with complex analytic and data visualization options.

To effectively manage patient populations across care delivery settings, ACOs generally require additional data and measurement solutions beyond what is typically included in core health IT systems such as basic EHRs. These additional components are needed to provide timely access to comprehensive information on patient care processes and outcomes and on providers' performance on measures of quality and utilization. The numerous sources of this information include administrative and claims-based data systems that can generate reports on spending and utilization, as well as more advanced EHRs that provide detailed clinical data. Providers in ACOs need to access this information at the patient level to identify and address gaps in patient care. Also, ACOs need to aggregate such information across populations and health care settings to identify systematic opportunities for performance improvement (for example, reducing high rates of readmissions). Finally, ACOs use data to measure their own performance on the quality and efficiency of care and provide feedback to their leaders as well as to constituent practices, teams, and physicians to stimulate improvement.

Results—In the Harvard ACO survey whose results are summarized in exhibit 2, EHRs were the most widely adopted health IT solution. They were used in 97 percent of ACOs, followed by disease registries (65 percent), health information exchange between inpatient and outpatient settings (60 percent), personal health records (53 percent), provider alerting (44 percent), and patient-provider secure messaging (38 percent). The order differed somewhat for the types of health IT that ACOs reported using more intensively specifically to meet ACO-related needs.

Among ACOs, the use of data to support performance measurement was widespread. The most widely adopted type of performance measurement was reporting physician-level performance directly back to physicians (used by 73 percent of ACOs), followed by using dashboards that made performance measures available to a broad range of ACO stakeholders to monitor quality (67 percent). The prevalence of types of performance measurement that ACOs reported using more intensively specifically to meet ACO-related needs was similar: Both the reports of physician-level performance and the dashboards were used intensively by 72 percent of ACOs.

Despite widespread adoption and intensive use of health IT and performance measurement solutions, ACOs found it challenging to gain a complete picture of the care received by their patient populations when patients moved across settings, which reduced the ACOs' ability to manage and coordinate that care. While health IT and performance measurement are necessary to support these activities, results from the Harvard ACO survey suggest that data-related health IT solutions fall short of meeting current needs. For instance, 62 percent of ACOs reported that health information exchange between inpatient and outpatient settings was "very challenging," with another 29 percent reporting it as "somewhat challenging." Similarly, 57 percent of ACOs reported that enhancing their EHRs to support population management (for example, by adding disease registries to their EHR systems) was "very challenging," and 31 percent reported it as "somewhat challenging." Only 46 percent of ACOs reported that they had the ability to monitor in a timely way data on the cost and quality of care for their ACO patient populations (data from the Harvard ACO survey, not shown).

In addition, these health IT and performance measurement solutions, which in theory should be facilitating data availability at both the patient and the population levels, were largely not associated with the key activity necessary for ACO effectiveness: timely access to data about its patient populations. That is, there were no significant correlations between an ACO's adoption of these solutions and its reporting that it had timely access to data. Of greatest concern is that even when health IT and performance measurement were used intensively, that use was not associated with ACOs' reporting timely access to needed information. Without such access, ACOs fly blind, which likely impedes their ability to achieve performance improvement goals.

Innovation 2: Advanced Primary Care Practice

Overview—The CPC and CPC+ initiatives sought to use payment reform (assume partial financial risk) and technical assistance to transform more than three thousand primary care practices across the United States, based on the core components of patient-centered medical homes. These components included improving access to care, providing risk-stratified care management, improving care coordination across settings of care, engaging patients and families, and planning preventive and chronic illness care.[20,21]

How Data Are Used—Data and information systems were core components of the CPC and continue to be central to the CPC+. The interventions initially recommended and then required the adoption of EHRs and provided information about how EHRs could be used to better adopt other components of the intervention. For each component, progress was tracked electronically, using EHRs and other health IT systems such as population registries or health information exchanges. For risk-stratified care management in the CPC, providers used an algorithm or physician assessment to score patients' health risk and entered the scores into the EHRs for review and use in care management. For the purposes of planning care, clinical quality measures were calculated from data and rules stored in health IT systems such as EHRs and registries. To coordinate the care of individual patients, providers relied on health information exchange systems to track patients from the hospital to home care, with information required to be entered within forty-eight hours of hospital discharge. To improve access to information relevant to patient care, 24/7 availability of the EHR was required. Later, providers were required to offer alternative visit types, such as electronic or tele-visits and virtual consultations.[22]

To assist with diffusion CMMI provided data-driven technical assistance to communicate required changes and motivate practices. For instance, the CMMI gave practices specific electronic feedback reports each quarter with quality measures, patient experience, and utilization-of-care averages; peer comparisons; and benchmarks (or standard goals to achieve) at the practice, provider, and patient levels. Online resources for practices included a website and portal through which physicians could share materials and engage in conversations with peers and experts. Connections to health IT registries, health information exchanges, and EHR vendors were facilitated by technical assistance provided by CMMI contractors.

Nearly all practices had EHRs at baseline, but the adoption of new EHR functions to accomplish the goals of the innovation was a core expectation.

Results—Under the CPC and CPC+ initiatives, practices adopted a wide range of new health IT functions, including using EHRs and health information exchanges to facilitate care management referrals, care planning, communication with patients and other team members, and follow-up.[21,22] For instance, 93 percent of practices used electronic patient portals to enhance access for patients.[22] In addition, practices reported significant improvements in electronic communication about patients' transitions across care settings and in the adoption of new tools to receive patient utilization information in near-real time and share patient care plans across settings. For example, respondents identified the Emergency Department Information Exchange system as helpful in allowing hospitals and EDs to share information about patients and care plans. Respondents reported that tailored assistance with data and reporting was helpful in getting started with using data regularly, and those who received such assistance were twice as likely to share data with the entire practice team. However, practices had lower trust of EHR-generated reports if they could not validate or manually change the reports to improve data quality and accuracy. The most disruptive challenge reported was making changes to the EHR, which led to loss of data and practice time. EHR implementations also required constant updating and changing, which led to inaccurate reports and broken EHR functions, such as risk stratification scores no longer able to be calculated. Practices that were part of health systems reported slower changes to EHR functions and reports than independently owned practices.

Practices reported improving their use of data and algorithms for risk stratification over the four years of the CPC. By 2016, 81 percent of practices were routinely using clinical data in assessing risk stratification and quality improvement (exhibit 3). However, health IT and data-related issues were two of the top 4 challenges to practices' success; responses indicated frustration at what practices perceived couldn't be done by the technology.

Data-driven technical assistance to practices from CMMI contractors, such as online technical assistance, improved communication and feedback. Practices noted that using the online technical assistance portal for communication as the second most helpful component of technical assistance (45 percent found it helpful) in adopting the innovation, just behind help from other practices (48 percent).

Challenges reported by practices to technical assistance providers included difficulty sharing experiences, technical requirements, and how to create accurate reports, even between practices with the same EHR. In turn, these challenges complicated attempts to compare performance across practices. Communication—especially from payers to practices—using the portal was also difficult, as a result of exaggeratedperceptions of appropriate security requirements to maintain patient privacy and confidentiality by organizational leadership.

Innovation 3: EvidenceNOW

Overview—The Agency for Healthcare Research and Quality created the EvidenceNOW initiative in 2015 to promote the use of evidence-based cardiovascular disease preventive care in smaller primary care practices with limited quality improvement capabilities.

EvidenceNOW consists of seven regional cooperatives, each of which serves about two hundred practices. These cooperatives connect practices with technical assistance to help them increase their quality improvement capabilities and implement the “ABCs” of heart health: aspirin, blood pressure control, lowering cholesterol, and smoking cessation.

How Data Are Used—EvidenceNOW did not explicitly require practices to use health IT. Instead, practices were required to report quality measures quarterly to their regional cooperative and national evaluators. Many practices used these data to identify quality deficits and then take the steps needed to improve performance and to monitor whether practice changes were working. Some cooperatives shared data with practices each quarter, showing them benchmarks of their performance on the “ABCs” and how they compared to other practices on these quality metrics.

Results—EvidenceNOW practices tended to have fewer than ten clinicians each, and 40 percent of the practices were clinician owned. More than sixty different EHR systems were in use across practices; most of these were certified, and most were not new implementations. More than half of the practices reported participating in the meaningful-use EHR incentive program, and more than half reported that they could produce quality reports using their EHR system. Nevertheless, many practices could not produce such reports for a range of reasons, including that their EHR did not allow for customization of the measurement period to align with quality improvement timelines. These timelines were often short periods during which practices would try an intervention—such as implementing standardized protocols for taking or retaking accurate blood pressure measurements—and then assess how well they did (periods known as plan-do-study-act cycles). Cooperatives provided infrastructure and support to help practices get usable data for quality improvement. In some cooperatives, data warehouses or health information exchanges produced these data for practices. Other cooperatives hired people help facilitate practices’ ability to use their EHRs to perform these quality measurements, which—in some cases—included relying on manual audits of patients’ electronic records. Extracting and comparing data involved many other challenges, including the variety of locations for data storage, lack of access to the data, and inconsistent implementation of measures across practices.

Discussion

The US health care system is pursuing multiple types of innovations to try to improve the value of health care by addressing cost and quality shortcomings. To assist in the adoption of innovations, the use of data and health IT—tailored to the particular innovation model—is crucial. We have described three large-scale innovations and how the use of data and health IT supported each model.

By synthesizing information collected from the innovations, we have highlighted cross-cutting themes and challenges. Three common themes emerged: Heath IT adoption was substantial yet insufficient; data were difficult to access and share, making them less comprehensive and timely; and technical assistance was needed to overcome barriers. EHRs were largely adopted by participants in the early stages. In ACOs and the CPC and CPC+ initiatives, a strong emphasis was placed on the use of data to drive the innovation, and

health IT was implemented to achieve that goal. For ACOs, the types of health IT solutions pursued included registries and messaging functionalities, while in advanced primary care practice, additional measurement and population health functions were pursued.

The resources and organizational burden required to adopt both initial EHRs and supplemental health IT functions were greater than stakeholders expected. Nonetheless, the adopted functions were not perceived as sufficient to drive uptake of the innovation. In particular, while participants achieved the widespread ability to capture data, there were substantial limitations to how easily and effectively the data could be accessed and used across a wide range of purposes. Efforts to extract, transform, share, and use data to improve were limited by technical issues (as both large ACOs and small practices reported), costs, workforce limitations, the systems' functional limitations, barriers to interoperability, and barriers to the aggregation and comparison of data.

Participants in different innovations had different perspectives on these problems. ACOs were able to successfully invest in intensifying use of needed functions but then struggled to translate these investments into timely access to needed data. In the primary care practice–based innovations, simply adding needed supplemental functions—particularly those related to reporting measures of quality or utilization—was difficult despite significant effort. Technical assistance helped facilitate some data-related functions, such as the aggregation of physician or practice performance measures into benchmarked comparison reports, and technical assistance staff facilitating discussions between practices and EHR vendors about how best to achieve functional requirements. However, because participants spent so much time and so many resources on issues related to health IT, their ability to continue to make progress and implement the more critical behavior change components of the innovation was limited.

By and large, diffusing these innovations led to more implementation of health IT, but challenges in accessing and using data to fully transform care persisted. These challenges may have been exacerbated by the same program that facilitated the adoption of EHRs for the initiatives: the meaningful-use program. This program, developed and administered by CMS and the Office of the National Coordinator for Health Information Technology, provided incentives for EHR adoption and use but was widely perceived to be quite prescriptive and inflexible, requiring participants to adopt a set of specific functions related to data entry (for example, mandating the use of patient problem lists, social history, and other components). The program's specific requirements may have focused attention and resources in a way that failed to account for the data and technology needs of specific innovation models. To remedy this, CMS and ONC could respond to innovations' needs more flexibly by refining certification requirements to allow participants to follow different pathways of implementation to reach common goals such as information sharing.

Successful innovation relies on the ease of information sharing and timely measurement, yet providers continue to find these lacking with health IT. Without careful planning, the diffusion of innovative models will continue to be thwarted by gaps sharing of information and in functions of data systems. More could be done to encourage vendors to make data more accessible for quality improvement. Heath IT requirements could be made more

flexible to meet the needs of innovators, and experienced organizations could be called upon to help other organizations overcome these challenges.

Policy Implications

One of the most important findings from each of the initiatives described in this article is that the health IT infrastructures they adopted were neither sufficient nor able to be enhanced rapidly enough to facilitate achieving the initiatives' goals. The Medicare Access and CHIP Reauthorization Act (MACRA) of 2015 is ushering in a shift to value-based payment by Medicare under streamlined incentive programs. The previous reliance on disparate health IT and quality incentive programs thus is giving way to a more integrated approach under MACRA. There will be decreased reliance on rigid components related to data and information, allowing practices to select health IT innovations that match their transformation needs instead of those that meet strict program requirements. The shift from fee-for-service to value-based payment in the advanced alternative payment programs under MACRA may also facilitate targeted investments in HIT capabilities. Instead of reliance on providers to use their EHR systems to collect, manage, and provide needed data, a better approach might be the use of centralized entities such as state-based transformation centers or Quality Improvement Organizations experienced in the data-driven components of innovation. Policies that focus on the end goal of ease of information sharing and improved patient care, rather than the details of the technology to be adopted, may help build functionality.

Another critical finding was the range of barriers to the successful diffusion of data and system improvements. The source of these barriers—which included the lack of system interoperability and functions to easily share data—is beginning to be addressed, in part, through the Office of the National Coordinator for Health Information Technology, whose investments have improved the standards for data exchange (such as the Fast Healthcare Interoperability Resources standard) and have set policies in place that require vendors to use application programing interfaces and documents in standardized formats standardized dfor sharing key data elements. As these become more widely used, they may reduce practices' workforce burden by making it easier for health IT developers to implement needed new functions in added modules, rather than directly in monolithic EHR systems.[23] For example, decision support rules could be automatically updated in an external knowledge-based software application system, and the EHR could send patient data to the external system and receive recommendations back in near-real time. The Office of the National Coordinator for Health Information Technology has also worked to require more usability testing by vendors as part of the EHR certification program, to make it easier for practices to adopt and use a set of core EHR and data exchange functions. Federal efforts could be bolstered if organizations involved in the innovations collectively engaged vendors to improve health IT functions required for the innovations. For example, in the CPC+ model, practices on the advanced track were required to obtain health IT vendors' signed agreements to would provide the needed functions.[20] Similar approaches may be useful among ACOs or future initiatives similar to EvidenceNOW.

Conclusion

At a time when stakeholders expected that the substantial national investment in health IT and electronic data would be paying off in the successful adoption of data-driven innovation models in health care delivery, evidence from three large-scale and diverse innovations suggests that this is not yet the case. Broadening collaborative efforts within innovation communities, in conjunction with policies directed at improving and increasing the flexible use of health IT functions, is likely necessary to make data-driven innovation of health care delivery a reality.

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Exhibit 1

Descriptions of innovation models, by type

	Large integrated care	**Advanced primary care**	**Primary care quality improvement**
Innovation example	ACOs	CPC and CPC+	EvidenceNOW
Description	Providers, payers hospitals, and health systems that take financial risk to provide coordinated, high-quality care for populations	Collaboratives of primary care practices that agree to coordinate and manage care for populations in return for additional payment	Primary care practices enrolled by cooperatives to enhance quality improvement capability, with a focus on heart health outcomes
Size	251 federally-sponsored ACOs in 2014, 480 in 2016, covering more than nine million people	441 practices (CPC) in seven regions (2012–16); 2,866 practices (CPC+) in fourteen regions (2017)	1,493 practices assisted by seven regional cooperatives (2015–17)
Funding	CMS, program run by CMMI Commercial payers	CMS or other payers, program run by CMMI	Agency for Healthcare Research and Quality
Technical assistance	ACOs engage their own technical assistance and support; the ACO Learning Network and subsequent organizations helped guide these efforts.	Assistance is provided by national and regional learning collaboratives and health IT support. Resources include standard reports and quality, patient experience, and utilization measurement, along with online repositories containing example health IT configurations and workflows	Cooperatives provide tools, facilitation, and education, while a central technical assistance group identifies needs and provides education across cooperatives.

SOURCE Authors' analysis. NOTES ACO is accountable care organization. CPC is the Comprehensive Primary Care initiative. CPC+ is Comprehensive Primary Care Plus. CMS is the Centers for Medicare and Medicaid Services. CMMI is the Center for Medicare and Medicaid Innovation. IT is information technology.

Exhibit 2

Adoption and intensified use of health information technology (IT) and performance reporting functions by CMS accountable care organizations (ACOs)

	ACOs adopting (%)	**ACOs using more intensively (%)**
Type of health IT used		
Electronic health records	97	42
Disease registries	65	53
Health information exchange	60	47
Personal health records	53	33
Provider alerting	44	52
Patient-provider secure messaging	39	31
Performance measurement		
Physician-level measurement	73	72
Dashboard for multiple stakeholders	67	72
Level of challenge perceived by ACOs	**Very challenging (%)**	**Somewhat challenging (%)**
Health information exchange	62	29
Enhancing EHRs for population management	57	31

SOURCE Authors' analysis of data for 2013–14 from the ACO survey conducted by the Harvard T. H. Chan School of Public Health. NOTE EHR is electronic health record.

Exhibit 3

Advanced primary care practices' experience with health information technology (IT) for practice transformation related to risk stratification and care management

	Percent of practices or rank given by practices
Use of health IT data and systems for risk stratification and care management	
Any health IT	81%
EHR or clinical data and tools	61
Payer reports	37
Interactive registry or population management tool	21
Largest challenges (by rank)	
Physician and staff buy-in	1
Turnover or staffing	2
Reporting	3
Data-related issues	4
Resources used to address challenges	
Other practice(s)	48%
Website and online portal	45
Practice facilitators	36

SOURCE Authors' analysis of data for 2015–16 from the risk-stratification survey conducted by Oregon Health and Science University and for 2016 from the technical assistance survey conducted by the university. NOTE EHR is electronic health record.