

Use of Electronic Health Record Systems in Accountable Care Organizations

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Electronic health records (EHRs) have been the centerpiece of modernizing the US health care delivery system, promising everything from greater efficiency to better patient engagement.^{1,2} The latest ambition is better safety and quality through the use of electronic clinical quality measures (eCQMs). These measures, which are being implemented for accountable care organizations (ACOs) beginning in 2023 as part of the 2021 Medicare Physician Fee Schedule final rule,³ draw on EHR data elements for diagnoses, services, and laboratory values⁴ and should be a simple extension of current EHR functionality, reducing the burden of manual abstraction and reporting.⁵ However, ACOs and other complex delivery systems utilize multiple EHR systems, many of which have limited functionality, making it complex and costly to benefit from this new way of reporting quality measures. This study seeks to analyze the key challenges facing ACOs as they move toward eCQMs and the added challenges for ACOs with multiple EHR systems.

BACKGROUND

EHRs

There is evidence that EHRs have improved health care by improving data documentation,⁶ decreasing medication errors,⁷ and improving ability to share information across providers.⁸ At the same time, EHRs are also contributing to medical errors and clinician burnout, problems either driven or exacerbated by the lack of interoperability between records.¹ This lack of interoperability presents a deeper issue. Health care systems, made up of hospitals and clinician groups, are complex, and, as they develop over time, even a single corporate entity may have multiple legacy EHR systems. Although some are in a single-EHR environment, the rest need to find ways to make multiple EHR platforms interoperable to share data within their own system.⁹ This problem is compounded for ACOs and other groups of clinicians, as they may represent multiple health care systems, each with their own set of EHR platforms, joining together into an even larger group to provide value-based care.

ABSTRACT

OBJECTIVES: To assess the ability of accountable care organizations (ACOs) to use electronic health record (EHR) data for quality.

STUDY DESIGN: Cross-sectional study of ACOs participating in the Medicare Shared Savings Program (MSSP).

METHODS: A national survey of MSSP ACOs included questions on the number of EHR systems used across all providers in the ACO and barriers to reporting EHR-based quality measures.

RESULTS: Just 9% of ACOs use a single EHR system, whereas 77% use 6 or more EHR systems. The more EHR systems an ACO uses, the less likely it is to report having the infrastructure to aggregate EHR data and the more concerned it is about the short-term viability and accuracy of EHR-based quality measures.

CONCLUSIONS: ACOs have diverse structures that often result in the usage of multiple EHR systems. This has the potential to cause serious delays when CMS begins requiring ACOs to report their quality measures through their EHRs in 2022.

Am J Manag Care. 2022;28(1):e31-e34. doi:10.37765/ajmc.2022.88818

TAKEAWAY POINTS

The usage of multiple electronic health record (EHR) systems is a common occurrence among accountable care organizations (ACOs). This paper summarizes the results of a survey on EHR usage within ACOs and discusses some of the issues this may present in reporting quality measures, including that:

- ▶ Just 9% of surveyed ACOs use a single EHR system throughout their entire organization;
- ▶ 77% of surveyed ACOs use 6 or more EHR systems; and
- ▶ Among the 37% of Medicare Shared Savings Program ACOs with 16 or more EHR systems, concerns about EHR-based quality measures include access to data, standardization of data elements, and cost of integrating across systems.

eCQMs

eCQMs are quality measures that use data extracted from EHRs or other health information technology.⁵ They are currently required for acute care, critical access, and dual-eligible hospitals participating in CMS' Promoting Interoperability Programs.¹⁰ There are reasons for this, as their virtues include being able to use clinical data to assess the outcomes of treatment, reducing the burden of manual abstraction and reporting, and working toward providing the ability to access real-time data for point-of-care quality improvement.⁵ However, similarly to EHRs, eCQMs also have their drawbacks. A recent study found that system-owned physician practices struggled to report cardiovascular eCQMs, taking up to 15 months to submit results.¹¹ Another study found that the median time for a physician practice to report at least 1 of 4 eCQMs was more than 8 months, although they did find that practices in ACOs tended to be able to report more quickly.¹² In addition to problems reporting results, a recent study in Kansas found that 15% of EHR-based measures were missing information when patients moved between facilities (eg, hospital to skilled nursing facility).¹³

ACOs and Complexity

An ACO is a set of providers who take on risk for managing the total cost of care for a given population of patients. CMS sponsors ACO models for Medicare beneficiaries, but there are also commercial ACOs, such as the Blue Cross Blue Shield of Massachusetts Alternative Quality Contract, and Medicaid ACOs. The organizational structures of ACOs vary widely, ranging from small clinician groups with no hospitals and fewer than 100 total providers to large groups with more than a dozen hospitals and thousands of providers.¹⁴ Federally qualified health centers and rural health centers can also participate. ACOs are often formed by a number of different individual clinical practices coming together. Twenty percent of the time, those forming an ACO are part of an already existing organization, and in more than 50% of cases, the groups forming the ACO have never pursued a risk-based contract together. In these newly formed ACOs, providers share the same EHR system 20% of the time.¹⁵

As a result, ACOs may have providers using numerous different EHR systems, ranging from simple tools, such as NueMD, to more sophisticated tools supported by large companies, such as Epic and Cerner. This diversity poses challenges for data integration,

quality reporting, care coordination, and other functions for which the ACO needs to extract and share information stored in an EHR.¹⁴

METHODS

This cross-sectional study of CMS Medicare Shared Savings Program (MSSP) ACOs used a web-based survey to gather information on the number of EHR systems currently in use across ACO networks in the spring of 2021. This question was part of a larger survey looking at

the impact of a recent overhaul of the ACO quality reporting process included in the 2021 Medicare Physician Fee Schedule final rule that was due to go into effect in 2021 and 2022, with a specific focus on the effects of the change in how quality measures will be reported.

Sample

The survey was sent to all MSSP ACOs that were active in 2021, with targeted outreach to members of the National Association of ACOs (NAACOS). We received responses from a total of 163 MSSP ACOs. The point of contact for the survey was either the primary ACO contact from CMS' list of 2021 MSSP ACOs or the primary or secondary contact from the NAACOS database.

Tool

Survey questions were developed by ACO experts at NAACOS and the Institute for Accountable Care. Specific items were pilot tested with ACO leaders on the NAACOS Quality Committee. The survey was distributed through the Alchemer platform via an introductory email in which the first question was embedded, with a response triggering the launch of the remainder of the survey. Respondents received 3 reminder emails, each of which included a link to the full survey.

Measures and Data

The primary question of interest asks: "How many EHRs do the practices/participant Taxpayer Identification Numbers (TINs) in your ACO use?" Additional questions asked about ease of integrating EHR data and implementing eCQMs. Survey responses were linked with the 2020 MSSP Public Use File to determine the characteristics of responders vs nonresponders. ACO high revenue status was included as an indicator of size/capital reserves. CMS considers an ACO high revenue if its total Medicare Part A and Part B expenditures far exceed its expenditures on ACO beneficiaries (the threshold is 35% or more of total A+B revenue for ACO participants / total A+B expenditures for ACO's assigned beneficiaries). ACO size is defined by the number of unique beneficiaries participating in the model.

Analysis

The descriptive analysis shows characteristics of ACOs by the number of EHR systems.

RESULTS

Of 477 MSSP ACOs in 2021, there were 163 respondents, for a response rate of 34%. As can be seen in **Table 1**, survey respondents tend to have more attributed beneficiaries and more providers and are more likely to be considered high revenue, an indicator of significant Medicare reimbursements outside the ACO program, than the MSSP ACO population as a whole. As shown in **Table 2**, only 9% of respondents have a single EHR system, with an additional 14% using between 2 and 5 EHR systems.

Large numbers of EHR systems are common, with 40% having 6 to 15 different systems and almost 40% having 16 or more systems. ACOs with more beneficiaries and provider groups (as defined by TINs) are more likely to have multiple EHR systems, and, consequently, they need to make greater investments to integrate their data. For example, 49% of those with 16 or more EHR systems are large, with more than 25,000 beneficiaries, compared with just one-third of those with 1 EHR system. Those in the group with 16 or more EHR systems are also least likely to have software to integrate EHRs (23% compared with 48% for those with 2-5 EHR systems) and most likely to report challenges with adding needed integration infrastructure (62% compared with 30% for those with 2-5 EHR systems).

Finally, ACOs with only 1 EHR system report the fewest concerns about moving into an eCQM reporting system. Only 29% of the single-system ACOs report concerns with data access and just 21% have concerns about standardization across EHRs. This is in stark contrast to the 67% of the ACOs with 16 or more EHR systems concerned with data access and 82% concerned with standardization across EHRs.

DISCUSSION

ACOs have diverse structures that often cut across organizations or provider groups. This frequently results in multiple EHR systems within the same ACO, many of which vary in terms of sophistication and ability to export data. In addition to different data models, EHR systems may differ in terms of quality, completeness, and even which data elements are in a standard, machine-readable format (as opposed to clinician notes). This makes it administratively burdensome for these organizations to draw on EHR data for quality or other types of reporting, such as eCQMs, at this time. Furthermore, data integration is likely to come with unanticipated

expenses, staff training, new data validation processes, changes in workflow for providers, and other logistical and legal considerations. It is also important to note that the accuracy of measures may be low, particularly early in the data integration process when different EHR systems may have different definitions for the same field.

Limitations

There are a few limitations that should be kept in mind when interpreting these results. First, respondents tend to be larger MSSP

TABLE 1. Characteristics of MSSP ACO Survey Respondents Compared With Nonrespondent 2021 MSSP ACOs

Characteristic	Survey respondents (n = 158)	Survey nonrespondents (n = 319)	P ^a
ACO size			
Small (5000-10,000 beneficiaries)	23% (37)	39% (126)	<.01
Medium (11,000-25,000 beneficiaries)	42% (66)	42% (133)	.98
Large (> 25,000 beneficiaries)	35% (55)	19% (60)	<.01
Physician led (low revenue)	42% (67)	57% (181)	<.01
Mean number of primary care providers	349	254	.01
Member of NAACOS	85% (135)	52% (166)	<.01

ACO, accountable care organization; IAC, Institute for Accountable Care; MSSP, Medicare Shared Savings Program; NAACOS, National Association of ACOs.

^aP values were determined using χ^2 tests.

Sources: NAACOS/IAC survey of MSSP ACOs, spring 2021; MSSP Public Use File, 2020; MSSP participant list, 2021.

TABLE 2. Data Integration and Quality Measure Reporting Capabilities by Number of EHR Systems Within MSSP ACOs

Capabilities	Number of EHR systems within ACO				P ^a
	1 EHR (n = 14)	2-5 EHRs (n = 23)	6-15 EHRs (n = 66)	≥ 16 EHRs (n = 60)	
ACOs in each EHR category	9%	14%	40%	37%	
ACO has infrastructure to aggregate EHR data, n (%)	11 (79%)	9 (39%)	10 (15%)	8 (13%)	<.01
ACO finds it very difficult to add infrastructure to aggregate data across EHRs, n (%)	1 (7%)	7 (30%)	28 (42%)	37 (62%)	.02
ACO anticipates paying for registries or other systems changes, n (%)	6 (43%)	17 (74%)	59 (89%)	49 (82%)	.35
ACO concerns with moving to eCQMs/MIPS CQMs for ACO quality reporting, n (%)					
Contractual issues	1 (7%)	1 (4%)	4 (6%)	8 (13%)	.46
Data access	4 (29%)	19 (83%)	58 (88%)	40 (67%)	.10
Lack of standardization across EHRs	3 (21%)	20 (87%)	59 (89%)	49 (82%)	.08
Cost of implementation	5 (36%)	13 (56%)	52 (79%)	39 (65%)	.28

ACO, accountable care organization; CQM, clinical quality measure; eCQM, electronic CQM; EHR, electronic health record; IAC, Institute for Accountable Care; MIPS, Merit-based Incentive Payment System; MSSP, Medicare Shared Savings Program.

^aP values were determined using χ^2 tests.

Source: NAACOS/IAC survey of MSSP ACOs, spring 2021.

TRENDS FROM THE FIELD

ACOs. It is hard to know whether smaller ACOs face the same degree of EHR integration challenges as larger ACOs. On one hand, they may be singular entities with a single EHR system, although it seems plausible to assume that independent groups that come together to form an ACO also have numerous legacy health record systems. Second, the study is cross-sectional, reflecting the technology of mid-2021. ACOs may have made data integration improvements since the time of the survey. Finally, we cannot say whether the challenges described are caused by having more EHR systems in use or whether there is another confounding factor (eg, size and complexity of ACO activity) that both is the cause of the numerous EHR systems in ACOs and makes aspects of coordination, such as eCQM reporting, difficult.

CONCLUSIONS

To fulfill the potential of EHR technology and advance the use of eCQMs, EHR vendors have to increase the availability of data integration tools and software that allow ACOs to efficiently gather data across different platforms. There is some hope that the 21st Century Cures Act, which sets up certain criteria for certification for application program interfaces (APIs), will ultimately result in the establishment of a standard for health care quality exchange.¹⁶ APIs are software intermediaries that allow 2 programs to talk to each other.¹⁷ Thus, in theory, standardizing APIs would make it easier to connect EHRs when it comes time to report eCQMs. In practice, however, the timeline for such standardization is still unclear. HHS' Trusted Exchange Framework and Common Agreement, billed as a nationwide on-ramp to interoperability, is not due to go live until 2022, more than 3 years after an initial draft was released.¹⁸ CMS is also behind in implementing its interoperability agenda.¹⁹ This leaves ACOs in a difficult position. They are required to begin reporting at least 1 eCQM in 2023.

With no clear idea of when interoperability among their many EHR systems will become a realistic option, many ACO leaders are worried. Specifically, concerns about the completeness and accuracy of the data they will be able to provide in this new setting are forcing many ACOs to hire vendors or additional analysts—expensive moves that they worry will hinder their ability to achieve shared savings.³ Vendors can help in the short term by precoding eCQMs into their records, allowing ACOs to export results rather than data elements. Alternatively, expanding the data dictionaries for capturing an ACO's core measures has the potential to provide a workaround that does not rely on EHR interoperability.²⁰

Ultimately, value-based payment models require meaningful, actionable, and patient-centered quality measures to succeed. eCQMs are an example of how EHR platforms can help create a real-time quality and patient management infrastructure across the US health care delivery system. However, without timely solutions to the issues of data aggregation, any movement toward

eCQMs has the potential to create more problems, in the short term, than it solves. ■

Acknowledgments

The authors would like to acknowledge the contributions of Jennifer Gasperini, who reviewed drafts of this paper, and the members of the NAACOS Policy Committee for their contributions to reviewing the survey tool.

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Source of Funding: This project was self-funded.

Author Disclosures: Mr Sobul has attended meetings of the National Association of ACOs with accountable care organization leaders.

Authorship Information: Concept and design (JP, SS); acquisition of data (SS); analysis and interpretation of data (JP, SS); drafting of the manuscript (JP, SS); critical revision of the manuscript for important intellectual content (JP, SS); and supervision (JP).

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REFERENCES

1. Fry E, Schulte F. Death by a thousand clicks: where electronic health records went wrong. *Fortune*. March 18, 2019. Accessed July 16, 2021. <https://fortune.com/longform/medical-records/>
2. Hoffer EP. America's health care system is broken: what went wrong and how we can fix it, part 5: malpractice, fraud, waste, and the EMR. *Am J Med*. 2019;132(10):1129-1132. doi:10.1016/j.amjmed.2019.05.009
3. Raths D. ACO execs describe painful transition to eCQM reporting. *Healthcare Innovation*. October 1, 2021. Accessed October 19, 2021. <https://www.hcinovationgroup.com/policy-value-based-care/value-based-care-quality-measurement/article/21240663/aco-exec-describe-painful-transition-to-ecqm-reporting>
4. Using health IT for care coordination: insights from six Medicare accountable care organizations. HHS Office of Inspector General. May 17, 2019. Accessed July 16, 2021. <https://oig.hhs.gov/oei/reports/oei-01-16-00180.pdf>
5. Getting started with eCQMs. eCQI Resource Center. Accessed July 16, 2021. https://ecqi.healthit.gov/ecqms?qt-tabs_ecqm=0
6. Nguyen L, Bellucci E, Nguyen LT. Electronic health records implementation: an evaluation of information system impact and contingency factors. *Int J Med Inform*. 2014;83(11):779-796. doi:10.1016/j.ijmedinf.2014.06.011
7. Tubaihsat A. The effect of electronic health records on patient safety: a qualitative exploratory study. *Inform Health Soc Care*. 2019;44(1):79-91. doi:10.1080/17538157.2017.1398753
8. Feldman SS, Bhavsar GP, Schooley BL. Consumer perceptions of health IT utilization and benefits. *JAMA Open*. 2019;2(1):99-106. doi:10.1093/jamiaopen/oo049
9. Vest JR, Unruh MA, Freedman S, Simon K. Health systems' use of enterprise health information exchange vs single electronic health record vendor environments and unplanned readmissions. *J Am Med Inform Assoc*. 2019;26(10):989-998. doi:10.1093/jamia/oc2116
10. Electronic clinical quality measures basics. CMS. Accessed October 18, 2021. <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/ClinicalQualityMeasures>
11. Parchman ML, Anderson ML, Penfold RB, Kuo E, Dorr DA. The ability of practices to report clinical quality measures: more evidence of the size paradox? *J Am Board Fam Med*. 2020;33(4):620-625. doi:10.3122/jabfm.2020.04.190369
12. Knierim KE, Hall TL, Dickinson LM, et al. Primary care practices' ability to report electronic clinical quality measures in the EvidenceNOW Southwest initiative to improve heart health. *JAMA Netw Open*. 2019;2(8):e198569. doi:10.1001/jamanetworkopen.2019.8569
13. D'Amore JD, McCrary LK, Denson J, et al. Clinical data sharing improves quality measurement and patient safety. *J Am Med Inform Assoc*. 2021;28(7):1534-1542. doi:10.1093/jamia/ocab039
14. Performance year financial and quality results. CMS. Accessed January 4, 2022. <https://data.cms.gov/medicare-shared-savings-program/performance-year-financial-and-quality-results>
15. Lewis VA, Tierney KI, Colla CH, Shortell SM. The new frontier of strategic alliances in health care: new partnerships under accountable care organizations. *Soc Sci Med*. 2017;190:1-10. doi:10.1016/j.socscimed.2017.04.054
16. Office of the National Coordinator for Health Information Technology, HHS. 21st Century Cures Act: interoperability, information blocking, and the ONC Health IT Certification Program. *Fed Regist*. 2020;85(85):25642-25961.
17. What is an API? (application programming interface). MuleSoft. Accessed October 18, 2021. <https://www.mulesoft.com/resources/api/what-is-an-api>
18. Pifer R. Long-awaited interoperability framework TECCA to go live in 2022, ONC says. *Healthcare Dive*. July 14, 2021. Accessed October 19, 2021. <https://www.healthcaredive.com/news/long-awaited-interoperability-framework-tecca-to-go-live-in-2022-nc-says/603259/>
19. Schreiber M, Andress J. Transforming CMS quality measurement in the digital age. *Healthcare Information and Management Systems Society*. August 12, 2021. Accessed January 4, 2022. https://www.himss.org/sites/hde/files/handout-188_529.pdf
20. Hidden dangers in electronic clinical quality measures (eCQMs). Nuance. April 2019. Accessed December 6, 2021. https://www.nuance.com/content/dam/nuance/en_us/collateral/healthcare/white-paper/wp-hidden-dangers-in-electronic-clinical-quality-measures-ecqms-en-us.pdf

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