



March 2017

HEALTH INFORMATION TECHNOLOGY

HHS Should Assess the Effectiveness of Its Efforts to Enhance Patient Access to and Use of Electronic Health Information

Accessible Version

GAO Highlights

Highlights of [GAO-17-305](#), a report to congressional requesters

Why GAO Did This Study

HHS's goal is that all Americans will be able to electronically access their longitudinal health information, that is, their health information over time. HHS's efforts to achieve this goal include the Medicare EHR Program and other efforts to encourage providers to make patient health information available and for patients to access such information.

GAO was asked to review the state of patients' electronic access to their health information. This report (1) describes the electronic access to health information available to patients, and patients' views of this access, (2) describes the extent to which patients electronically access their health information, and actions providers reported taking to encourage such access, and (3) evaluates HHS's efforts to advance patients' ability to electronically access their health information. GAO analyzed data from HHS and other sources; reviewed applicable strategic planning documents; surveyed a generalizable sample of providers that participated in the Medicare EHR program; and interviewed HHS officials and a nongeneralizable sample of patients, providers, and health information technology product developers.

What GAO Recommends

GAO recommends that HHS 1) develop performance measures to assess outcomes of key efforts related to patients' electronic access to longitudinal health information, and 2) use the information from these measures to help achieve program goals. HHS concurred with the recommendations.

View [GAO-17-305](#). For more information, contact Carolyn Yocom at (202) 512-7114 or yocomc@gao.gov.

March 2017

HEALTH INFORMATION TECHNOLOGY

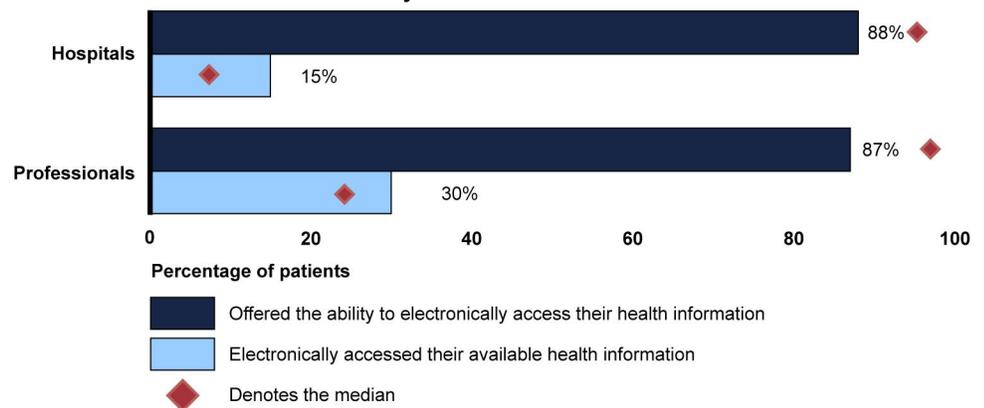
HHS Should Assess the Effectiveness of Its Efforts to Enhance Patient Access to and Use of Electronic Health Information

What GAO Found

Since 2009, the Department of Health and Human Services (HHS) has invested over \$35 billion in health information technology, including efforts to enhance patient access to and use of electronic health information. One of the largest programs is the Centers for Medicare & Medicaid Services' (CMS) Medicare Electronic Health Record Incentive Program (Medicare EHR Program), which, among other things, encourages providers to make electronic health information available to patients. Program data for 2015 show that health care providers that participated in the program (3,218 hospitals and 194,200 health care professionals such as physicians) offered most of their patients the ability to electronically access health information. Patients generally described this access as beneficial, but noted limitations such as the inability to aggregate their longitudinal health information from multiple sources into a single record.

Data from the 2015 Medicare EHR Program show that relatively few patients electronically access their health information when offered the ability to do so. Patients GAO interviewed described primarily accessing health information before or after a health care encounter, such as reviewing the results of a laboratory test or sharing information with another provider.

Average Percentage of Patients of 2015 Medicare EHR Program Participating Providers Who Were Offered Access and Electronically Accessed Available Health Information



Source: GAO analysis of HHS data. | GAO-17-305

While HHS has multiple efforts to enhance patients' ability to access their electronic health information, it lacks information on the effectiveness of these efforts. The Office of the National Coordinator for Health Information Technology (ONC) within HHS collaborates with CMS to assess CMS's Medicare EHR Program as well as its own efforts to enhance patient access to and use of electronic health information. However, ONC has not developed outcome measures for these efforts consistent with leading principles for measuring performance. Without such measures, HHS lacks critical information necessary to determine whether each of its efforts are contributing to the department's overall goals, or if these efforts need to be modified in any way.

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Abbreviations

| | |
|------------|--|
| C-CDA | Consolidated-Clinical Document Architecture |
| CMS | Centers for Medicare & Medicaid Services |
| EHR | electronic health record |
| HHS | Department of Health and Human Services |
| HITECH Act | Health Information Technology for Economic and Clinical Health Act |
| HRSA | Health Resources and Services Administration |
| IT | information technology |
| ONC | Office of the National Coordinator for Health Information Technology |
| PHR | personal health record |

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March 15, 2017

Congressional Requesters

Since the enactment of the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009, the federal government has invested over \$35 billion to accelerate the development and adoption of health information technology (IT). These efforts are aimed at encouraging investment in and the use of electronic health records (EHR) and related technologies that, among other things, enable patients to access their health information when they need it in a useful electronic format. This health information can include, for example, summaries of vital signs, such as blood pressure; laboratory test and other screening results; and information on present and past prescriptions. One of the goals of the Office of the National Coordinator for Health Information Technology (ONC), an office within the Department of Health and Human Services (HHS), is for patients to have the ability to electronically access and aggregate their longitudinal health information in order to provide comprehensive information on their health over time.¹ According to ONC, when patients have such access to their health information, they are better able to monitor chronic conditions, ensure their health information is accurate, and share their health information with providers when needed.²

In a 2016 report to Congress, ONC noted that patients' ability to electronically access their health information has increased over time, though there are limitations to this access.³ ONC reports that in 2012, only one-quarter of hospitals provided patients with the ability to electronically view their information; in 2015, 95 percent of hospitals

¹Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, *Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap* (FINAL Ver. 1.0) (October 2015). A fundamental component of ONC's goal is the widespread ability of patients to electronically view, download, and transmit their health information to a third party (which we refer to collectively as "accessing health information" in this report).

²Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, *2016 Report to Congress on Health IT Progress: Examining the HITECH Era and the Future of Health IT* (November 2016).

³Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, *2016 Report to Congress on Health IT Progress: Examining the HITECH Era and the Future of Health IT* (November 2016).

offered this ability.⁴ However, ONC has reported that electronic health information is often spread across multiple providers using disparate systems that are not interoperable.⁵ ONC has reported that this dispersal makes it cumbersome for individuals to aggregate their electronic health information from different providers into a single longitudinal health record.

You asked that we review the status of health IT interoperability from the perspective of the patient, specifically focusing on patients' ability to access, control, and contribute to their electronic health information. In this report, we

- (1) describe the extent and type of electronic access to health information currently available to patients, and patients' views about this access;
- (2) describe the extent to which patients electronically access their health information, and actions providers reported taking to encourage such access; and
- (3) evaluate HHS's efforts to advance patients' ability to electronically access their health information.

To address our first two objectives, we undertook several steps. We conducted a literature search to identify articles published between 2014 and 2015 that describe how patients electronically access their health information. We identified and reviewed 51 such articles.⁶ In addition, we analyzed data provided by the Centers for Medicare & Medicaid Services (CMS) for the Medicare EHR Incentive Program (Medicare EHR Program) for program year 2015 showing the extent to which providers—hospitals and health care professionals (e.g., physicians)—participating in this program reported offering patients in their hospital or practice the

⁴J. Henry, Y. Pylypchuk, and V. Patel, "Electronic Capabilities for Patient Engagement Among U.S. Non-Federal Acute Care Hospitals: 2012-2015," *ONC Data Brief*, no. 38 Office of the National Coordinator for Health Information Technology (Washington, D.C., September 2016).

⁵When systems are interoperable, they are able to exchange electronic information with other systems and process the information without special effort on the part of the user.

⁶We limited our search to 2014 and 2015 to capture the most recently available articles at the time our search was conducted. Databases searched included BIOSIS Previews, Embase, MEDLINE, PsycINFO, and SciSearch. We used different combinations of terms such as "medical records," "patient access," "patient portal," and "consumer access."

ability to electronically access health information and the extent to which patients used these features.⁷ We also supplemented these data with other types of data from CMS, ONC, the Health Resources and Services Administration (HRSA), and the U.S. Census Bureau to identify the characteristics of these providers and patients. We assessed the reliability of these data by (1) performing electronic testing of required data elements, (2) reviewing existing information about the data and the system that produced them, and (3) consulting agency officials who are knowledgeable about the data. We determined that these data were sufficiently reliable for the purposes of our reporting objectives. (See Appendix I for more details of our analysis.) We also interviewed relevant experts to learn about patients' ability to electronically access health information. Specifically, we interviewed knowledgeable individuals in the area of health IT and patient electronic access from Mathematica Policy Research, the American Health Information Management Association, Healthwise, the National Association for Trusted Exchange, and the Open Notes Foundation, as well as individuals conducting advocacy work in this area. We selected these organizations and individuals based on mentions in previous interviews and references in literature.

As part of our work for our first two objectives, we also obtained information on the perspectives of patients, providers, and health IT developers on patient electronic access to health information, as follows.

⁷Starting in 2011, the Medicare EHR Program provided incentive payments for certain eligible providers, including certain hospitals and health care professionals, such as physicians, that successfully attested to the Medicare EHR program. Providers successfully attested to the program when they demonstrated meaningful use of certified EHR technology and met other program requirements established by CMS. Our analysis of Medicare EHR Program data examined providers who successfully attested to the Medicare EHR Program, who we refer to in this report as participants. While a similar program operates under Medicaid, for the purposes of this report, we only examined data from the Medicare EHR Program. In program year 2015, there were 194,200 health care professionals (e.g., physicians) and 3,218 hospitals that participated in the Medicare EHR Program, which is a subset of all Medicare providers eligible to participate in the program. CMS estimated in a 2015 final rule that there could be approximately 595,100 non-hospital-based Medicare professionals and approximately 4,900 hospitals eligible for the Medicare EHR program in 2015. Therefore, approximately 33 percent of eligible professionals and 66 percent of eligible hospitals participated in the Medicare EHR Program in 2015.

We analyzed data on two measures related to patient electronic access in the Medicare EHR Program for which CMS collects information: (1) the percentage of a provider's patients who were offered the ability to electronically view, download, *and* transmit their health information, and (2) the percentage of a provider's patients who actually electronically viewed, downloaded, *or* transmitted their health information.

- To obtain patients' perspectives, we interviewed a nongeneralizable sample of 33 patients to learn about their experiences electronically accessing their health information. Patients Like Me, a patient advocacy organization, agreed to let us post a request on its website seeking to interview patients. The request directed patients to contact us directly if they were interested in talking about their experiences electronically accessing their health information. We were able to successfully schedule and complete interviews with 33 of these patients. During these interviews, we asked the patients about instances when they electronically accessed their health information, challenges they encountered when accessing or attempting to access such information, benefits they experienced as a result of such access, and improvements they would like to see.
- To obtain providers' perspectives, we conducted a nationally representative survey of 1,867 providers who participated in the Medicare EHR Program for the 2014 program year. We received valid survey responses from 175 hospitals and 253 health care professionals. The weighted response rate, which accounts for the differential sampling fractions within strata, is 21 percent for the full sample, 28 percent for eligible hospitals, and 20 percent for eligible professionals. In the survey, we asked providers about the methods they use to give their patients electronic access to their health information, the perceived benefits of giving patients such access, and the steps providers have taken to encourage electronic access by their patients, among other things. (See Appendix I for a more detailed description of our provider survey.) We also interviewed 6 providers who volunteered to speak with us after responding to our survey to learn about their perspectives on patient access to electronic health information. The views of these 6 providers are not generalizable to all providers.
- To obtain health IT developers' perspectives, we interviewed a nongeneralizable sample of individuals from 16 companies in the field of health IT. We identified these companies through interviews and internet searches as companies that are developing or have developed products that facilitate patients' electronic access to health information. Specifically, we interviewed 10 health IT developers who are working to develop or who have developed applications intended to enable consumers of their products to access their electronic health information and aggregate it into a single location; representatives from 2 EHR vendors that offer portals that providers can purchase so that their patients can electronically access their health information; representatives from 2 companies that are working on health IT projects related to consumer access to health information; and

representatives from 2 other companies that promote the development of health IT platforms that enable consumers to electronically access their health information.

To evaluate HHS's efforts to advance patients' ability to electronically access their health information, we reviewed relevant documents, such as strategic plans and agency budget justifications, for both ONC and CMS for fiscal years 2015 and 2016, the most recent years available. We compared the information and documentation to relevant criteria from GAO's body of work on effectively managing performance under the Government Performance and Results Act of 1993.⁸ We also interviewed officials from CMS and ONC about each agency's efforts to further the ability of patients to electronically access their health information and the extent to which their agencies are evaluating these efforts.

We conducted this performance audit from September 2015 to March 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Medicare and Medicaid EHR Incentive Programs and Patient Electronic Access

The largest federal investments in health IT and patient electronic access to health information are the Medicare and Medicaid EHR Incentive Programs. These programs provide incentives to hospitals and health care professionals that are able to demonstrate meaningful use of a certified EHR system. Providers must attest that they have met certain measures in order to receive payment, with the required functions increasing in complexity as providers move through the stages of the program. Among the measures in the current programs are two that are

⁸See GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, [GAO/GGD-96-118](#) (Washington, D.C.: June 1, 1996); GAO, *Managing for Results: Critical Issues for Improving Federal Agencies' Strategic Plans*, [GAO/GGD-97-180](#) (Washington, D.C. September 16, 1997).

specifically designed to capture the extent to which patients are able to electronically access their health information. Unless providers claimed an exclusion from reporting these measures, providers were required to successfully complete them in order to receive incentive payments for program year 2015.⁹ The measures are as follows:

- (1) **Ability to electronically access health information.** More than 50 percent of a providers' patients must be provided timely access to view online, download, and transmit to a third party their health information,¹⁰ and
- (2) **Actual electronic access.** At least one of a provider's patients must electronically view, download, or transmit to a third party their information during the 90-day reporting period.¹¹

Providers participating in these EHR Programs must use certified EHR technology, which is technology that has been determined to conform to standards and certification criteria developed by ONC. These criteria do not specify a particular technical method for providing patients with access to their health information, but do specify parameters for accessing certain types of health information. According to ONC, many providers use some type of patient portal to provide access to these types of health information. A patient portal is a secure online website that gives patients 24-hour access to their personal health information and medical records from anywhere with an Internet connection. Patient portals are

⁹Providers can claim an exclusion from reporting these measures if they meet any of the following criteria: (1) Any eligible professional who neither orders nor creates any of the information listed for inclusion as part of both measures, except for "Patient name" and "Provider's name and office contact information," may exclude both measures. (2) Any eligible professional who conducts 50 percent or more of his or her patient encounters or any eligible hospital that is located in a county that does not have 50 percent or more of its housing units with 4 Mbps broadband availability according to the latest information available from the Federal Communications Commission on the first day of the EHR reporting period may exclude only the second measure. (3) Providers attesting to the program for the first or second year were not required to report the second measure.

¹⁰A hospital or critical access hospital's patients include all patients who are discharged from the inpatient or emergency department during the 90-day reporting period. Information must be made available within 36 hours of discharge to be considered timely. A professional's patients include all unique patients seen by the professional during the 90-day reporting period. Information must be made available within 4 business days of the information being made available to the professional, and is subject to the professional's discretion to withhold certain information.

¹¹This threshold was 5 percent of a provider's patients for the 2014 program.

purchased by a provider and generally only include health information generated and made available by that individual provider.

Federal Health Information Technology Strategic Plans

ONC released the most recent strategic plan for health IT, developed with input from federal and nonfederal stakeholders, in September 2015. This plan guides the actions of multiple federal agencies with regard to health IT. The plan outlines four primary goals, each with its own objectives for using health IT, to improve the health and well-being of individuals and communities.¹² Two of these goals are to transform health care delivery and community health and advance person-centered and self-managed care.¹³ In addition to this strategic plan, in 2015 ONC developed, with input from federal and nonfederal stakeholders, a Shared Nationwide Interoperability Roadmap (which we refer to in this report as the Roadmap).¹⁴ The Roadmap proposes specific actions to advance the nation towards an interoperable health IT system that collectively improves health. The Roadmap includes the goals that patients can access their longitudinal electronic health information, contribute to this information, send and receive that information through a variety of technologies, and use that information to manage their health and participate in shared decision making with their health care providers. These Roadmap goals support the HHS strategic plan goals of advancing care and transforming health care delivery and community health.

Performance Management and Assessment

Performance measures assess performance via ongoing monitoring and reporting of program accomplishments, which include progress toward pre-established goals. Our previous work has found that performance measures can serve as an early warning system to management and as

¹²The Office of the National Coordinator for Health Information Technology, Office of the Secretary, U.S. Department of Health and Human Services, *Federal Health IT Strategic Plan 2015-2020*, September 21, 2015.

¹³The other two goals in the strategic plan are to foster research, scientific knowledge, and innovation and enhance the nation's health IT infrastructure.

¹⁴The Office of the National Coordinator for Health Information Technology, *Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap, FINAL Version 1.0*, October 6, 2015.

a vehicle for improving accountability to the public.¹⁵ We have also published guidance on assessing performance which states that it is important for performance measures to be tied to program goals and for agencies to ensure that their activities support their organizational missions and move them closer to accomplishing their strategic goals.¹⁶ In addition, our guidance to federal agencies on designing evaluations suggests that performance measures should include both process and outcome measures. (See table 1.)¹⁷ Outcome measures are particularly useful in assessing the status of program operations, identifying areas that need improvement, and ensuring accountability for end results. Furthermore, our guidance on assessing performance notes that leading organizations should not only establish performance measures but also use information from these performance measures to continuously improve processes, identify program priorities, and set improvement goals.

Table 1: Description of Process and Outcome Measures

| Type of measure | Description | Example |
|-----------------|--|---|
| Process | Addresses the type or level of program activities conducted and the direct products or services delivered by a program | The number of participants enrolled in a job training program |
| Outcome | Addresses the results of products and services | The percentage of participants who find employment after successfully completing the job training program |

Source: GAO. | GAO-17-305

¹⁵GAO, *Performance Measurement and Evaluation: Definitions and Relationships*, [GAO-11-646SP](#) (Washington, D.C.: May 2, 2011).

¹⁶[GAO/GGD-96-118](#).

¹⁷GAO, *Designing Evaluations: 2012 Revision*, [GAO-12-208G](#) (Washington, D.C.: January 31, 2012).

Most Patients of Providers Participating in the 2015 Medicare EHR Program Were Offered Electronic Access to Their Health Information and Noted Benefits and Limitations of Such Access

Data from CMS show that most patients who received their health care from providers participating in the Medicare EHR Program had the ability to electronically access their health information. Information from our survey of providers and interviews with patients and providers show that this access is typically offered through patient portals and the type of information offered varies. In interviews, patients described the benefits and limitations of accessing their health information electronically.

Almost 90 Percent of Patients Receiving Care from Providers Participating in the 2015 EHR Program Had Electronic Access to Their Health Information

CMS data show that providers who participated in the 2015 Medicare EHR Program reported offering most of their patients the ability to electronically access their health information. In 2015, all participating hospitals and nearly all participating health care professionals reported offering electronic access to health information to 88 and 87 percent of their patients respectively, on average.¹⁸ This means that the providers gave the patients they saw or discharged all of the information necessary to electronically view, download, and transmit the patients' health information, such as a website address, a username and password, and instructions for logging onto the website.

¹⁸For program year 2015, all 3,218 participating hospitals reported that they met the program requirement to offer electronic access to over 50 percent of their patients. For the same program year, 192,258 of the 194,200 participating health care professionals reported meeting the requirement. Health care professionals could participate in the program without reporting that they offered electronic access if they reported to CMS that they neither order nor create relevant information.

Our survey of providers who participated in the 2014 Medicare EHR Program and interviews with providers further illustrate the extent to which providers offered their patients electronic access to their health information. Our survey found that nearly all providers routinely provided new patients with access to this information (92 percent of health care professionals and 91 percent of hospitals). Providers we interviewed also described circumstances in which a patient may not have been offered access. These circumstances included instances such as in emergency care, when offering electronic access may not be appropriate at the point of care, or for behavioral health data, when it might not be in the best interest of the patient to access the information.

ONC has published information on the extent to which non-federal acute-care hospitals and office-based physicians provide their patients with access to their health information. ONC reported that in 2015, almost all hospitals (95 percent) offered patients the ability to electronically view their health information, and about 7 out of 10 (69 percent) hospitals provided their patients with the ability to view, download, and transmit their health information electronically.¹⁹ In addition, ONC recently reported that among office-based physicians, 63 percent provided patients with the ability to electronically view their health information.²⁰ ONC reported in another data brief that in 2014, nearly 4 in 10 Americans were offered electronic access to their medical records.²¹

¹⁹J. Henry, Y. Pylypchuk, and V Patel, "Electronic Capabilities for Patients among U.S. Non-Federal Acute Care Hospitals: 2012-2015." *ONC Data Brief*, no.38. Office of the National Coordinator for Health Information Technology (Washington, D.C., Sept. 2016).

²⁰Office of the National Coordinator for Health Information Technology, "Office-based Physician Electronic Patient Engagement Capabilities," *Health IT Quick-Stat*, no. 54. (Washington, D.C.: December 2016), accessed February 2017, <https://dashboard.healthit.gov/quickstats/pages/physicians-view-download-transmit-secure-messaging-patient-engagement.php>.

²¹V. Patel, W. Barker and E Siminerio, "Trends in Consumer Access and Use of Electronic Health." *ONC Data Brief*, no.30. Office of the National Coordinator for Health Information Technology (Washington, D.C., Oct., 2015).

Providers Who Participated in the 2014 EHR Program Generally Used Patient Portals to Make Various Types of Health Information Available to Patients

Our survey of providers who participated in the 2014 Medicare EHR Program found that most providers offered electronic access to patients through a patient portal, and our interviews suggest that patients often received access to a different portal for each provider.²² A patient portal is a secure website that allows patients to access information contained in their provider's EHR system and is managed by the provider. EHR vendors and providers we interviewed noted that patients generally have to manage separate login information for each provider-specific portal. Many patients we interviewed confirmed this; for example, a number of patients we interviewed said that they had access to more than one portal, each of which contained their health information from a different care setting (e.g., hospital stays, general practitioner, and different specialists).

The types of health information that providers made available to patients varied, but our survey of providers indicated that most routinely offer access to most types of patient information. The Medicare EHR Program requires that participants make certain types of information available, such as laboratory test results and current medications.²³ According to our survey, an estimated 94 percent of hospitals and 77 percent of health care professionals routinely offered access to laboratory test results, which are required by the program.²⁴ (See table 2.) Our survey also showed that fewer providers routinely offered access to certain

²²Information is from the 2016 GAO survey of 1,867 hospitals and health care professionals in the United States that participated in the Medicare EHR Program for the 2014 program year. This information is based on the data from the valid survey responses we received from 175 hospitals and 253 health care professionals.

²³To meet the requirements of the Medicare EHR Program's Consumer Electronic Access measures, health care professionals and hospitals must make information such as the following available to patients: current and past problems list, procedures, laboratory test results, current medication list, medication history, current medication allergy list, medication allergy history, vital signs, and care plan field(s) including goals and instructions. In circumstances where there is no information available to populate one or more of the fields previously listed, the provider may indicate that the information is not available and still meet the measures.

²⁴All estimates from this survey were calculated with a 95 percent confidence level and have a margin of error of plus or minus 7 percentage points or fewer.

information that is not required by the program and that they find less helpful for their patients to view. For example, 46 percent of hospitals and 54 percent of health care professionals reported routinely offering access to clinician notes, which are not required by the program. Additionally, our survey showed that fewer providers find it helpful for patients to view clinician notes and radiological images than for patients to view information such as laboratory results and current medications. Representatives from two hospitals we interviewed explained that their hospitals relied on a committee to decide what information to make available to patients through the portal and how soon after it is available to the provider to make it available to the patient. One EHR vendor we spoke with noted that the vendor automatically makes almost all information, including clinician notes, available to patients through the vendor's patient portal by default, though many vendors allow providers to limit the types of information they routinely make available to patients.

Table 2: Estimated Percentages of Providers Who Participated in the 2014 Medicare EHR Program that Routinely Offer Various Types of Health Information through Patient Portals

| Type of Health Information | Required by the Medicare EHR program to be electronically available to patients ^a | Providers reporting that they offered information when available ^b | | Providers reporting that it is helpful for patients to view the information ^c | |
|----------------------------|--|---|---------------------------|--|---------------------------|
| | | Hospitals | Health Care Professionals | Hospitals | Health Care Professionals |
| Allergies | Yes | 92% | 81% | 84% | 70% |
| Clinical history | Yes | 83% | 77% | 76% | 71% |
| Clinician notes | No | 46% | 54% | 51% | 42% |
| Current medications | Yes | 92% | 82% | 87% | 83% |
| Immunization history | No | 82% | 67% | 81% | 73% |
| Laboratory test results | Yes | 94% | 77% | 87% | 80% |
| Problems/conditions | Yes | 91% | 80% | N/A | N/A ^d |
| Radiology images | No | 13% | 31% | 25% | 27% |
| Radiology result reports | No | 79% | 65% | 77% | 65% |
| After-visit summary | Yes | 85% | 77% | 81% | 78% |

Source: GAO survey of Medicare EHR Program participants. | GAO-17-305

Notes: Data were from the 2016 GAO survey of hospitals and health care professionals in the United States that participated in the Medicare Electronic Health Record (EHR) Program for the 2014 program year. Percentages are based on the data from the valid survey responses GAO received from 175 hospitals and 253 health care professionals.

All estimates in this table have been calculated using the appropriate sampling weights and survey design variables and have a margin of error at the 95 percent confidence level of plus or minus 7 percentage points or fewer.

^aTo meet the requirements of the Medicare EHR Program’s Patient Electronic Access measures, hospitals and health care professionals must make information such as the following available to patients: current and past problems list, procedures, laboratory test results, current medication list, medication history, current medication allergy list, medication allergy history, vital signs, and care plan field(s) including goals and instructions. In circumstances where there is no information available to populate one or more of the fields previously listed, the provider may indicate that the information is not available and still meet the measures.

^bThese columns contain the percentage of providers who answered “yes” to the survey question “in the past 6 months, have you or your hospital routinely entered the following health information in your [patient health portal] (when available for the patient)?”

^cThese columns contain the portion of providers who answered “yes” to the survey question “do you or your hospital find it helpful for patients to electronically view the following types of health information via patient health portals?”

^dThis question was not included on the survey.

Patients we interviewed said that the type of information made available in their portals was incomplete and inconsistent across providers. Though many patients talked about accessing their lab results through their portal, multiple patients said that their results were not always available for them to view. For example, one patient said that sometimes her lab results are posted, and other times they are never made available to her, and she does not have a sense of when the results will be made available. Three

patients expressed frustration that their vital signs information such as weight and blood pressure was not available through their portals, particularly since they knew that their providers collected this information during visits. Another patient said that she has observed a lot of variability in what information providers make available through their portals, with some doctors providing access to detailed information such as clinical notes and lab results, and others only making basic information available, such as appointment reminders and vital signs information collected during visits.

Patients Described Numerous Benefits and Some Limitations with Their Electronic Access to Health Information

During our interviews with 33 patients who have accessed their health information electronically, patients described numerous benefits from the ability to electronically access their health information. These benefits included the ability to communicate better with their health care providers, track health information over time, and share information with other providers. Multiple patients described circumstances in which they used information in their portal to improve their interactions with their provider and adhere to provider recommendations. For example, one patient described how he logged into the portal after a visit to review instructions from his provider that he had forgotten. Patients also noted that electronically accessing their health information made them feel empowered or more proactive to manage their health, particularly over time. For example, patients described using their electronic access to view specific test results over time to see whether their condition was changing, or to access diagnostic information that gave them the ability to do more research on their medical condition. One patient described using the information in her portal to notice a trend in her lab results and also learn of a condition she had of which her provider failed to inform her. Patients also described using their patient portals to share information with other providers. Multiple patients described printing out medical information from their portals, such as lab results, and bringing that information to appointments with other providers. Patients noted that portals make sharing health information very convenient.

However, patients also described some limitations with their access, many of which were related to the functionality of the portal. Patients we interviewed stated that they were able to view their health information electronically, but many patients said that it was not clear that this

information could be electronically downloaded or transmitted. Patients also expressed frustration with the amount of time and effort it took to set up electronic access through their providers, managing multiple passwords for their many portals, and understanding each portal's user interface. Many patients said that the information itself was often incorrect or not presented in helpful ways, and some patients noted that there was no simple way to correct or denote incorrect information within the portal. For example, one patient said that another person's information was included in her record, and it took multiple requests to her provider to remove this information from her record. Another patient was frustrated that information about his weight that was captured in his yearly physical was not available in the portal in a way that would allow him to track his weight over time.

Multiple patients said that an overall limitation is that they could not aggregate all of their health information into a single longitudinal health record. While there are health IT products available to help patients and providers aggregate information, they are not in high demand. For example

- patient-purchased personal health records (PHR) can enable patients to aggregate electronic information from disparate sources into a single record. Health IT developers said that there are PHR products available for patients who attempt to generate such a record, but our survey and patient interviews indicate that these products are not widely used. Health IT developers noted that these products have limited functionality because they or the users (e.g., patients) cannot access information stored in EHR systems, and one developer noted that a lack of standardization limits the ability to present information in a meaningful way.²⁵ Patients we interviewed generally stated that they were not using these products, and health IT developers agreed that consumer demand is low. Additionally, relatively few hospitals and health care professionals we surveyed reported having the capability to submit information to PHR products.
- Provider-purchased products can also help patients and providers aggregate longitudinal health information, according to health IT product developers and EHR vendors we interviewed. For example,

²⁵For example, health IT developers stated that the lack of open application programming interfaces means they cannot access information stored in EHR systems. Application programming interfaces are technology that allows one software program to access the services or information provided by another software program.

one health IT developer explained that providers can currently purchase their product to display information from multiple EHR systems in a single portal; this product would need to be purchased separately from the EHR system and would require additional configuration. However, according to our survey, we estimate that most providers offer patient portals that are packaged with their EHR system. One EHR vendor representative said that the company was currently in the process of developing a product that will enable patients to access information from multiple providers using their EHR system. However, that product has not been released for provider and patient use.

Few Patients of Providers Participating in the Medicare EHR Program Electronically Accessed Their Health Information, and Providers Reported Taking Steps to Encourage Access

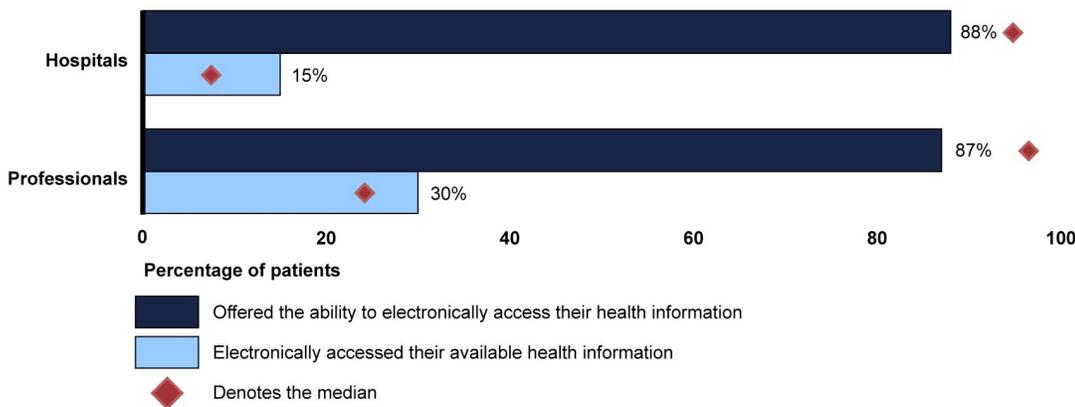
Less than One-third of Patients Electronically Accessed Their Health Information, and Patients Reported Such Access Generally Occurs Before or After Seeing a Provider

Providers participating in the Medicare EHR Program in 2015 reported that relatively few patients electronically accessed their health information when it was made available to them.²⁶ In other words, few of these patients logged into a patient portal and viewed, downloaded, or transmitted their health information. Our analysis of 2015 Medicare EHR Program data collected by CMS showed that among participating hospitals, 15 percent of their patients electronically accessed their available health information; among physicians and other health care professionals, this percentage was twice as much, with about a third (30

²⁶The participating providers we refer to are the 194,200 health care professionals (e.g., physicians) and 3,218 hospitals that participated in the Medicare EHR program for program year 2015. Providers could participate in the program without meeting measures related to consumer electronic access if they claimed exclusion due to certain characteristics, such as limited broadband availability in their community.

percent) of their patients accessing their available health information. (See fig. 1.)

Figure 1: Average Percentage of Patients of 2015 Medicare EHR Program Participating Providers Who Were Offered Access and Electronically Accessed Available Health Information



Source: GAO analysis of HHS data. | GAO-17-305

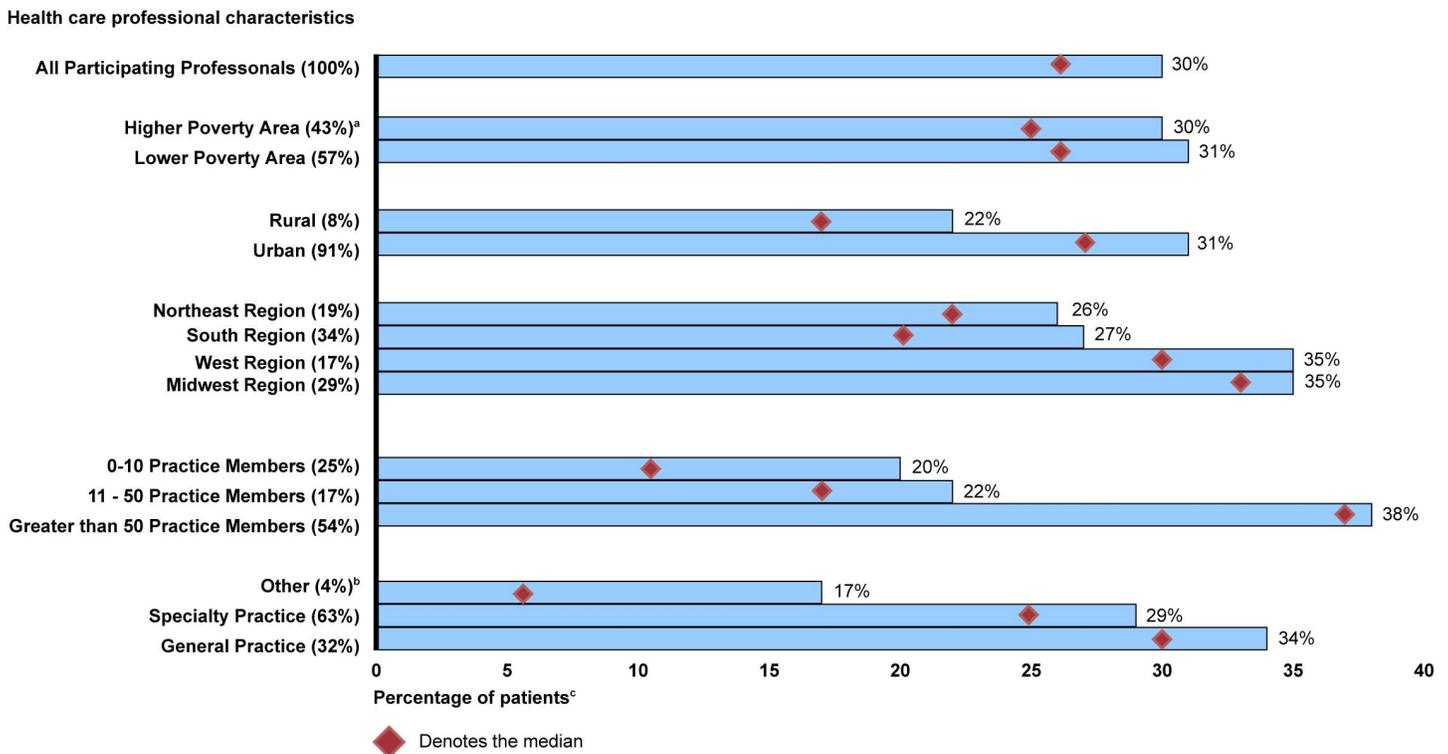
Notes: We analyzed data that HHS collected from providers for the 2015 Medicare Electronic Health Record (EHR) Program. We refer to providers who successfully attested to the program in a given year as “participants.” This figure reports data from the two program measures related to patient electronic access to health information; in 2015, 192,258 health care professionals and all 3,218 hospitals reported offering electronic access to health information to their patients, and 176,474 professionals and 2,985 hospitals reported that one or more of their patients actually accessed their health information. We calculated the percentage of patients who accessed their available information by dividing the number of patients who accessed their information by the number of patients who were offered access for each provider.

Examining access rates by provider characteristics, our analysis shows that some types of non-hospital based providers reported relatively low percentages of patients accessing their health information electronically in 2015. Analyzing 2015 Medicare EHR Program data supplemented with other HHS data, we found that among non-hospital based providers participating in the 2015 program:

- health care professionals located in areas with a higher (i.e., above the national median) percentage of residents in poverty and located in rural areas reported lower levels of electronic access to health information, compared with professionals in lower-poverty areas and professionals located in urban areas;
- health care professionals with 50 or fewer group practice members reported notably lower levels of electronic access to health information compared with professionals with larger numbers of group practice members; and

- health care professionals other than general or specialty practitioners—including chiropractors, dentists, and podiatrists—reported notably lower levels of electronic access to health information compared with professionals in general practice or specialty practice. (See fig. 2.)

Figure 2: Average Percentage of Patients of 2015 Medicare EHR Program Health Care Professionals Who Electronically Accessed Available Health Information, by Provider Characteristic



Source: GAO analysis of HHS data. | GAO-17-305

Note: We analyzed data that HHS collected from health care professionals (e.g., physicians) for the 2015 Medicare Electronic Health Record (EHR) Program. We refer to providers who successfully attested to the program in a given year as “participants.” We analyzed two program measures related to patient electronic access to health information in conjunction with HHS’s Physician Compare file, the 2015-2016 Area Health Resources File, and information from the U.S. Census Bureau. The number in parentheses next to each characteristic represents the percentage of the health care professionals that falls into the category; these numbers may not sum to 100 because of rounding. We did not control for any other characteristics when computing the average for each category.

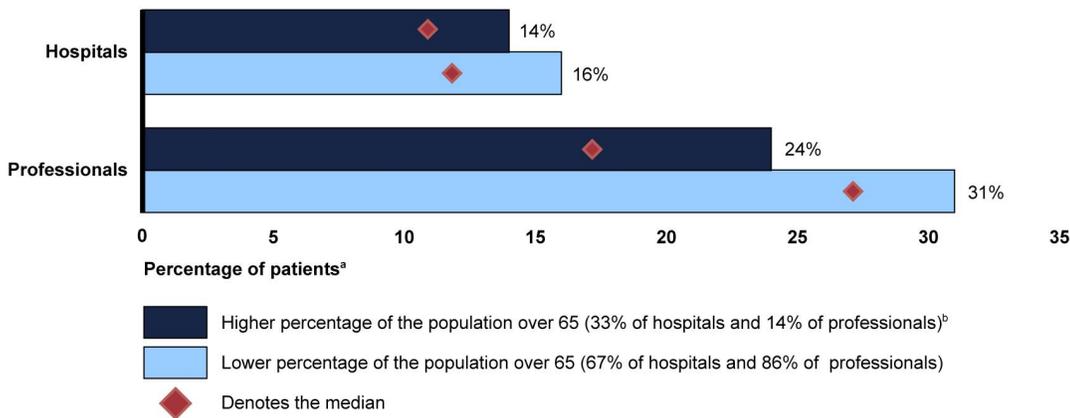
^aWe categorized a provider as practicing in a higher poverty area if they were located in a county with higher than the median percentage of the population living under the poverty line, according to HHS’s 2015-2016 Area Health Resources File.

^b“Other” provider types include chiropractors, podiatrists, and dentists.

^cWe used Medicare EHR Program data to calculate the percentage of each health care professional’s patients who accessed their available information by dividing the reported number of patients who accessed their information by the reported number of patients who were offered access.

Examining access rates by age, our analysis of data from the 2015 Medicare EHR Program and data from HRSA's Area Health Resources File indicates that the level of electronic access to health information reported by both hospitals and health care professionals was lower among those located in areas with a higher percentage of the population over age 65. (See fig. 3.)

Figure 3: Average Percentage of 2015 Medicare EHR Program Participants' Patients Who Electronically Accessed Available Health Information, by Percentage of County Residents Over Age 65



Source: GAO analysis of HHS data. | GAO-17-305

Note: We analyzed data that the Centers for Medicare & Medicaid Services collected from hospitals and health care professionals (e.g., physicians) for the 2015 Medicare Electronic Health Record (EHR) Program. We refer to providers who successfully attested to the program in a given year as "participants." We analyzed two program measures related to patient electronic access to health information in conjunction with the Health Resources and Services Administration's 2015-2016 Area Health Resources File. We did not control for any other provider characteristics when computing the average for each category.

^aWe used Medicare EHR Program data to calculate the percentage of patients who accessed their available information for each provider by dividing the number of patients who accessed their information by the number of patients who were offered access.

^bWe categorized a provider as practicing in an area with a higher population over age 65 if they were located in a county with higher than the median percentage of the population over age 65, according to the Health Resources and Services Administration's 2015-2016 Area Health Resources File.

The findings from our analysis of access rates by patient age are consistent with other evidence suggesting that older patients may be less likely to access their health information electronically compared with younger patients. Providers we interviewed and who responded to our survey, as well as health IT developers we interviewed, said that a patient's age affected the extent to which she electronically accesses her health information. Multiple providers who responded to our survey and that we interviewed conveyed that, in their experience, older patients are less likely to electronically access their information. Providers and health

IT developers noted that younger patients and those with chronic conditions are most likely to want electronic access to their health information.

Some providers we surveyed and interviewed attributed the lack of interest in accessing health information electronically among older patients to a decreased likelihood of having access to a computer or web-enabled device. One provider stated that his hospital serves a large elderly population and that this was the biggest challenge to meeting the requirement under the 2014 Medicare EHR Program that over 5 percent of patients access their health information electronically. A recent data analysis by ONC found no differences in rates of access to or the viewing of online medical records by age, but the analysis did find that individuals between the ages of 50 and 59 had significantly higher rates of electronically communicating with health care providers, looking up test results online, and using smartphone health applications compared with individuals 70 years or older.²⁷ More generally, a 2013 survey conducted by the Pew Research Center found that adults age 65 or older were most likely to say that they never go online.²⁸

Age is not the only determinant as to whether patients electronically access their health information. According to studies we reviewed, patients may not access their health information frequently because they do not have a reason to do so. In 2015, ONC reported that for 2013 and 2014, about three-quarters of surveyed individuals who reported that they did not access their medical records online indicated that they did not do so because they did not have a need to use the information.²⁹ Similarly, another study found that most patients who report rarely or never accessing electronic health information say that they do not have a need to do so.³⁰

²⁷V. Patel, W. Barker, and E. Siminerio, "Disparities in Individuals' Access and Use of Health Information Technology in 2014," *ONC Data Brief* No. 34. Office of the National Coordinator for Health Information Technology (Washington, D.C., Feb. 2016).

²⁸Pew Research Center, *Who's Not Online and Why*. (Washington, D.C.: Sept. 25, 2013).

²⁹V. Patel, W. Barker, and E. Siminerio, "Trends in Consumer Access and Use of Electronic Health Information." *ONC Data Brief* No. 30. Office of the National Coordinator for Health Information Technology (Washington, D.C., Oct. 2015).

³⁰National Partnership for Women and Families. *Engaging Patients and Families: How Consumers Value and Use Health IT*. (Washington, D.C., Dec. 2014).

According to patients we interviewed, patients who electronically access their health information typically do so before or after a health care encounter. For example, patients we interviewed said that they accessed information in their portal to review information before or after an encounter with a provider—for example, to review lab test results, communicate with their providers about a recent appointment, or share information between providers during visits. About half of the patients we interviewed also described using portals offered by their providers to access “convenience features” related to receiving health care, such as features used to see appointment reminders, request medication refills, message their provider, or schedule an appointment. Similarly, one of the studies we reviewed found that consumers expressed preferences to use online access to their health information primarily for needs that occur before or after a health care encounter (e.g., to view recently completed lab work or notes from a recent physician visit) or because they are accessing convenience features offered in their provider’s portal, such as online appointment scheduling or to request medication refills.³¹

Providers Reported Taking a Variety of Actions to Encourage Patient Electronic Access

In our survey of 2014 Medicare EHR Program participants, providers reported using a variety of outreach strategies and other efforts to encourage their patients to access the health information made available to them. These methods include promoting the use of patient portals and providing prizes and other incentives to access the portals. (See table 3.)

³¹National Partnership for Women and Families. *Engaging Patients and Families: How Consumers Value and Use Health IT*. Washington, D.C.: (December 2014).

Table 3: Estimated Percentages of Methods Used by Providers Who Participated in the 2014 Medicare EHR Program to Encourage Patients to Electronically Access Their Health Information

| Method | Estimated percentage of hospitals using method | Estimated percentage of health care professionals using method |
|--|--|--|
| Educational brochures or other written materials about the patient health portal | 96% | 78% |
| Steps taken to improve patient health portal usability or design | 64% | 66% |
| Promoting the patient health portal at every patient interaction | 64% | 79% |
| Provide access to computers in hospital or practice | 58% | 46% |
| Reminder emails | 55% | 58% |
| Incentives given to clinical staff | 7% | 14% |
| Raffle giveaways/prizes for patients | 6% | 10% |
| Discounts on procedures | 2% | 3% |
| Other | 2% | 1% |

Source: GAO survey of Medicare EHR Program participants. | GAO-17-305

Notes: Data were from the 2016 GAO survey of hospitals and health care professionals in the United States that successfully attested to the Medicare Electronic Health Record (EHR) Program for the 2014 program year. Percentages are based on the data from the valid survey responses we received from 175 hospitals and 253 health care professionals.

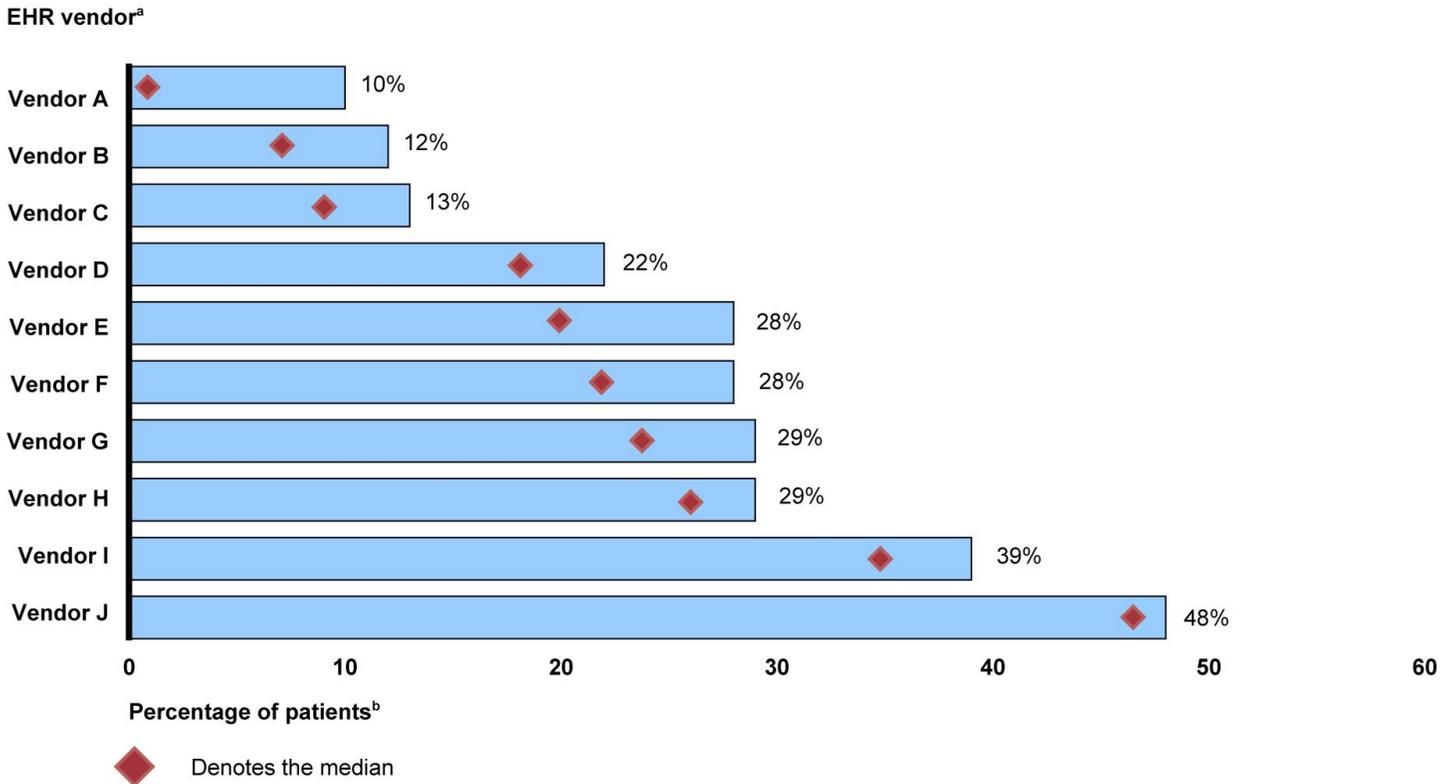
All estimates in this table have been calculated using the appropriate sampling weights and survey design variables and have a margin of error at the 95 percent confidence level of plus or minus 7 percentage points or fewer.

Providers we interviewed similarly reported undertaking a variety of efforts to encourage patients to electronically access their health information. For example, a hospital representative stated that to increase patient access, staff members tell patients about the portal and take steps to register patients for the portal at every interaction. Another hospital representative explained that hospital staff individually assist patients and even help patients obtain a private e-mail address to register for the portal, if necessary. Yet another hospital representative said that the hospital staff wore buttons instructing patients to ask staff about the portal, and the hospital also installed billboards to remind patients to ask staff about the portal. Despite these efforts, this hospital representative said that they struggled to meet the patient electronic access requirements under the Medicare EHR program.

Our interviews with the 33 patients and analysis of Medicare EHR program data and our survey data indicate that the type of portal that providers use may influence the extent to which patients access their available health information. In particular, patients we interviewed noted that they sometimes experienced technical difficulties when attempting to access information through the portal or were confused by the portal's user interfaces. For example, patients noted that they were sometimes

unable to access information in their portals due to the sites being down for maintenance or that their portals were not optimized for viewing on a mobile device, which limited their ability to use the portal. Several patients also expressed frustration with the user interface of the portal offered by their providers, noting that it was difficult to navigate and find the information they wanted. About two-thirds of the providers we surveyed reported taking steps to improve their patient portal's usability or design. Our provider survey data indicate that most providers offer patient portals that are packaged with their EHR system and therefore provided by the same vendor. One vendor we interviewed noted that it allows for some customization for each customer. We viewed demonstrations of three EHR systems' patient portals, and observed that the portal design does vary by vendor. For example, the portals we viewed had differences in their interfaces, including where to access health information and how tabs were labeled. Our analysis of Medicare EHR Program data from ONC and CMS confirms that the type of portal itself may affect the extent to which patients access their available health information; the average percentage of patients that accessed their available health information varied depending on the provider's reported EHR vendor. (See figs. 4 and 5.)

Figure 4: Average Percentage of 2015 Medicare EHR Program Health Care Professionals' Patients Who Electronically Accessed Available Health Information, by EHR System Vendor



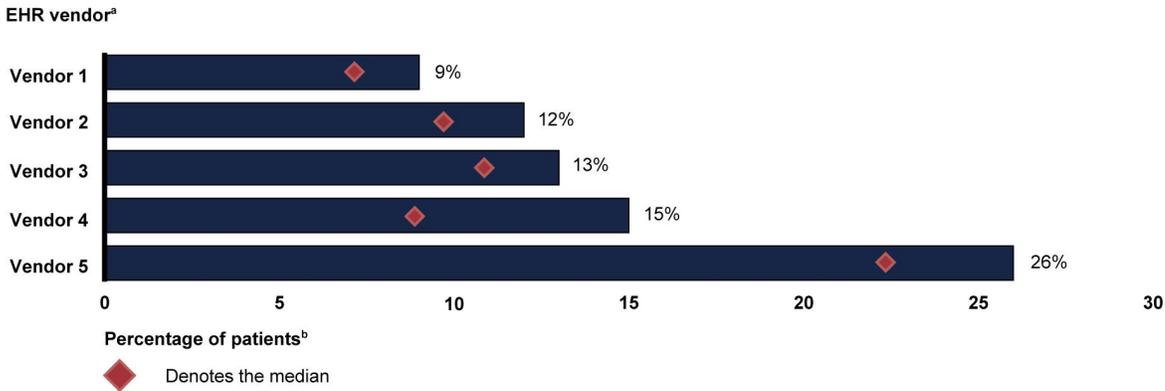
Source: GAO analysis of HHS data. | GAO-17-305

Note: We analyzed data that HHS collected from health care professionals (e.g., physicians) for the 2015 Medicare Electronic Health Record (EHR) Program. We refer to providers who successfully attested to the program in a given year as “participants.” We analyzed two program measures related to patient electronic access to health information in conjunction with data on the vendor of the certified EHR system(s) used to support a provider’s participation in the 2015 program. We limited our analysis to the 176,998 health care professionals who reported using a single vendor to support their participation. We did not control for any other provider characteristics when computing the average for each vendor.

^aThese EHR vendors represent the top 10 most frequently used EHR vendors reported by health care professionals using a single vendor for the 2015 Medicare EHR Program.

^bWe used 2015 Medicare EHR Program data to calculate the percentage of patients who accessed their available information for each provider by dividing the number of patients who accessed their information by the number of patients who were offered access.

Figure 5: Average Percentage of 2015 Medicare EHR Program Hospitals' Patients Who Electronically Accessed Available Health Information, by EHR System Vendor



Source: GAO analysis of HHS data. | GAO-17-305

Note: We analyzed data that HHS collected from hospitals for the 2015 Medicare Electronic Health Record (EHR) Program. We refer to providers who successfully attested to the program in a given year as “participants.” We analyzed two program measures related to patient electronic access to health information in conjunction with data on the vendor of the certified EHR system(s) used to support a provider’s participation in the 2015 program. We limited our analysis to the 2,188 hospitals who reported using a single vendor to support their participation. We did not control for any other provider characteristics when computing the average for each vendor.

^aThese EHR vendors represent the top 5 most-reported EHR vendors by hospitals using a single vendor for the 2015 Medicare EHR Program.

^bWe used 2015 Medicare EHR Program data to calculate the percentage of patients who accessed their available information for each provider by dividing the number of patients who accessed their information by the number of patients who were offered access.

HHS Has Taken Steps to Increase Patients’ Electronic Access to Health Information but Lacks Outcome Measures to Determine the Effectiveness of These Efforts

HHS Programs and Other Efforts Aim to Further Patients’ Ability to Access Health Information Electronically, Including Longitudinal Health Information

HHS officials said that two agencies, CMS and ONC, have programs or other efforts aimed at increasing the ability of patients to electronically access their health information, including the ability to access longitudinal health information and aggregate it in a single location. In the case of CMS, agency officials told us that the Medicare and Medicaid EHR

Programs have made a significant contribution towards achieving these goals. The two programs require participating hospitals and health care professionals to provide electronic access to health information to a specified portion of patients.³² According to CMS officials, the programs support HHS's strategic goals to improve health care through the meaningful use of health information technology.³³

In the case of ONC, agency officials identified multiple efforts they are undertaking to increase patients' ability to electronically access their health information, including longitudinal health information. Some examples of these efforts include the following:

- *Patient Engagement Playbook*. The playbook is a tool developed by ONC to assist providers in engaging patients with health IT by, for example, using patient portals to engage patients in their health and care.
- *Blue Button Initiative*. This initiative includes three distinct efforts – a connector, a voluntary pledge program, and a research project. The connector is a website that helps patients locate their health information online and assists in the development of apps and tools to help consumers understand their health information. The voluntary pledge encourages public and private organizations—such as providers, hospitals, technology companies, and non-profit organizations—to commit to making health information available to patients electronically and to encourage patient access. The research effort is designed to understand the unmet needs and challenges facing stakeholders.
- *Health IT Certification Standards and Certification Criteria*. These standards and criteria identify certain vocabularies and structured formats that must be included in certified EHR systems and other EHR technology that providers are required to use in order to participate in the EHR programs.

³²In 2015 providers participating in the Medicare EHR Program had to offer at least 50 percent of their patients online access to health information (specifically, the ability to view, download, and transmit health information) in order to successfully attest to the program.

³³One of the goals in HHS's Federal Health IT Strategic Plan is to "Transform Health Care Delivery and Community Health." CMS officials said that of the objectives under the goal, "improve health care quality, access, and experience through safe, timely, effective, efficient, equitable, and person-centered care," is the objective that supports their work with the EHR Programs.

- *Consumer Health Data Aggregator Challenge.* By awarding private sector innovation, this challenge aims to spur the development of third-party consumer-facing applications that use open, standardized application programming interfaces to help consumers aggregate their data in one place.

(See Appendix II for a list of ONC's programs and efforts most directly related to increasing patients' ability to electronically access their health information.)

Both CMS and ONC officials told us that their efforts aim to increase the extent to which patients can electronically access their health information. Officials said that their efforts are guided by goals such as the Roadmap's long-term milestone of enabling patients to access longitudinal health information, contribute to their electronic health information (e.g., send data from wearable devices to their electronic health record), and direct their health information into any location of their choice (e.g., to a PHR application purchased by the patient that aggregates all their health information in a single location). According to ONC officials, the agency's efforts all support HHS's Federal Health IT Strategic Plan as well as ONC's Roadmap, which establishes several milestones for the agency's ongoing efforts to increase patients' ability to access their health information electronically. These milestones are the following:

- 1) a majority of individuals are able to securely access their electronic health information and direct it to the destination of their choice (to be achieved between 2015 and 2017);
- 2) individuals regularly access and contribute to their longitudinal electronic health information via health IT, send and receive that information through a variety of emerging technologies, and use that information to manage their health and participate in shared decision-making with their care, support, and service teams (to be achieved between 2018 and 2020); and
- 3) individuals are able to seamlessly integrate and compile longitudinal electronic health information across online tools, mobile platforms, and devices to participate in shared decision-making with their care, support, and service teams (to be achieved between 2021 and 2024).

HHS Cannot Determine Whether Its Agencies' Efforts Are Helping Increase Patients' Electronic Access to Health Information

HHS does not have information on the effectiveness of CMS's and ONC's efforts to increase the ability of patients to access their health information electronically. Although ONC measures some progress related to these efforts and the Medicare EHR Program, ONC does not directly measure the impact of these efforts on increasing patients' electronic access to health information. In the case of CMS, officials told us that while they track the number of providers that participate in the Medicare EHR Program, the agency does not directly measure the extent to which the program specifically affects patients' ability to access their health information electronically. However, HHS officials stated that they do monitor the program by seeking public comments during the rulemaking process and by publicly reporting statistics. Officials told us that ONC collaborates with CMS to monitor and review the EHR Programs and has used the results of these analyses to modify the programs over time. ONC officials told us there is a data use agreement in place that allows ONC to analyze Medicare EHR Program data. Additionally, ONC commissions evaluations of programs initiated under the HITECH Act, including the Medicare EHR Program. While ONC's data analyses and commissioned evaluation provide information concerning patient access to electronic health information and patient engagement, these efforts do not measure the impact of the Medicare EHR Program on patients' ability to access their health information electronically.

In the case of ONC, ONC measures a range of outcomes associated with its multiple efforts, but the office does not measure the extent to which its individual efforts are having an effect on patients' ability to access their health information electronically—by determining, for example, if providers that participate in these initiatives have higher rates of patient access. ONC officials stated that they use metrics as a means of assessing whether the technologies and resources made available through ONC's efforts are being utilized. For example, ONC officials told us they count the number of website visits to the Patient Engagement Playbook page, the number of providers and other stakeholders who have pledged to make electronic health information available to their patients through ONC's Blue Button Initiative, and the number of times

patients access educational videos about their right to access their health information online.³⁴

According to officials, ONC also uses nationally representative surveys of hospitals, other providers, and patients that are fielded by various organizations to measure the extent to which patients access their health information electronically; however, the surveys cannot be used to measure whether, or to what extent, ONC's efforts most directly related to patient access are achieving their intended effects.³⁵ ONC's survey data identify, for example, how many patients reported being able to electronically view, download, or transmit their health information as well as if patients sent their health information to an app, mobile device, or PHR. The survey of patients provides information on how patients are accessing their health information and what they do with that information once accessed. For example, the survey asks patients whether they have attempted to electronically send their health information to another electronic location such as a PHR application. Finally, the survey also asks patients about the extent to which they experience any challenges when electronically accessing their health information. ONC officials told us that they plan to conduct a consumer survey with different questions in 2017; however, ONC has not finalized the questions for this survey. According to ONC officials, these surveys help the agency understand other factors, such as how broadband access and language influence patient access and whether progress is being made generally towards the Roadmap goal of increasing patients' ability to access their health information electronically.

HHS lacks information on the effectiveness of CMS's and ONC's efforts because it has not developed outcome measures. For example, ONC cannot determine if patient electronic access is higher for participants in the Blue Button Initiative compared with non-participants or if providers who use the Patient Engagement Playbook achieve more patient

³⁴ONC officials told us that, based on a recent assessment of the Blue Button Initiative, they have plans to develop outcome measures for this effort. However, these officials were unable to provide us with details regarding the specific outcome measures they are considering or how they might be implemented or assessed.

³⁵ONC used information from the following surveys: 1) an annual mail or secure online site survey of hospitals, conducted by the American Hospital Association since 2008; 2) an annual mail/phone survey of office-based physicians, conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics from 2008-2012; and 3) a consumer phone survey, conducted by MITRE and NORC at the University of Chicago that was fielded in 2012, 2013, and 2014.

electronic access than non-users. In our prior work we have identified the use of outcome measures as a leading principle for measuring performance.³⁶ Guidance for federal agencies based on these principles calls for federal agencies to include outcome measures that address the status of program operations, identify areas that need improvement, ensure accountability for end results, and measure progress towards agency strategic goals—in this case, HHS’s goals related to increasing patients’ ability to access their health information electronically. Without outcome-focused performance measures, HHS cannot determine whether, or to what extent, each of its efforts are contributing to the department’s overall goals, or if these efforts need to be modified in any way.

Conclusions

Through CMS’s Medicare and Medicaid EHR Programs and ONC’s multiple individual initiatives, HHS supports a wide range of efforts intended to increase patients’ electronic access to their health information. HHS’s investment in these efforts has been significant—since 2009 HHS has spent over \$35 billion on the development and adoption of health information technology. CMS’s and ONC’s efforts aim to encourage the use of technologies that allow patients to electronically access their longitudinal health information, contribute to that information, and direct it to any location of their choice. While HHS’s investment in health information technology is significant, HHS lacks the ability to determine whether, or to what extent, CMS’s and ONC’s efforts are helping HHS achieve its goals. ONC is largely responsible for measuring the nation’s progress towards increasing patients’ electronic access to health information. However, ONC has not developed outcome measures to directly measure the effectiveness of its individual efforts, identify areas that need improvement, and ensure accountability for achieving results. Without such outcome-focused performance measures linked to relevant agency goals, ONC—and by extension, HHS—cannot determine whether, or to what extent, each of the programs and efforts is contributing to overall goals, or if these efforts need to be modified in any way.

³⁶See GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, [GAO/GGD-96-118](#) (Washington, D.C.: June 1, 1996).

Recommendations

To help ensure that its efforts to increase patients' electronic access to health information are successful, the Secretary of HHS should direct ONC to take two actions.

- First, develop performance measures to assess outcomes of key efforts related to patients' electronic access to longitudinal health information. Such actions may include, for example, determining whether the number of providers that participate in these initiatives have higher rates of patient access to electronic health information.
- Second, use the information these performance measures provide to make program adjustments, as appropriate. Such actions may include, for example, assessing the status of program operations or identifying areas that need improvement in order to help achieve program goals related to increasing patients' ability to access their health information electronically.

Agency Comments and our Evaluation

We provided a draft of this report to HHS for its review and comment. HHS provided written comments, which are reprinted in appendix III. HHS also provided technical comments, which we incorporated as appropriate. In its written comments, HHS concurred with both of our recommendations.

With regard to our first recommendation, which calls for HHS to develop performance measures to assess the outcomes of key efforts related to patients' electronic access to longitudinal health information, HHS noted that ONC is committed to assessing the effects of health IT adoption and use. HHS detailed efforts on the part of ONC and CMS to assess progress in patients' access to their electronic health information and said that the department has used these assessments to modify its programs for encouraging such use over time. HHS stated that there has been an increase in patients' ability to electronically access and use their health information and noted that we said this in our report. With regard to our statement that ONC is primarily responsible for assessing the effects of the Medicare EHR Program, HHS raised concerns that this statement was misleading because assessing the impact of the program is a coordinated effort between ONC and CMS. In response, we changed our description of the roles of ONC and CMS to reflect HHS's comment.

While HHS has worked to assess the impact of its efforts, it agreed that ONC has not developed a specific means for measuring outcomes associated with ONC's efforts aimed at furthering patients' ability to electronically access their health information. HHS also noted that ONC is required by HITECH and the Medicare Access and Children's Health Insurance Program Reauthorization Act to develop performance measures for the adoption of EHRs and related efforts to facilitate the electronic use and exchange of health information. HHS stated that these required performance measures involved nationwide surveys that go beyond the scope of the Medicare EHR Program data discussed in this report. Therefore, HHS stated that ONC would make every effort to develop performance measures for patient education and outreach initiatives but would have to balance these efforts with its efforts to develop measures for the adoption of EHRs, interoperability, and patient engagement nationwide.

In concurring with our second recommendation, that ONC use the information the performance measures provide to make program adjustments, HHS stated that it is committed to using performance measures to guide program improvement.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Health and Human Services, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staffs have any questions about this report, please contact me at (202) 512-7114 or at yocomc@gao.gov. Contact points for our Office of Congressional Relations and Office of Public Affairs can be found on the last page of this report. Other major contributors to this report are listed in appendix IV.



Carolyn L. Yocom Director, Health Care

List of Requesters

The Honorable Lamar Alexander
Chairman
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable John Thune
Chairman
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Michael Enzi
Chairman
Subcommittee on Primary Health and Retirement Security
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable Richard Burr
United States Senate

The Honorable Pat Roberts
United States Senate

Appendix I: Methodology for Medicare Electronic Health Record Incentive Program (Medicare EHR Program) Data Analysis and Provider Survey

This appendix provides additional details regarding our analysis of Medicare EHR Program data and our nationally representative provider survey. The data analysis and the provider survey were used, in part, to describe the extent and type of electronic access to health information currently available to patients, the extent to which patients electronically access their health information, and the actions providers are taking to encourage such access.¹

Methodology for Analysis of Medicare EHR Program Data

We analyzed data from the Centers for Medicare & Medicaid Services (CMS) as supplemented with other government data to (1) determine the number of providers—that is, hospitals and health care professionals (e.g., physicians)—that participated in the 2015 Medicare EHR Program; (2) determine the number of program participants who reported each of two measures related to patient electronic access to health information; (3) determine the extent to which program participants are offering patients, and patients are using, the ability to electronically access their health information; and (4) examine the characteristics of providers that were associated with higher or lower percentages of patients who actually accessed their available health information.

We assessed the reliability of these data by (1) performing electronic testing of required data elements, (2) reviewing existing information about the data and the system that produced them, and (3) consulting agency officials who are knowledgeable about these data. We determined that

¹Throughout the report, we use the terms “electronic access” and “access” to collectively refer to patients’ ability to electronically view, download, or transmit their health information.

these data were sufficiently reliable for the purposes of our reporting objectives.

Number of providers that participated in the Medicare EHR Program.

To determine the number of providers that participated in the Medicare EHR Program in 2015, we analyzed data extracted from CMS's National Level Repository that represented all successful attestations. CMS collected these data from January 2016 to March 2016. We counted the number of unique providers that were included in the 2015 program data (whom we refer to as "participants").

Number of program participants who reported two measures related to patient electronic access to health information. To determine the number of participants who reported two measures related to patient electronic access to health information, we counted the number of unique providers who reported a number for (1) the percentage of patients who were offered the ability to electronically view, download, and transmit their health information, and (2) the percentage of patients who actually electronically viewed, downloaded, or transmitted their health information.

The extent to which program participants are offering patients—and patients are using—the ability to electronically access their health information. To determine the extent to which program participants offered patients the ability to electronically access their health information, we computed the average of the reported percentages of patients who were offered the ability to view, download, and transmit their health information by their provider. To determine the extent to which program participants' patients actually used the ability to electronically access their health information, we computed the average of the reported percentage of patients who actually viewed, downloaded, or transmitted their health information. To determine the extent to which program participants' patients actually used the ability to electronically access their health information when it was available, we divided the number of patients who actually accessed their health information by the number of patients who were offered access for each participant, and computed the average.

Characteristics of providers associated with higher or lower percentages of patients who actually accessed their available health information. To examine the characteristics of providers that were associated with higher or lower percentages of patients who actually accessed their available health information, we analyzed data on provider characteristics from CMS, the Office of the National Coordinator for Health Information Technology (ONC), the Health Resources and

Services Administration (HRSA), and the U.S. Census Bureau. Each characteristic is divided into two or more categories. For example, the characteristic “geographic region” is divided into four categories—Midwest, Northeast, South, and West regions. As part of this analysis, we computed the average percentage of patients who actually accessed their available health information for providers within each characteristic category without controlling for other characteristics. We examined the following provider characteristics:

Regional characteristics. We analyzed data on the following regional characteristics using providers’ business zip code:

- *Metropolitan status.* We used the 2015-2016 HRSA Area Health Resources File to determine whether providers were located in a metropolitan area—an area that has at least one urbanized area of 50,000 people, among other criteria. We then categorized providers in metropolitan areas as being located in urban areas and providers that were not as being in rural areas.
- *Geographic region.* We used information from the U.S. Census Bureau to identify the U.S. census region—Midwest, Northeast, South, or West—where providers were located or practiced.
- *County residents living in poverty.* We used information from the HRSA Area Health Resources File to calculate the 2014 national median percentage of counties’ residents living under the poverty line. We then categorized providers into “higher poverty” areas if they were located in a county above the national median percentage of residents living in poverty and “lower poverty” areas if they were located in a county below or equal to the median.
- *County residents over age 65.* We used information from the HRSA Area Health Resources File to estimate the 2014 national median of counties’ percentage of residents over age 65. We then categorized providers into “higher population over 65” areas if they were located in a county above the national median percentage of residents over age 65 and “lower population over age 65” areas if they were located in a county below or equal to the median.

Hospital type. We analyzed data on the following categorizations of hospital type:

- *Hospital classification.* We determined whether hospitals were classified as acute care hospitals or critical access hospitals by using data from CMS’s Hospital Compare file.

- *Ownership type.* We used data on ownership type from CMS's Hospital Compare file to create three categories of ownership: (a) for-profit, (b) nonprofit, and (c) government-owned.

Health care professional characteristics. We analyzed data on the following categorizations of professional characteristics:

- *Health care professional specialty.* We obtained data on professionals' primary specialty from CMS's Physician Compare file. We then consolidated these specialties into the following three categories: (a) general practice physician, (b) specialty practice physician, and (c) other, which includes chiropractors, podiatrists, and dentists.
- *Number of health care professionals in the practice.* We estimated the number of professionals in each practice by using data from CMS's Physician Compare file. We subsequently created three practice size categories: (a) practice of 1 to 10 professionals, (b) practice of 11 to 50 professionals, and (c) practice of 51 or more professionals.

Methodology for Provider Survey

We surveyed a nationally representative sample of providers who participated in the 2014 Medicare EHR Program about how they are providing patients with the ability to electronically access health information.

The survey was designed to collect information from providers related to patient electronic access to health information, including the methods and specific technology providers use to give patients electronic access to their health information, the types of health information providers make available through these technologies, and any methods providers use to encourage patient electronic access. The survey was also designed to capture providers' perspectives on the benefits of patients having such electronic access to their health information—specifically whether providers saw it beneficial for patients to electronically view, download, or transmit certain types of health information.

The target population for this survey was all hospitals and health care professionals who reported to the Medicare EHR Program that 5 percent or more of their patients viewed, downloaded, or transmitted their health

information for the 2014 program year.² Using 2014 program data provided to us by CMS, we identified 60,321 hospitals and health care professionals to be included in the population for this survey. We selected a stratified random sample of 1,867 hospitals and providers as described in table 4 below. We stratified the population by type (hospitals and health care professionals) and the reported percentage of patients who electronically accessed their health information in 2014. We computed the sample sizes separately for hospitals and professionals needed to achieve a precision of plus or minus 5 percentage points or fewer at the 95 percent confidence level. We then increased the sample sizes in each group for expected response rates of about 50 and 30 percent for hospitals and health care professionals, respectively. (See table 4.)

Table 4: Description of Stratified Sampling Frame and Sample Sizes

| Stratum | Population size | Sample size |
|--|-----------------|--------------|
| Hospitals - bottom 50 percent of patients who electronically accessed their health information | 909 | 315 |
| Hospitals - top 50 percent of patients who electronically accessed their health information | 908 | 314 |
| Health care professionals - bottom 50 percent of patients who electronically accessed their health information | 29,251 | 619 |
| Health care professionals - top 50 percent of patients who electronically accessed their health information | 29,253 | 619 |
| Total | 60,321 | 1,867 |

Source: GAO Analysis of CMS Data. | GAO-17-305

A link to this web-based survey was emailed to these 1,867 providers via the email addresses included in the program data provided by CMS. We received valid responses from 428 (23 percent) out of the 1,867 hospitals and health care professionals selected in our stratified random sample. The weighted response rate, which accounts for the differential sampling

²To participate in the Medicare EHR Program, providers had to report two measures related to patient electronic access or claim an exclusion for these measures. These two measures were (1) Ability to electronically access health information—in 2014 and 2015, more than 50 percent of a providers' patients must have their information available electronically with the ability to view, download, and transmit to a third party in a timely manner (i.e., within 36 hours of discharge for hospitals or within 4 business days that the information is available to a health care professional), and (2) Actual electronic access—in 2014, more than 5 percent of a provider's patients must electronically view, download, or transmit their information. In 2015, one patient must electronically view, download, or transmit their information.

fractions within strata, is 21 percent for the full sample, 28 percent for hospitals, and 20 percent for health care professionals. (See table 5.)

Table 5: Description of Valid Responses

| Stratum | Sample size | Valid responses | Weighted response rate |
|---|--------------|-----------------|------------------------|
| Hospitals - bottom 50 percent of patients who electronically accessed their health information | 315 | 74 | 28% |
| Hospitals - top 50 percent of patients who electronically accessed their health information | 314 | 101 | |
| Health care professionals - bottom 50 patients who electronically accessed their health information | 619 | 115 | 20% |
| Health care professionals - Top 50 patients who electronically accessed their health information | 619 | 138 | |
| Total | 1,867 | 428 | 21% |

Source: GAO Analysis of CMS Data. | GAO-17-305

We conducted an analysis of our survey results to identify potential sources of nonresponse bias using two methods. First, we examined the response propensity of the sampled hospitals and health care professionals by several demographic characteristics. These characteristics included region, metropolitan status, specialty type, size of practice, hospital type, and hospital ownership type. Second, we compared weighted estimates from respondents and nonrespondents to known population values for measures that are related to the survey outcomes for which we were most interested. We conducted statistical tests of differences, at the 95 percent confidence level, between estimates and known population values, and between respondents and nonrespondents. These analyses were conducted separately for hospitals and health care professionals.

Based on this analysis, we did not observe significant differences in response propensities or between known population values and estimates for nearly all of the characteristics we examined. However, we did observe significant differences by ownership type for hospitals and by region for health care professionals. Specifically, we found that proprietary and physician-owned hospitals were significantly under-represented by our respondents. Additionally, we found that professionals in the Northeast and South were significantly under-represented, while professionals in the Midwest and West were over-represented by our respondents.

To ensure that the survey results appropriately represented the population of 60,321 hospitals and health care professionals, we weighted the results from the 428 respondents by the inverse of the probability of selection (base weight) and a nonresponse adjustment factor to account for nonresponse and the differences in response propensities we identified. The nonresponse adjustment factor was calculated using weighting class adjustments where adjustment cells were based on strata, hospital ownership type, and region.

We repeated the nonresponse bias analysis using the adjusted weights and found no significant differences with known population and the weighed estimates for all of the characteristics we examined. This provided us with evidence that the nonresponse weighting class adjustments help mitigate any potential nonresponse bias introduced by the differences in response propensities we identified.

Based on the results of this nonresponse bias analysis and the weighting adjustments, we determined that weighted estimates generated from these survey results are generalizable to the population of hospitals and health care professionals and are sufficiently reliable for the purposes of this report.

Because we followed a probability procedure based on random selections, our sample is only one of a large number of samples that we might have drawn. Since each sample could have provided different estimates, we express our confidence in the precision of our particular sample's results as a 95 percent confidence interval (e.g., plus or minus 7 percentage points). This is the interval that would contain the actual population value for 95 percent of the samples we could have drawn. As a result, we are 95 percent confident that each of the confidence intervals in this report will include the true values in the study population.

Appendix II: ONC Efforts to Further Patients' Ability to Access Longitudinal Electronic Health Information

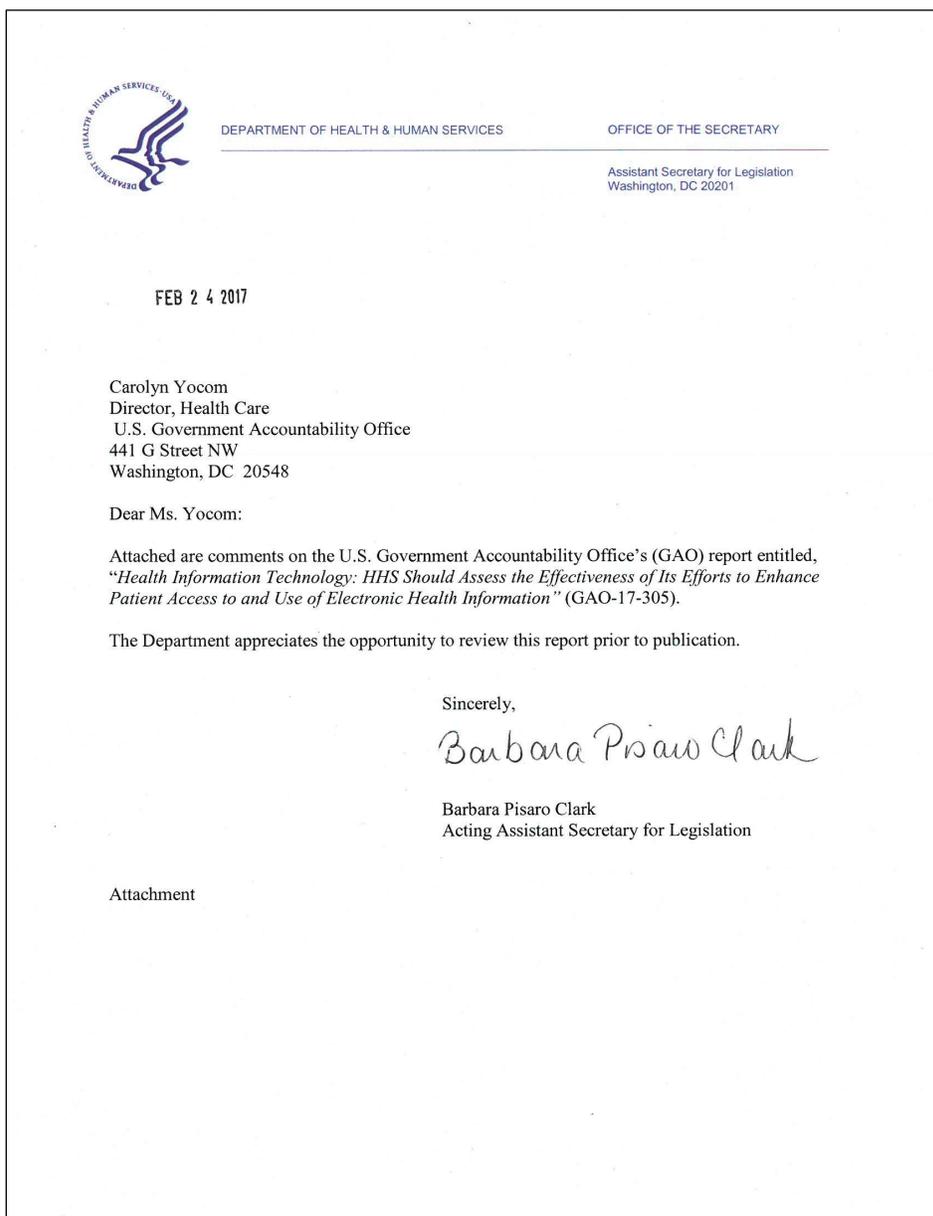
| Office of the National Coordinator for Health Information Technology (ONC) Effort | Description |
|---|---|
| Blue Button Pledge Program | Voluntary pledge where organizations, such as providers and hospitals, commit to advance efforts to increase patient access to and use of their health data. |
| Blue Button Connector | Website to help consumers locate where to find health information online and assist the development of apps and tools to help consumers understand and use their health information. |
| Blue Button Research Project | Research designed to understand the experience of stakeholders surrounding patient access to their own health information and use of electronic health information. The research focuses on how empathy can help to understand the unmet needs and challenges facing stakeholders. |
| Consumer Education Video | Educational video for consumers about their right to access their health information. |
| Intervention to Increase Enrollment in Patient Portals | Intervention aimed at increasing the percentage of patients who enroll in online portals to view, download, and transmit their health records and communicate online with their clinicians. |
| Patient Story Collection | Four videos that show how health information technology is being used for patient engagement, access, and care coordination. |
| Strategies for Improving Patient Engagement Through Health IT | Interactive document that walks providers through strategies they can use to engage patients with the use of health IT. |
| Personal Health Record Privacy Considerations Tool | Tool that identifies key considerations for adopting health information exchange based on personal health records. |
| Health Insurance Portability and Accountability Act (HIPAA) Access Infographic | Infographic regarding an individual's right to access their medical records (developed and published in conjunction with the Department of Health and Human Services (HHS) Office for Civil Rights). |
| Access Videos for Consumers | Easy-to-understand videos for consumers, captioned in English and Spanish, about individuals' right to access their health information under HIPAA, addressing issues including fees and requesting that health information be sent to a third party (developed and published in conjunction with the HHS Office for Civil Rights). |
| Examining Oversight of the Privacy & Security of Health Data Collected by Entities Not Regulated by HIPAA | Published report on gaps in legal oversight between the collection of electronic health information regulated by HIPAA and not regulated by HIPAA so that consumers can be better aware of the privacy and security conditions of how they manage their digital health. |
| Application Programming Interface (API) Task Force | Task force to identify priority recommendations for ONC that will help enable consumers to leverage API technology to access patient data, while ensuring the appropriate level of privacy and security protection. |
| Tech Lab | Provides internal and external stakeholders with common connection points to ONC's standards and technology efforts. Tech Lab is organized around four areas: 1) standards coordination; 2) testing and utilities; 3) pilots; and 4) innovation. |

**Appendix II: ONC Efforts to Further Patients'
Ability to Access Longitudinal Electronic
Health Information**

| Office of the National Coordinator for Health Information Technology (ONC) Effort | Description |
|--|--|
| Move Health Data Forward Challenge | Challenge to stimulate consumer-mediated exchange; will help create API solutions to help individuals securely and electronically authorize the movement of health data to destinations of their choice. |
| Consumer Health Data Aggregator Challenge | Challenge to spur the development of third-party consumer-facing applications that use open, standardized APIs to help consumers aggregate their data in one place. |
| HEART Working Group | A working group aimed at developing a set of privacy and security specifications that enable a consumer to control the authorization of access to RESTful health-related data sharing APIs, and to facilitate the development of interoperable implementations of these specifications by others. |
| Patient Engagement Playbook | Tool for health care providers, practice staff, and hospital administrators who want to leverage health IT using patient portals to engage patients in their health and care. |
| Model Privacy Notice Update | Update of the 2011 Model Privacy Notice to be more broadly applicable (beyond personal health records). According to ONC, this update provides open-source content that technology developers can use to notify consumers of their privacy and security practices. |
| 2015 Edition Health IT Certification Criteria Final Rule | The 2015 Edition of ONC's Health IT Certification Criteria supports the certification of health IT, including APIs, to support patient access to health data and view, download, and transmit functions that continue to support patient access to their health information, including via both encrypted and unencrypted email transmission to any third party the patient chooses. |
| Interoperability Pledge | Commitment from health care industry to make electronic health records work better for consumers and providers. |

Source: GAO analysis of information provided by ONC. | GAO-17-305

Appendix III: Comments from the Department of Health and Human Services



GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HEALTH INFORMATION TECHNOLOGY: HHS SHOULD ASSESS THE EFFECTIVENESS OF ITS EFFORTS TO ENHANCE PATIENT ACCESS TO AND USE OF ELECTRONIC HEALTH INFORMATION (GAO-17-305)

The U.S. Department of Health and Human Services (HHS) appreciates the opportunity from the Government Accountability Office (GAO) to review and comment on this draft report.

Recommendation

To help ensure that its efforts to increase patients' electronic access to health information are successful, the Secretary of HHS should direct the Office of the National Coordinator for Health Information Technology (ONC) to take two actions.

- First, develop performance measures to assess outcomes of key efforts related to patients' electronic access to longitudinal health information. Such actions may include, for example, determining whether the number of providers that participate in these initiatives have higher rates of patient access to electronic health information.
- Second, use the information these performance measures provide to make program adjustments, as appropriate. Such actions may include, for example, assessing the status of program operations or identifying areas that need improvement in order to help achieve program goals related to increasing patients' ability to access their health information electronically.

HHS Response

HHS concurs with GAO's recommendation. ONC is committed to assessing the impacts of health IT adoption and use. One of our most important ongoing activities is the Centers for Medicare & Medicaid Services (CMS) and ONC collaboration to monitor and review the electronic health record (EHR) Incentive Programs and other programs implemented as a result of the Health Information Technology for Economic and Clinical Health Act (HITECH Act). Since the inception of the Medicare and Medicaid EHR Incentive Programs, CMS and ONC have used these analyses to modify the Programs over time.

ONC conducts analysis projects designed to monitor the extent to which patients are (1) given access to their health information electronically; (2) engage with their care providers electronically; and (3) experience challenges with electronically accessing their information. ONC's analyses serve two purposes. First, to ensure that interoperability is achieved, ONC and CMS monitor the nation's progress towards the goal of providing a majority of individuals with access to their electronic health information. Second, ONC uses its results to inform progress related to its key national initiatives such as the ONC Certification Program.

The data show that there has been an uptick in access. As noted in GAO's report, (p. 11), the Medicare and Medicaid EHR Incentive Programs have had a significant effect on the general population's ability to electronically access and use information on their health. The number of providers offering patients access to their health information electronically has increased, as has the number of patients using the systems available to access this information.

This information supports ONC's recent data release. Based on nationally representative data, we found that in 2015, 64 percent of physicians had an EHR with the capability to exchange secure messages with patients, an over 50 percent increase since 2013. Furthermore, 63 percent of physicians had the capability for their patients to electronically view their medical record,

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HEALTH INFORMATION TECHNOLOGY: HHS SHOULD ASSESS THE EFFECTIVENESS OF ITS EFFORTS TO ENHANCE PATIENT ACCESS TO AND USE OF ELECTRONIC HEALTH INFORMATION (GAO-17-305)

41 percent had the capability for patients to download their medical record, and 19 percent had the capability for patients to electronically send (transmit) their medical record to a third party <https://dashboard.healthit.gov/quickstats/pages/physicians-view-download-transmit-secure-messaging-patient-engagement.php>. Similarly, the percent of hospitals that enable patients to electronically view, download, and transmit their health information grew almost 7-fold between 2013 and 2015.

Within the report, GAO states that ONC is primarily responsible for assessing impacts of the Medicare EHR Incentive Program. This statement is misleading. Assessing the impacts of the Medicare EHR Incentive Program is a coordinated effort between ONC and CMS. For example, ONC's analyses are focused on evaluating progress as it pertains to effects of specific program requirements, but not the overall effectiveness of the CMS Medicare EHR Incentive Program. As noted above, ONC evaluates adoption of technologies within the industry. CMS is and has been responsible for assessing the overall program, including progress on objectives and measures since the program's inception. CMS has, through publically published data and reports, and within references in rulemaking and data analysis, included information regarding provider performance on these specific measures.

As a result of its ongoing research and monitoring of patient access, ONC is actively developing and reporting on patient access performance measures. As noted in GAO's report, HHS has developed the Federal Health Information Technology (IT) Strategic Plan as well as the *Shared Nationwide Interoperability Roadmap* (the Roadmap). Both of these documents emphasize the importance of placing the patient in the center of health information flow by ensuring that information is available when and where it is needed ultimately resulting in better patient outcomes. The milestones outlined in these documents serve as performance measures used to establish benchmarks and programmatic targets.

ONC is carefully monitoring progress towards these milestones and identifying demonstrable evidence that the milestones are met. For example, Roadmap commitment F3.6, "work to address barriers that prevent patients from accessing their health data," was fulfilled by the release of the patient access guidance and [accompanying videos](#) in September 2016.

However, GAO is correct that ONC has not developed a specific means of measuring the outcomes associated with all of its efforts listed in Appendix II. GAO recommends the development of such performance measures to specifically assess how ONC's programs, projects, or deliverables have individually achieved the goal of increasing access. There are two issues that GAO should consider.

- First, ONC notes that many of the access efforts listed in Appendix II are targeted towards all providers and all patients utilizing EHRs and are not specifically focused on organizations that received incentive payments from the Medicare and Medicaid EHR Incentive Programs. Therefore, an evaluation of ONC's efforts to increase access would need to capture the effect of these efforts on electronic access to health information in the general population.

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HEALTH INFORMATION TECHNOLOGY: HHS SHOULD ASSESS THE EFFECTIVENESS OF ITS EFFORTS TO ENHANCE PATIENT ACCESS TO AND USE OF ELECTRONIC HEALTH INFORMATION (GAO-17-305)

- Second, development of such measures must take into account ONC's limited resources and Paperwork Reduction Act concerns, which would make development and fielding of large-scale outcomes surveys impracticable. ONC could consider building in a usability testing approach to our outreach efforts, which might include sharing our outreach efforts via webinars or focus groups, conducted on a voluntary basis, to determine if patients feel that our education efforts make them more likely to access their health information.

ONC recognizes the importance of outcomes measures in ensuring that programs are enabling progress toward ONC's strategic goals, and identifying areas where particular programs may need improvement or refinement. ONC will take resolution steps to implement GAO's recommendation, including:

- Developing process measures for ONC programs and projects including but not limited to the Blue Button Initiative, Patient Engagement Playbook, and consumer-facing resources.
- Identifying outcome measures to assess impact of these programs, both individually and collectively, towards improving patients' electronic access and use of health information.
- Collaborating with federal agency partners to develop shared metrics to assess patients' electronic access to health information.

The GAO report focuses largely on Medicare EHR Incentive Program and ONC's initiatives to increase patient access. It is worth mentioning that ONC is required to develop performance measures for adoption of EHRs and related efforts to facilitate the electronic use and exchange of health information, as described in HITECH section 13113 (a) and more recently the Medicare Access and CHIP Reauthorization Act (MACRA) section 106(b). These required performance measures involve nationwide surveys that go beyond the scope of the Medicare EHR Incentive Program data discussed in this report. Responding to these statutorily-required reports involves significant resource commitment as well as a broader understanding of how access to and use of health information is evolving. ONC believes that these required outcomes measures will lead to better data on patient access and will provide a clearer picture as to whether patients have access to and are using electronic health information. Therefore, while ONC will make every effort to develop performance measures for its patient education and outreach initiatives, we believe that limited resources are more appropriately allocated to measuring questions of nationwide adoption of electronic health records, interoperability, and patient engagement.

To measure the broader issue of interoperability and barriers to interoperability including patient access required under MACRA section 106(b), ONC is collaborating with the National Cancer Institute and the National Partnership for Women and Families on the Health Information National Trends Survey, a nationally representative survey of individuals to monitor health IT access and use. <http://hints.cancer.gov/about.aspx>

As GAO noted in its report, there are a number of factors that come into play when a patient decides whether to engage electronically with their health care providers. Improved access to electronic health information might be one factor. However, there are other factors such as health status, which can influence whether a patient has a need to view, download, or transmit

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HEALTH INFORMATION TECHNOLOGY: HHS SHOULD ASSESS THE EFFECTIVENESS OF ITS EFFORTS TO ENHANCE PATIENT ACCESS TO AND USE OF ELECTRONIC HEALTH INFORMATION (GAO-17-305)

their electronic health information. HHS has a project underway with the National Quality Forum to develop a measurement framework which identifies clinical outcome measures sensitive to interoperability.

<http://www.qualityforum.org/ProjectMaterials.aspx?projectID=83283>

HHS also concurs with GAO's recommendation regarding information performance measures provide. HHS is committed to using performance measures to guide program improvement. The information obtained from such access and patient engagement efforts will be used to make needed programmatic changes, to ensure that our efforts to increase access to electronic health information are effective.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Carolyn Yocom, (202) 512-7114 or yocomc@gao.gov

Staff Acknowledgments

In addition to the contact named above, Tom Conahan, Assistant Director; Andrea E. Richardson, Analyst-in-Charge; Marisa Beatley; A. Elizabeth Dobrenz; and Courtney Liesener made key contributions to this report. Also contributing were Jim Ashley, Carolyn Fitzgerald, Krister Friday, Monica Perez-Nelson, and Katie Singh.

Appendix V: Accessible Data

Data Tables

Data Table for Highlights figure, Average Percentage of Patients of 2015 Medicare EHR Program Participating Providers Who Were Offered Access and Electronically Accessed Available Health Information

| | Professionals | | Hospitals | |
|---|---------------|--------|-----------|--------|
| | Mean | Median | Mean | Median |
| Electronically Accessed Their Available Health Information | 30% | 26% | 15% | 11% |
| Offered the Ability to Electronically Access Their Health Information | 87% | 94% | 88% | 92% |

Data Table for Figure 1: Average Percentage of Patients of 2015 Medicare EHR Program Participating Providers Who Were Offered Access and Electronically Accessed Available Health Information

| | Professionals | | Hospitals | |
|---|---------------|--------|-----------|--------|
| | Mean | Median | Mean | Median |
| Electronically Accessed Their Available Health Information | 30% | 26% | 15% | 11% |
| Offered the Ability to Electronically Access Their Health Information | 87% | 94% | 88% | 92% |

Data Table for Figure 2: Average Percentage of Patients of 2015 Medicare EHR Program Health Care Professionals Who Electronically Accessed Available Health Information, by Provider Characteristic

| Professional Characteristics | Mean portion of patients who accessed available information | Median portion of consumers who accessed available information |
|---|---|--|
| General Practice (32%) | 34% | 30% |
| Specialty Practice (63%) | 29% | 25% |
| Other (4%) | 17% | 6% |
| Greater than 50 Practice Members (54%) | 38% | 37% |
| 11 - 50 Practice Members (17%) | 22% | 17% |
| 0-10 Practice Members (25%) | 20% | 11% |
| Midwest Region (29%) | 35% | 33% |
| West Region (17%) | 35% | 30% |
| South Region (34%) | 27% | 20% |
| Northeast Region (20%) | 26% | 22% |
| Urban (91%) | 31% | 27% |
| Rural (8%) | 22% | 17% |
| Lower Poverty Area (57%) | 31% | 26% |
| Higher Poverty Area (43%) ^b | 30% | 25% |
| All Participating Professionals (100%) ^a | 30% | 26% |

Data Table for Figure 3: Average Percentage of 2015 Medicare EHR Program Participants' Patients Who Electronically Accessed Available Health Information, by Percentage of County Residents Over Age 65

| | Professionals | | Hospitals | |
|--------------------------------|---------------|--------|-----------|--------|
| | Mean | Median | Mean | Median |
| Lower Population Over 65 Area | 31% | 27% | 16% | 12% |
| Higher Population Over 65 Area | 24% | 18% | 14% | 11% |

Data Table for Figure 4: Average Percentage of 2015 Medicare EHR Program Health Care Professionals' Patients Who Electronically Accessed Available Health Information, by EHR System Vendor

| | Mean | Median |
|----------|------|--------|
| Vendor J | 48% | 47% |
| Vendor I | 39% | 37% |
| Vendor H | 29% | 27% |
| Vendor G | 29% | 24% |
| Vendor F | 28% | 22% |
| Vendor E | 28% | 20% |
| Vendor D | 22% | 19% |
| Vendor C | 13% | 9% |
| Vendor B | 12% | 7% |
| Vendor A | 10% | 1% |

Data Table for Figure 5: Average Percentage of 2015 Medicare EHR Program Hospitals' Patients Who Electronically Accessed Available Health Information, by EHR System Vendor

| | Mean | Median |
|----------|------|--------|
| Vendor 5 | 26% | 23% |
| Vendor 4 | 15% | 9% |
| Vendor 3 | 13% | 11% |
| Vendor 2 | 12% | 10% |
| Vendor 1 | 9% | 7% |

Agency Comment Letter

Text of Appendix III: Comments from the Department of Health and Human Services

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FEB 2, 2017

Carolyn Yocom Director, Health Care

U.S. Government Accountability Office 441 G Street NW

Washington , DC 20548

Dear Ms. Yocom:

Attached are comments on the U.S. Government Accountability Office's (GAO) report entitled, "Health Information Technology: HHS Should Assess the Effectiveness of Its Efforts to Enhance Patient Access to and Use of Electronic Health Information" (GAO-17-305).

The Department appreciates the opportunity to review this report prior to publication.

Sincerely,

Barbara Pisaro Clark

Acting Assistant Secretary for Legislation

Attachment

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GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S DRAFT REPORT ENTITLED: HEALTH INFORMATION TECHNOLOGY: HHS SHOULD ASSESS THE EFFECTIVENESS OF ITS EFFORTS TO ENHANCE PATIENT ACCESS TO AND USE OF ELECTRONIC HEALTH INFORMATION (GAO-17-305)

The U.S. Department of Health and Human Services (HHS) appreciates the opportunity from the Government Accountability Office (GAO) to review and comment on this draft report.

Recommendation

To help ensure that its efforts to increase patients' electronic access to health information are successful, the Secretary of HHS should direct the Office of the National Coordinator for Health Information Technology (ONC) to take two actions.

- First, develop performance measures to assess outcomes of key efforts related to patients' electronic access to longitudinal health information. Such actions may include, for example, determining

whether the number of providers that participate in these initiatives have higher rates of patient access to electronic health information.

- Second, use the information these performance measures provide to make program adjustments, as appropriate. Such actions may include, for example, assessing the status of program operations or identifying areas that need improvement in order to help achieve program goals related to increasing patients' ability to access their health information electronically.

HHS Response

HHS concurs with GAO's recommendation . ONC is committed to assessing the impacts of health IT adoption and use. One of our most important ongoing activities is the Centers for Medicare & Medicaid Services (CMS) and ONC collaboration to monitor and review the electronic health record (EHR) Incentive Programs and other programs implemented as a result of the Health Information Technology for Economic and Clinical Health Act (HITECH Act).

Since the inception of the Medicare and Medicaid EHR Incentive Programs, CMS and ONC have used these analyses to modify the Programs over time.

ONC conducts analysis projects designed to monitor the extent to which patients are (1) given access to their health information electronically; (2) engage with their care providers electronically; and (3) experience challenges with electronically accessing their information. ONC's analyses serve two purposes. First, to ensure that interoperability is achieved, ONC and CMS monitor the nation's progress towards the goal of providing a majority of individuals with access to their electronic health information. Second, ONC uses its results to inform progress related to its key national initiatives such as the ONC Certification Program.

The data show that there has been an uptick in access. As noted in GAO's report, (p. 11), the Medicare and Medicaid EHR Incentive Programs have had a significant effect on the general population 's ability to electronically access and use information on their health. The number of providers offering patients access to their health information electronically has increased, as has the number of patients using the systems available to access this information.

This information supports ONC's recent data release. Based on nationally representative data, we found that in 2015, 64 percent of

physicians had an EHR with the capability to exchange secure messages with patients, an over 50 percent increase since 2013. Furthermore, 63 percent of physicians had the capability for their patients to electronically view their medical record,

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41percent had the capability for patients to download their medical record, and 19 percent had the capability for patients to electronically send (transmit) their medical record to a third party

<https://dashboard.healthit.gov/quickstats/pages/physicians-view-download-transmit-secure-messaging-patient-engagement.php> .

Similarly, the percent of hospitals that enable patients to electronically view, download, and transmit their health information grew almost 7-fold between 2013 and 2015.

Within the report, GAO states that ONC is primarily responsible for assessing impacts of the Medicare EHR Incentive Program. This statement is misleading. Assessing the impacts of the Medicare EHR Incentive Program is a coordinated effort between ONC and CMS. For example, ONC's analyses are focused on evaluating progress as it pertains to effects of specific program requirements, but not the overall effectiveness of the CMS Medicare EHR Incentive

Program. As noted above, ONC evaluates adoption of technologies within the industry. CMS is and has been responsible for assessing the overall program, including progress on objectives and measures since the program's inception. CMS has, through publically published data and reports, and within references in rulemaking and data analysis, included information regarding provider performance on these specific measures.

As a result of its ongoing research and monitoring of patient access, ONC is actively developing and reporting on patient access performance measures. As noted in GAO's report, HHS has developed the Federal Health Information Technology (IT) Strategic Plan as well as the Shared Nationwide Interoperability Roadmap (the Roadmap). Both of these documents emphasize the importance of placing the patient in the center of health information flow by ensuring that information is available when and where it is needed ultimately resulting in better patient outcomes. The milestones outlined in these documents serve as performance measures used to establish benchmarks and programmatic targets.

ONC is carefully monitoring progress towards these milestones and identifying demonstrable evidence that the milestones are met. For example, Roadmap commitment F3.6, "work to address barriers that prevent patients from accessing their health data," was fulfilled by the release of the patient access guidance and accompanying videos in September 2016.

However, GAO is correct that ONC has not developed a specific means of measuring the outcomes associated with all of its efforts listed in Appendix II. GAO recommends the development of such performance measures to specifically assess how ONC's programs, projects, or deliverables have individually achieved the goal of increasing access. There are two issues that GAO should consider.

- First, ONC notes that many of the access efforts listed in Appendix II are targeted towards all providers and all patients utilizing EHRs and are not specifically focused on organizations that received incentive payments from the Medicare and Medicaid EHR Incentive Programs. Therefore, an evaluation of ONC's efforts to increase access would need to capture the effect of these efforts on electronic access to health information in the general population.

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- Second, development of such measures must take into account ONC's limited resources and Paperwork Reduction Act concerns, which would make development and fielding of large-scale outcomes surveys impracticable. ONC could consider building in a usability testing approach to our outreach efforts, which might include sharing our outreach efforts via webinars or focus groups, conducted on a voluntary basis, to determine if patients feel that our education efforts make them more likely to access their health information.

ONC recognizes the importance of outcomes measures in ensuring that programs are enabling progress toward ONC's strategic goals, and identifying areas where particular programs may need improvement or refinement. ONC will take resolution steps to implement GAO's recommendation, including:

- Developing process measures for ONC programs and projects including but not limited to the Blue Button Initiative, Patient Engagement Playbook, and consumer-facing resources.

- Identifying outcome measures to assess impact of these programs, both individually and collectively, towards improving patients' electronic access and use of health information.
- Collaborating with federal agency partners to develop shared metrics to assess patients' electronic access to health information.

The GAO report focuses largely on Medicare EHR Incentive Program and ONC's initiatives to increase patient access. It is worth mentioning that ONC is required to develop performance measures for adoption of EHRs and related efforts to facilitate the electronic use and exchange of health information, as described in HITECH section 13113 (a) and more recently the Medicare Access and CHIP Reauthorization Act (MACRA) section 106(b). These required performance measures involve nationwide surveys that go beyond the scope of the Medicare EHR Incentive Program data discussed in this report. Responding to these statutorily-required reports involves significant resource commitment as well as a broader understanding of how access to and use of health information is evolving. ONC believes that these required outcomes measures will lead to better data on patient access and will provide a clearer picture as to whether patients have access to and are using electronic health information. Therefore, while ONC will make every effort to develop performance measures for its patient education and outreach initiatives, we believe that limited resources are more appropriately allocated to measuring questions of nationwide adoption of electronic health records, interoperability, and patient engagement.

To measure the broader issue of interoperability and barriers to interoperability including patient access required under MACRA section 106(b), ONC is collaborating with the National Cancer Institute and the National Partnership for Women and Families on the Health Information National Trends Survey, a nationally representative survey of individuals to monitor health IT access and use. <http://hints.cancer.gov/about.aspx>

As GAO noted in its report, there are a number of factors that come into play when a patient decides whether to engage electronically with their health care providers. Improved access to electronic health information might be one factor. However, there are other factors such as health status, which can influence whether a patient has a need to view, download, or transmit

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their electronic health information . HHS has a project underway with the National Quality Forum to develop a measurement framework which identifies clinical outcome measures sensitive to interoperability.

<http://www.qualityforum.org/ProjectMaterials.aspx?projectID=83283>

HHS also concurs with GAO's recommendation regarding information performance measures provide. HHS is committed to using performance measures to guide program improvement. The information obtained from such access and patient engagement efforts will be used to make needed programmatic changes, to ensure that our efforts to increase access to electronic health information are effective.

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