Evaluation of the 2015 National Electronic Health Records Survey

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This report presents the results of the cognitive evaluation of the 2015 National Electronic Health Records Survey (NEHRS), which is an annual supplement of the ongoing National Ambulatory Medical Care Survey (NAMCS). The NEHRS is a national survey of office-based physicians conducted by the National Center for Health Statistics, and is sponsored by the Office of the National Coordinator for Health Information Technology (ONC) in the Department of Health and Human Services (DHHS).

NEHRS is primarily concerned with the adoption of electronic health records (EHRs, also commonly known as EMRs by physicians, standing for electronic *medical* records) and the meaningful use standards set by DHHS. NEHRS is partially funded by the American Recovery and Reinvestment Act of 2009[2] (which includes the Health Information Technology for Economic and Clinical Health, or HITECH, Act), as well as the Patient Protection and Affordable Care Act of 2010 (ACA)[3]. The aim of both the HITECH Act and the ACA is to enhance efficiency and to improve quality in the health care system, including increasing the adoption rate of electronic health records, expanding access to care, and improving patient health. NEHRS provides key information that allows DHHS to evaluate and implement the electronic health records provisions laid out in ARRA and ACA.

In consultation with both the Division of Health Care Surveys at NCHS and ONC, the Center for Questionnaire Design and Evaluation Research (CQDER) designed and conducted a cognitive and usability evaluation of the 2015 NHERS self-report paper-based instrument. The instrument (see Appendix A) is eight pages long, and includes 41 numbered questions. There are nine "table format" questions, which present sub-questions as row headers and answer categories as column headers. Given this high number of table questions, as well as the overall length of the questionnaire, this evaluation project focused not just on the response processes behind the questionnaire items, but also on the instrument's overall usability.

This report first presents a brief overview of cognitive interviewing methodology and the theory behind the question response process, and then describes the research design for this particular project. Overall, cross-item findings are then discussed, and finally a question-by-question analysis is presented.

METHODS

Cognitive Interviewing Methodology and the Question Response Process

Cognitive interviewing is a qualitative method whose purpose is to evaluate survey questionnaires, and determine which constructs the questionnaires' items capture. The primary benefit of cognitive

[1] The author would like to thank Marko Salvaggio for conducting a number of the cognitive interviews for this evaluation project.

[2] P.L. 111-5

[3] P.L. 111-148

interviewing over non-qualitative evaluation methods is that it provides rich, contextual data into how respondents interpret questions, apply their lived experiences to their responses, and formulate responses to survey items based on those interpretations and experiences (Willis 2004, Miller et al 2015). Thus, cognitive interviewing data allows researchers and survey designers to understand whether or not a question is capturing the specific social constructs they originally wanted, and gives insight into what design changes are needed to advance the survey's overall goals. Additionally, the documented findings of cognitive interviews provide data end users the context needed to more fully understand the quantitative trends that emerge from survey data.

The underlying theory that directs the conduct of cognitive interviews is that of the question response process. Individuals typically interpret survey questions through a four-step process: They first comprehend the underlying construct, then recall the information needed, judge their answer, and finally map their answer onto one of the available response categories (Tourangeau, 1984). Given the correct protocols, cognitive interviewing can uncover the specific ways respondents perform each of these four steps.

Cognitive interviews are administered as one-on-one, in-depth, semi-structured qualitative interviews. Respondents are first asked survey items, and then probed about their answers and the thought processes behind them. While some cognitive interviewing relies on "think aloud" prompts, which ask respondents to speak through their thought processes as they are answering the survey, this project instead uses targeted probes that attempt to ascertain exactly which constructs the respondents are considering, and how they are judging and formulating their response. This semi-structured design uncovers not only these constructs, but also question response problems that often are unseen in a survey environment—including interpretive errors and recall inaccuracy. By asking respondents to provide textual verification of their responses, and about the processes by which they formulated their answers, these elusive errors are revealed.

Typical cognitive interviewing projects use a sample of approximately 20 to 40 respondents, which are purposively sampled for specific characteristics—such as race, education, or occupation—that are assumed to be relevant to the questions being evaluated. When studying questions related to the adopting of EHR systems, for instance, the sample would likely consist of respondents who both have and have not already started using EHRs, allowing for the discovery of both false positive and false negative answers. Because of the small sample size, not all demographic or occupational groups will be covered in the sample, and the analysis of cognitive interviewing does not provide generalizable findings in a statistical sense.

As a qualitative method, the analysis of cognitive interviewing data involves the iterative synthesis and reduction of the findings—beginning with a large amount of textual data (the raw transcripts and notes from the interviews themselves), and ending with cognitive schemata and conclusions that serve the overall purpose of the study. The analysis of cognitive interviewing can be conceptualized in five incremental stages: conducting the interviews, producing interview summaries, comparing data across respondents, comparing data across sub-groups of respondents, and drawing conclusions. As each step is completed, data are reduced such that meaningful content is systematically extracted to produce a summary that details a question's performance. It is the ultimate goal of a cognitive interviewing study to produce this conceptual understanding, and it is through data reduction that this type of understanding is possible. In reducing the cognitive interview data, the analyst produces a more comprehensive understanding of a question's performance; as analysis is performed, understanding of the question response process becomes more complex and complete. In the beginning it is only possible to understand how each individual respondent makes sense of and answers the survey question. By the end, individual interpretations are understood as well as how those interpretations relate across groups and within the overall context of the question's performance.

Sampling and Respondent Characteristics

For the evaluation of the 2015 NEHRS, a purposive sample of 20 respondents was recruited to participate in cognitive interviews. The universe for the NEHRS itself is non-institutional physicians who provide ambulatory care in the United States. For this evaluation project, the sample was limited to ambulatory care physicians in the Washington, DC and Baltimore, MD metropolitan area.

CQDER first constructed a sample frame of non-institutional physicians in the sample area using the publically-available CMS Physician Compare web tool, administered by the Centers for Medicare and Medicaid Services[4]. An advanced letter (see Appendix B) was sent to medical practices on this frame asking physicians at that practice to consider participating in the study and alerting them that an NCHS recruiter would be calling their office to set up an interview. Physicians were offered $100 to participate in the study. Following a telephone screening, which confirmed that the respondents were eligible for the study (specifically that they primarily provided ambulatory care in non-institutional settings), interviews were scheduled and conducted. The sample was constructed to provide diversity across the type of medicine the physicians practiced (primary care, specialty care, and surgery), as well as the size of the physicians' practices. Table 1 shows a breakdown of the sample by type of practice:

Table 1: Sample Characteristics

Type of Medical Practice	Number of Respondents
Primary Care	9
Specialty Care	3
Surgery	8

All but one of the 20 interviews were conducted outside of NCHS' Questionnaire Design Research Laboratory in Hyattsville, MD—primarily at the physician's offices. Interviews were limited to 60 minutes in length. Respondents were given the NEHRS paper questionnaire and were asked to answer the survey questions while the CQDER interviewer observed and asked follow-up probes+. Probes were administered concurrently alongside the survey questions, allowing the interviewers to get the respondents' immediate impressions and interpretations of the questions.

OVERALL RESULTS

Cognitive Findings

Two major themes emerged across the questionnaire that explain respondents' overall reactions to, and ability to correctly answer, the NEHRS questions. Both relate to the fact that, by and large, physicians are inappropriate proxy respondents for their practices' businesses managers, office and technical staff, and for their patients. The cognitive evaluation of the NEHRS instrument revealed that 1) physicians do not typically know enough about their practice's business affairs to provide accurate responses to questions about business affairs, and 2) physicians do not typically work with or understand how EHR systems work from the technology side, and do not tend to know how patient health data is either sent from, or entered into, their own systems.

Obtaining proxy responses, particularly in establishment surveys, is both accepted and encouraged in survey methodology (Biemer et al 1991). However, in order to ensure validity and to reduce

[4] http://www.medicare.gov/physiciancompare/

measurement errors, proxy respondents should only be asked about concepts with which they are familiar. In the case of the NEHRS, the sampled respondent is a physician who is then asked about a series of medical, business, and technical decisions about the "sample location" (the ambulatory care location where the respondent sees the most patients) and his or her medical practice. However, the amount of knowledge a respondent has about these three areas varies based on their location or practice's size, their non-care responsibilities at the practice (i.e. whether or not they are the practice's medical director), the practice's ownership structure, and their tenure at the practice. Overall, respondents had no problem whatsoever when asked about the medical side of their locations—such as when they were asked about their specialty (Question 1), the number of fellow providers at the location or practice (Questions 7 and 8), or their computer systems' features and capabilities they used when providing care (Question 23).

However, many respondents struggled when answering questions about their location's business practices—including about their patients' insurance plans (Question 13), their practice's plans to obtain a new EHR system (Question 20), or whether or not their practice applies for and obtains incentives from various government programs (Questions 21 and 26). Likewise, many respondents expressed difficulty or uncertainty when answering questions that focused on the technical aspects of their EHR systems, including about "meaningful use" (Question 16) and about whether or not their system had undergone a "risk assessment" (Question 19). In many of these cases, respondents noted that they were not the best person to ask about this information—many noted their office or business managers would be better suited to answer the business and billing questions, while their IT staff would be better suited to comment on the technical questions. While most respondents expressed some amount of difficulty with these questions, this pattern was particularly pronounced among physicians who worked in large practices, especially those associated with large regional or national medical organizations or corporations. Because of this organizational structure, these respondents were farther away (organizationally at least) from the business and technical decisions, and had to rely on communications they received from their parent organization in order to answer the questions. For instance, one surgeon who answered "no" to the question about buying a new EHR system (Question 20), explained that while she had heard rumors that the corporation that her practice was associated with was going to buy a new one, she hadn't heard anything officially from them and figured she had to answer "no."

Besides these structural issues of knowledge, many respondents expressed unease, or even applied clear misinterpretations, with some of the questions about the technical processes behind their day-to-day activities. For instance, Question 34 asks respondents whether or not they send and receive various types of patient health information electronically to other physicians and healthcare providers. Quite a few respondents were unsure whether or not "e-faxing" counted as electronic sending. A number were also unsure how to determine how other providers sent them information, as all they saw was the final product in either electronic or paper form (depending on their personal preference).

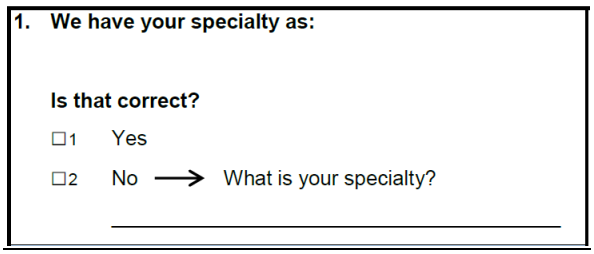
In practical terms, the problem with these instances of uncertainty across both the business practice and technology questions is that instead of using the "don't know" response option (labeled "unknown" in the tested version of the questionnaire), respondents tended to guess and provide another response. And while missing data (such as "don't know" responses) are not ideal, it is far easier to handle in the final analysis of the survey's data than response errors. The prominence of this pattern of interpretation varied somewhat across the questionnaire: respondents appeared to be more at ease answering "unknown" to technology questions, whereas they tended to guess more when answering the business ones.

Usability Findings

In addition to these general cognitive findings, the evaluation of the NEHRS also focused on the overall usability of the form. While all the respondents in the cognitive interviewing sample did finish the form, nearly all of them made some comment about the total length or the fact that some of the questions were too complex. The respondents' complaints about the instrument were particular noticeable around the

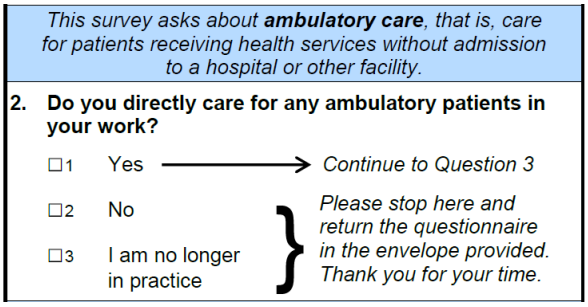
middle of the form (Pages 3 through 6 in Appendix A), when they were presented with a series of seven table format questions—one of which was a full page long, and the others which were half-page long questions. By the end of this series, a number of respondents did not pay attention to questions and were "straight-lining" their answers (i.e. answering the same way across all the items in a question or on a page). It is important to remember that they were doing this in the context of a cognitive interview where they were being paid to participate in the survey and were being observed by a member of NCHS' staff. In order to reduce the high burden and potential for response errors, item non-responses, and break-off that this section of the questionnaire presents, this series of questions should be simplified as much as possible.

QUESTION-BY-QUESTION ANALYSIS



1. We have your specialty as_____. Is that correct?

All 20 respondents received and answered this question. Two respondents answered "no," while the remaining 18 answered "yes." One respondent who answered no changed her specialty from "General Practice" to "Family Medicine," while another changed her specialty from "General Surgery" to "Vascular Surgery." This question was not probed extensively, and no cognitive findings are available.



2. Do you directly care for any ambulatory patients in your work?

All 20 respondents received this question and answered "yes." While all respondents generally understood this question to be asking about whether or not they took ambulatory patients, there was some slight variation in how they conceptualized ambulatory care, as seen in Figure 1.

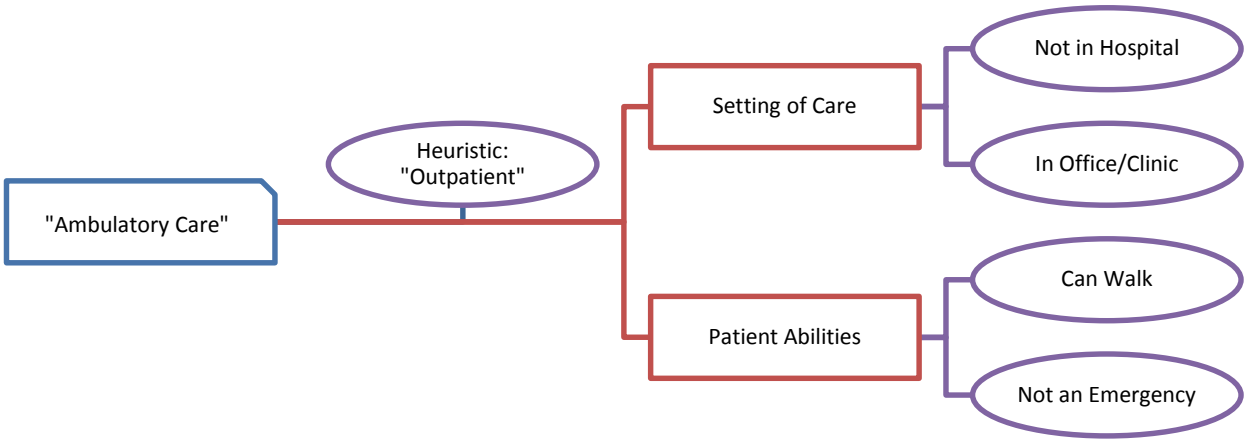


Figure 1: Cognitive Schema for Question 2

A few respondents immediately used a heuristic, understanding ambulatory care and "outpatient" care as one in the same. These respondents did not appear to think deeply about what outpatient care consisted of, just simply that the two terms were equivalent.

Most respondents conceptualized ambulatory care in terms of the *setting* of the care. These respondents either noted that ambulatory care was given outside of a hospital or that it was given in an office. For example, one primary care physician explained that ambulatory care meant that "…you are not in a hospital or nursing home—the other term is outpatient." Others focused on the fact that the patients came to them and received care in their office or clinic. For instance, another primary care physician explained that she was thinking about "patients coming into my office and not seeing them in a hospital."

Another group of respondents considered their patients' abilities when scoping the term "ambulatory care." Instead of simply considering where they provided care, these respondents thought about what health characteristics their patients had that allowed them to see them outside of a hospital or in their office. Some of these respondents focused on the fact that their patients could walk or function—that they were, quite literally—ambulatory. On the other hand, a number of other physicians explained that they only (or mostly) saw patients who were not suffering from an emergency

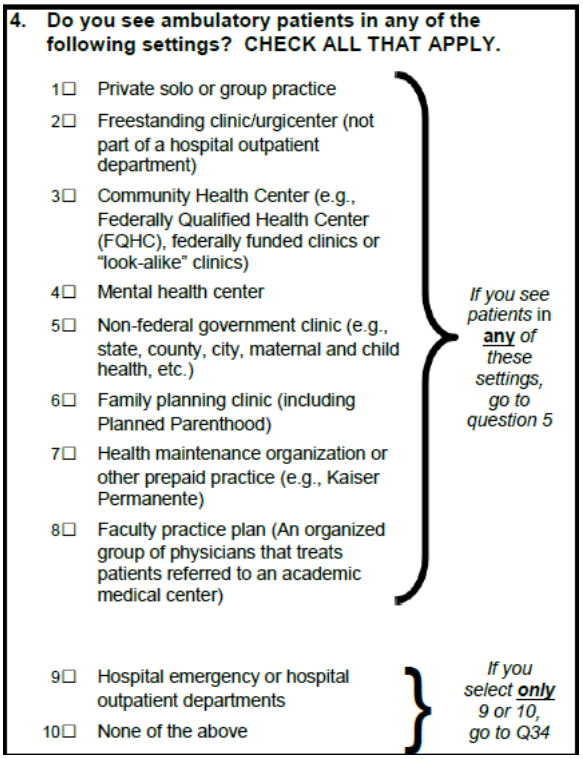
*The next question asks about a **normal week**. We define a normal week as a week with a normal caseload, with no holidays, vacations, or conferences.*
3. Overall, at how many office locations (excluding hospital emergency or hospital outpatient departments) do you see ambulatory patients in a normal week? _____ locations

3. Overall, at how many office locations (excluding hospital emergency or hospital outpatient departments) do you see ambulatory patients in a normal week?

All 20 respondents received and answered Question 3. The respondents all understood this question to be asking about at how many offices they provide care to patients. While some respondents who also work at hospital outpatient or emergency departments questioned why they had to exclude these locations, they

all did exclude them and no instances of response error were noted. For example, one primary care physician who also works at a hospital's outpatient center questioned this exclusion, saying "the work we do at [Hospital Name's outpatient department] isn't really any different than we do here [at her private practice office]." Nonetheless, this respondent did not include the hospital in her tally and answered "1." She and others in this situation explained that many patients, particularly those with low incomes, use hospital outpatient centers for their primary care services.

A few respondents indicated that they had difficulty with the term "normal week." This was less of a comprehension issue, and more a result of the fact that these physicians indicated that they had no "normal" week or that their work schedules were not regular across weeks. For instance, one primary care doctor noted that her practice has four locations, and she does not find out until the weekend what her weekly schedule will be. Respondents who indicated this lack of regularity all answered the question not with a single numeric answer (i.e. "2" locations), but rather a range of locations. The primary care physician noted above, for example, answered "2 to 3" on her form.

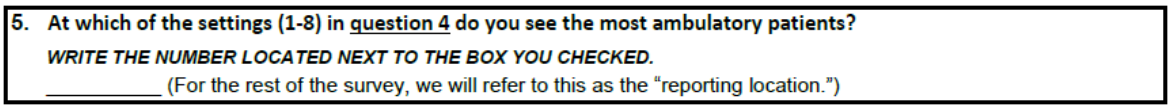


4. Do you see ambulatory patients in any of the following settings?

All 20 respondents received this question, and they understood it to be asking them to specify the type or types of practice in which they work. The cognitive interviewing sample was largely constructed of respondents in private practice, and the first answer category ("Private solo or group practice") was the most commonly cited by a wide margin. By and large, respondents understood this answer category to be referring to a non-hospital, non-HMO setting that the physician, or a group of physicians, personally owned.

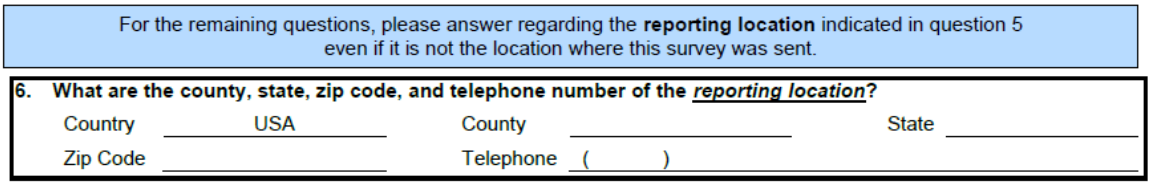
Two answer categories did cause confusion, however. First, a number of doctors whose practices had recently become associated with university medical systems (but who retained ownership of the practices) were not sure if they should answer "private solo or group practice" or "faculty practice plan." None of these respondents had ever used or heard the term "faculty practice plan," but from the definition provided they deduced that it was either a teaching hospital or something related to a university medical system. Of the five respondents who faced this issue, four chose only the first answer category, while one chose only the faculty practice plan answer. None of these respondents checked both boxes.

The second, and more significant, confusing answer category was the second one: "freestanding clinic/urgicenter." Two factors contributed to this confusion. First, respondents were unsure what the term "urgicenter" meant. While many respondents determined that this meant *urgent care center* (or, to use the physicians' parlance, "doc in a box"), they were not sure if this was some sort of specialized clinic besides a typical urgent care center. None of the 20 respondents had ever heard of, or used, the word "urgicenter." Secondly, many respondents did not know what exactly counted as a "freestanding clinic." Many office-based physicians questioned whether their solo or group practice should also be described as a freestanding clinic because it was in its own building. Others explained that they did not choose this answer category because their office was in an office tower or medical center, and thus was not "freestanding." Still others understood freestanding not as an indicator of the *physical space*, but rather as an indicator of a *relationship with a hospital*. These respondents considered whether or not their practices were associated with hospitals or university medical systems, and used the "freestanding clinic" answer category to indicate whether they were or were not associated with their other organizations.


5. **At which of the settings (1-8) in question 4 do you see the most ambulatory patients?**
WRITE THE NUMBER LOCATED NEXT TO THE BOX YOU CHECKED.
_____ (For the rest of the survey, we will refer to this as the "reporting location.")

5. At which of the settings (1-8) in question 4 do you see the most ambulatory patients?

All 20 respondents received and answered this question. This question was not probed extensively, and no cognitive findings are available.


For the remaining questions, please answer regarding the **reporting location** indicated in question 5 even if it is not the location where this survey was sent.

6. **What are the county, state, zip code, and telephone number of the *reporting location*?**
Country USA County _____ State _____
Zip Code _____ Telephone ( ) _____

6. What are the county, state, zip code, and telephone number of the *reporting location*?

All 20 respondents received and answered this question. The purpose of this question was to frame the remaining questionnaire by directing the respondents to consider only their primary location for the rest of the survey. While this question was asked during the cognitive interview, the data was not collected or entered into Q-Notes for confidentiality reasons. No findings are available for this question.

7. How many physicians, including you, work at the reporting location? _____

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All 20 respondents received Question 7. The response process for this question was somewhat complex, with multiple patterns of both comprehension and judgement as seen in Figure 2.

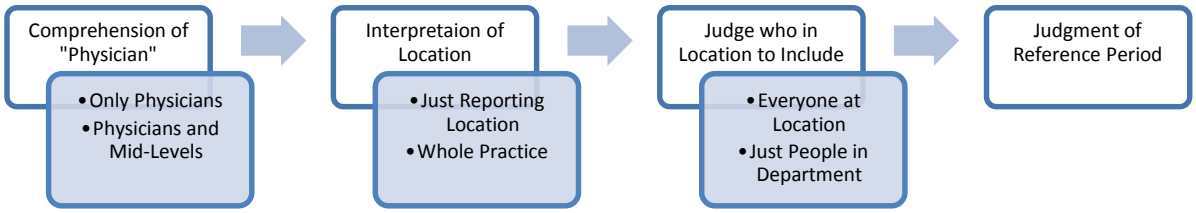


Figure 2: Response Process for Question 7

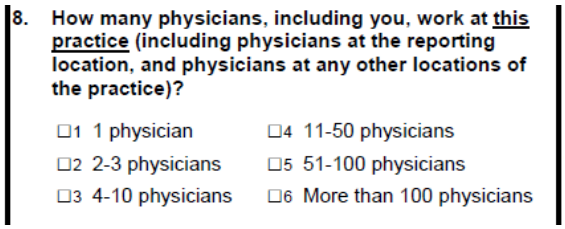
Respondents first had to decide what exactly this question was asking. Most interpreted the question to be only asking about the number of physicians at their location, and not the number of both physicians and mid-level providers (i.e. mid-wives and nurse practitioners). However, a few primary care physicians—particularly ones at small group or solo practices—decided to include mid-level provers into their calculations. Additionally, a few respondents started answering this Q with the latter interpretation, then looked through the next few questions in order to see whether or not there was a separate question about mid-levels. When these few respondents saw that there was a separate question (Question 10), they changed their response to exclude the mid-level providers.

Once respondents determined what the question was specifically asking, they then had to interpret the term "location." There were again two patterns of interpretation at this stage of the response process. Most respondents used the framing instructions provided prior to Question 6 and just answered about a single "reporting location." For example, one surgeon who worked at both a private practice and at a series of ambulatory surgery centered answer this question "2," thinking only about her private practice. However, a number of other respondents did not limit their response to just the "reporting location," but instead considered all the physicians in their practice. For example, one surgeon who had to location in his practice answered this question "8." When asked to explain, he said that he had eight doctors, including himself, across the practice. He went on to explain that he splits his time, but that most of the eight doctors worked primarily at one or the other center.

One interesting and related issue emerged from two physicians who worked at larger, multi-specialty practices. While both limited their interpretation to the reporting location itself, they were unsure whether to count *all* the physicians at the location or just the physicians in their *departments*. The confusion stemmed from the fact that both of these doctors—a surgeon and a primary care physician—did not have much contact with people outside of their department, and they did not think that they could provide an accurate answer. These two respondents split how they answered—one estimated the total size of his

practice's location, while the other simply reported on the size of her surgery department within the location.

Finally, there was some question about the reference period that the respondents used to judge their response. Most respondents did not appear to answer only about the day of the interview, but rather constructed an average of their staffing in a typical period of time—the number of physicians who worked at a location in a typical week, for example. One primary care physician who was also her practice's medical director, for example, explicitly noted that her location was staffed with 2.7 FTEs (Full Time Equivalent positions), but that this was spread across nine physicians who put in time at the location. As such, this respondent answered Question 7 by writing in "9." Similarly, another doctor noted that one of the physician in her office was on maternity leave and was not returning any time soon. However, he counted her in his final answer of "4."


8. How many physicians, including you, work at this practice (including physicians at the reporting location, and physicians at any other locations of the practice)?

❑1 1 physician
❑2 2-3 physicians
❑3 4-10 physicians
❑4 11-50 physicians
❑5 51-100 physicians
❑6 More than 100 physicians

8. How many physicians, including you, work at this practice (including physicians at the reporting location, and physicians at any other locations of the practice)?

The general response process for Question 8 is similar to that seen in the previous question, Q7. Respondents first had to comprehend what the question was specifically asking about by interpreting the term "physicians," and then judged the term "practice" in order to establish a count of physicians.

By and large, respondents carried their interpretations of "physicians" forward from Q7—as either including or excluding mid-level providers such as nurse practitioners. A few respondents who did include mid-level providers in the previous question dropped them from their interpretation here. One respondent explained this change by noting that she had looked over the next few questions before answering this one, and saw that an upcoming question dealt specifically with mid-level providers (Question 10).

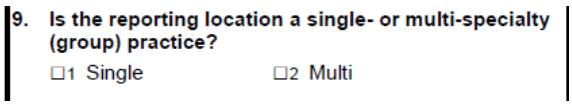
The largest source of interpretive variation in Q8 occurred during the judgement phase, when respondents had to determine what they were counting as "this practice." Figure 3 illustrates the schema used by respondents to make this judgement:

Figure 3" Response Schema for Question 8

Most respondents considered "practice" to include all the locations (and physicians) within their ownership organization. Respondents who worked at single location practices only considered their one location (and thus answered Q8 the same as Q7). Respondents who worked at multiple-location practices counted all the doctors who worked at all the practices' sites and therefore calculated a large number in Q8 than they did in Q7. For example, one surgeon who answered "3" to Q7, and "5" to Q8 explained that in the latter question, he was counting the two physicians who were in the practice, but primarily worked out of the hospital and surgical center, not the office.

One respondent limited his interpretation of "practice" to the reporting location only, even though upon further probing, it emerged that the respondent's full practice had two locations.

Other respondents considered locations beyond their reporting location when interpreting "practice" but did not consider the full ownership organization for which they worked. As in the previous question, one doctor limited her response to her *department* within her larger practice. This surgeon responded "15," thinking about the full surgery sub-population within her larger organization. Another respondent, who worked for a multi-location practice that had offices throughout the United States, limited his judgement to the three locations within the Washington, DC area—even though, upon probing, he explained that there was no organizational difference between the offices in DC verses the ones in any other state.

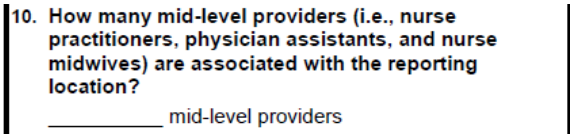

9. **Is the reporting location a single- or multi-specialty (group) practice?**
☐1 Single ☐2 Multi

9. Is the reporting location a single- or multi-specialty (group) practice?

In general, respondents understood Question 9 to be asking whether or not more than one specialty was offered at their practice. Most respondents conceptualized this by considering whether any specialties besides the one they practices was available. For example, one orthopedic surgeon answered "multi," and explained that the "other physician [in the practice] has a different specialty than me."

One respondent, another surgeon, answered based not on medical specialties, but rather on the number of locations in her practice. This respondent answered "multi," and upon probing revealed that she answered this way because her practice included "multiple wound centers," and was not thinking about either various surgery specialties were offered across the centers.

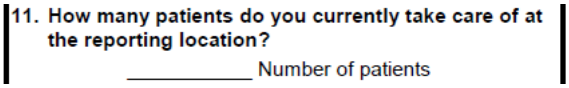
Not all respondents considered "specialty" in an official sense (as in the AMA Physician Specialty Groups coding scheme). Rather, some focused on different areas within the specialty that they and their colleagues practiced. For instance, an orthopedic surgeon explained his "multi" answer saying, "In theory, it's multi because we do different things," thinking not about different AMA specialties, but rather different areas of focus within orthopedic surgery.


10. How many mid-level providers (i.e., nurse practitioners, physician assistants, and nurse midwives) are associated with the reporting location?

_____ mid-level providers

10. How many mid-level providers (i.e., nurse practitioners, physician assistants, and nurse midwives) are associated with the reporting location?

Respondents largely understood this question to be asking about the number of nurse practitioners, physician assistants, and nurse midwives at their location. One respondent noted that she was not sure whether or not to included RNs as well—in the end, she decided to include them, even though none of the six nurses at her reporting locations were nurse practitioners.


11. How many patients do you currently take care of at the reporting location?

_____ Number of patients

11. How many patients do you currently take care of at the reporting location?

While all 20 respondents in the cognitive interviewing sample received Question 11, only 15 provided answers, with five refusing to do so. This question produced a great amount of confusion—17 of the 20 respondents expressed some form of confusion, frustration, or explicitly said they did not understand what this question was asking. And while this confusion was consistent across all three types of physicians in the same (primary care, medical specialists, and surgical specialists), they did interpret the question with different patterns. Figure 4 illustrates the schema respondents used to determine what the question was specifically asking about:

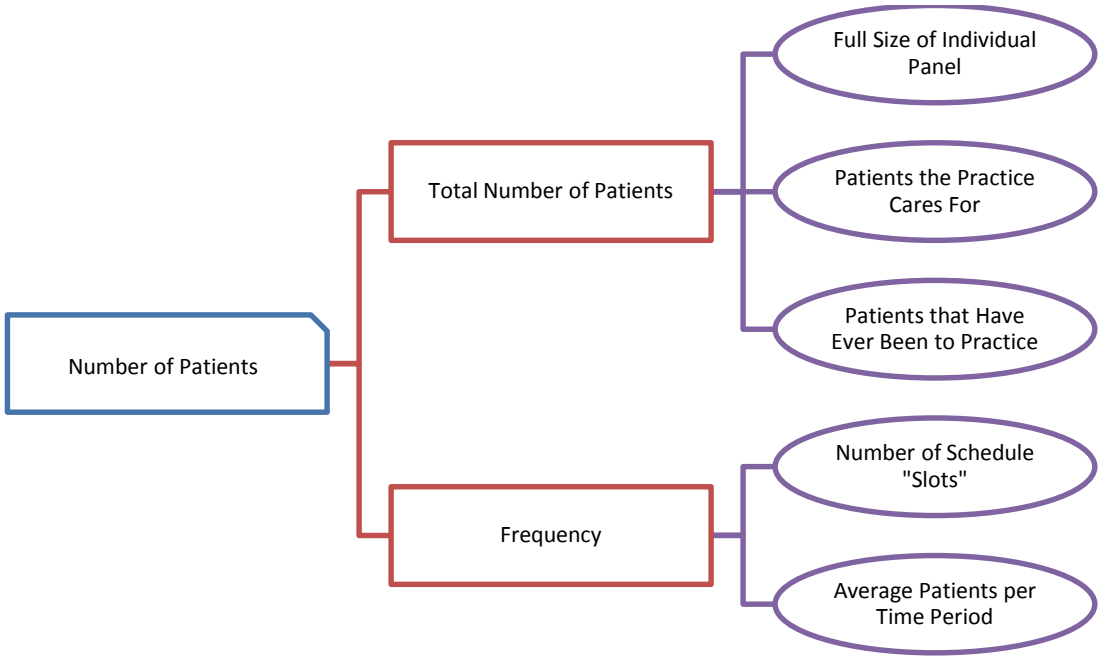


Figure 4: Response Schema for Question 11

Overall, respondents understood this question to be asking for one of two very different ways of conceptualizing their patient load. About half of the respondents who actually provided and answered this question were considering the *total number of patients* they had or saw, while the other half understood this question to be asking for a *frequency*—or how many patients they saw in a given timeframe.

Total Number of Patients

Within the subset of respondents who were thinking about their total number of patients, three distinct patterns of interpretation emerged: 1) the size of their personal, active panel, 2) the total number of patients for whom the practice currently provides care, and 3) the total number of patients for whom the physician or practice have ever provided care.

Respondents thinking of their active care panel considered how many patients their practice had specifically assigned to them. For instance, one primary care physician's immediate reaction to the question was to ask, "Are you asking about me specifically, or the whole group?" Upon deciding that the question was about her patients only, she reported she was assigned a panel of about 1,300 patients.

Other respondents decided that this question was asking not just about them personally, but about their whole group's load. Most of these respondents applied the second pattern of interpretation from above, and decided to report on the total number of patients that the group or practice care for currently. For example, one internist explained her answer of 3,000 saying, "I'm not sure what that means, 'How many patients?' For me? For the entire clinic?...I guess it's asking about how many unique patients we have in the practice."

A few respondents applied the third pattern and thought about the total number of patients for whom the practice had *ever* provided care. This was particularly common among the surgeons in the cognitive interviewing sample, as they usually only saw a patient once or twice ever (for the procedure and for a follow-up visit). For instance, one orthopedic surgeon said:

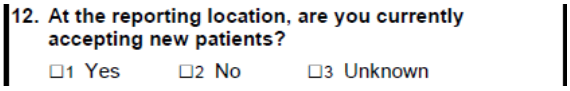
> I see patients that come here for knee replacement or hip replacement. And then they move on and I keep their chart, and then come back a year later or 10 years later or 20 years later. So I don't know how to answer this question. I mean, I have over 5000 patients.

Interestingly, this respondent was the only one who used this pattern who actually provided an answer to Q11. All the other respondents who were thinking about their practice's total, all-time patient load refused to provide a response, saying they no idea what the correct answer would be.

Frequency

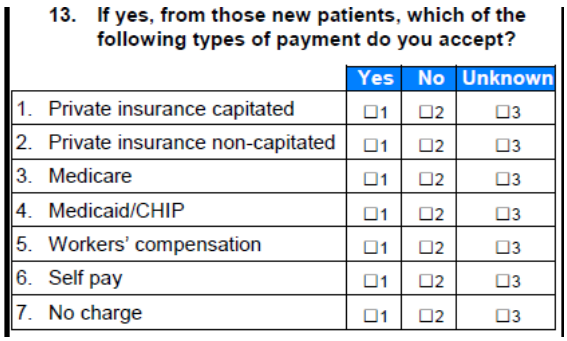
Two basic patterns of interpretation emerged among the respondents who thought this question was asking in some way about how many patients they saw over a given time. First, some respondents considered the total number of "slots" they had in their schedule and then reported a number of patients by extrapolating this number of slots to a total per day or week. So, for example, one neurologist said he had 15 slots a day, and then explained that "…I will say number of patients per week." This neurologist then answered Q11 by writing in "75" (15 slots a day, times 5 days in a week).

Other respondents were less precise in their reporting (or they explained that they had a high level of variability in their daily schedules). These respondents did not use math to extrapolate from their daily slots to an answer, but rather guessed an average number of patients they saw per day, week or year. It is important to note that there was little consistency across the respondents who used the frequency patterns of interpretation in the unit of measurement they used.


12. At the reporting location, are you currently accepting new patients?
☐1 Yes ☐2 No ☐3 Unknown

12. At the reporting location, are you currently accepting new patients?

All respondents uniformly understood this question as asking whether or not their *practice* was currently accepting new patients. Of the 20 respondents who received this question, only one (a psychiatrist) answered "no," with the rest answering "yes." This question was not probed systematically, and no cognitive findings are available.


13. If yes, from those new patients, which of the following types of payment do you accept?

	Yes	No	Unknown
1. Private insurance capitated	☐1	☐2	☐3
2. Private insurance non-capitated	☐1	☐2	☐3
3. Medicare	☐1	☐2	☐3
4. Medicaid/CHIP	☐1	☐2	☐3
5. Workers' compensation	☐1	☐2	☐3
6. Self pay	☐1	☐2	☐3
7. No charge	☐1	☐2	☐3

13. If yes, from those new patients, which of the following types of payment do you accept?

19 of the 20 respondents in the cognitive interviewing sample received and answered Question 13. Respondents largely understood that this question was about whether or not they accepted any of the listed types of insurance or payment plans in exchange for care. However, two areas of difficulty emerged: the issue of capitated versus non-capitated private insurance, and the meaning of "no charge." Both of these areas, described in detail below, appeared to emerge because this question is asking doctors about their business practices, which is an area of the practice with which many of the doctors in the cognitive interviewing sample had little to no experience or expertise.

Capitated versus Non-Capitated Private Health Insurance

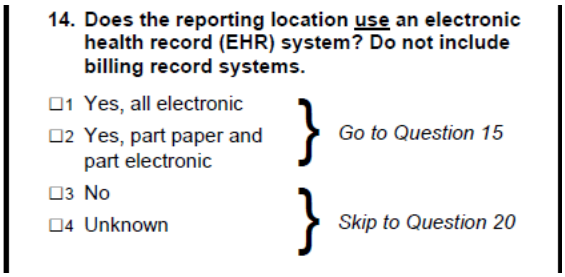
The first two items in Q13 ask whether or not the respondents' offices accept capitated and non-capitated private health insurance. Capitation (from the Latin for "head") is a common form of payment in HMO health insurance schemes wherein physicians or practices are paid not based on the individual services they provide to patients, but rather based on the number of patients they have enrolled in their practice[5].

Most respondents expressed confusion or explicitly said they did not know what the differences are between these two types of private health insurance. They dealt with this confusion in three ways. First, some respondents refused to answer the question, indicating that they did not know the difference and, therefore, could not provide an accurate answer. Secondly, some respondents reasoned that it was not an important difference and, thus, answered the two items the same way—thinking about "private insurance" in general. For instance, one respondent explained her "yes" answer by saying, "I'm not entirely sure what 'capitated' is, but I know we take all insurances." Finally, some respondents choose to answer "unknown," explicitly saying they did not know the difference between the two forms of payment. However, only two of the respondents who expressed confusion over these terms answered this way to the first item ("capitated") and none of them answered this way to the second item ("non-capitated").

No Charge

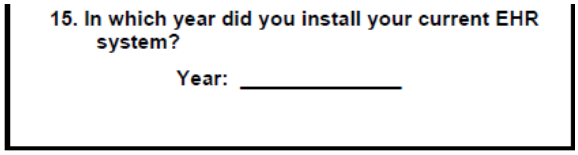
Respondents' comprehension of the term "No Charge" in the final item in Q13 varied across the cognitive interviews. Three interpretations emerged. First, some respondents took the phrase "no charge" at its face value, and interpreted it to mean that their patients would be given absolutely free care. Other respondents understood "no charge" to mean an income-dependent sliding scale, indicating that reduced rates were given to certain patients based on their ability to pay. Finally, a few other respondents understood this item to be asking about the exact same thing as the previous item ("self pay"). These respondents simply lumped all non-insurance holders (and their payment methods and plans) together.

[5] See Shelden, Thomas M. 1990. "A model of capitation." *Journal of Health Economics* 9(4): 397-409



14. Does the reporting location use an electronic health record (EHR) system? Do not include billing record systems?

All 20 respondents received and answered Question 14, with 14 answering "all electronic," five answering "part paper and part electronic," and only one answering "no." All respondents understood this question to be asking whether or not their reporting location used electronic health records. Most respondents noted that they preferred the term electronic medical records, or EMR, and tended to use this acronym throughout the rest of the survey instead of "EHR."



15. In which year did you install your current EHR system?

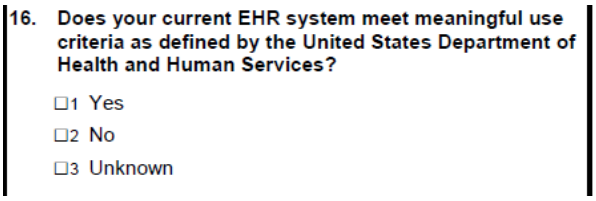
Respondents uniformly understood this question to be asking about the vintage of their reporting location's EHR system. However, there was some variation in this question across not only how respondents recalled and accessed this information, but also how they judged and reported their responses.

Two classes of respondents became evident during the analysis of the recall phase of this question—those respondents who were working at the recording location when their current EHR system went live, and those who were not working there at that time. Those respondents in the former group simply had to recall exactly when the system was installed. This group included not only practice owners (both group and solo), but also doctors who were employed by the practice at that time. On the other hand, those respondents who were not present when the EHR system was installed had to either rely on information gleaned from people who were there when the system was installed or simply guess as to when the system went live.

The respondents in this latter class of recall—who were not at the practice when the EHR system was installed—used four separate patterns of judgement when determining what information they should count (and report on) when answering this question. They either relied on the date they heard from others in the practice, guessed a date, gave the date they were hired, or simply said they did not know. The most common of these four patterns was to think about and report about the date they were hired at the

practice. For instance, one surgeon explained that she was hired in 2011, and the reporting location had its current EHR system in place when she started. Thus, she reported "2011" when answering the question, even though upon probing she said she did not know whether or not (or how long) they had the system in place before that point in time.

There was also a small amount of variation in how the respondents reported their answers to Q14. The great majority of respondents answered using a four-digit year (as prompted not only by the question text, but also the word "year" before the blank on the questionnaire). However, a few respondents reported in terms of the *number of years* the system had been in place—so for instance, one doctor answered "4," and upon probing revealed that he was thinking about 2011.


16. Does your current EHR system meet meaningful use criteria as defined by the United States Department of Health and Human Services?

☐1 Yes
☐2 No
☐3 Unknown

16. Does your current EHR system meet meaningful use criteria as defined by the United States Department of Health and Human Services?

The 39 respondents who had EHR systems at their reporting locations all received and answered Question 16, and while they all understood that it was asking whether or not their system met some set of criteria or another, many expressed difficulty while responding. Overall, this difficulty appears to again originate with the fact that, in many cases, doctors are not responsible for the purchase, upkeep, or certification of EHR systems. "Meaningful use" is a term that nearly all of the respondents indicated that they had heard about but that very few were familiar enough with to be able to explicate what exactly constituted the criteria. While some respondents indicated that meaningful use criteria included factors such as medicine and treatment track and the ability for patients to access their records, most respondent were much more vague. These doctors understood the term to refer to a set of system requirement that their EHR had to meet in order to for their practice to get access to various government benefits and reimbursements.

While there was not much variation in the comprehension of the term "meaningful use," the processes that respondents used to judge their answers did vary some. Figure 5 below illustrates that cognitive schema respondents used to respond to this question, and as shown, doctors without a direct knowledge of the EHR system use a variety of strategies in order to determine whether or not it met "meaningful use."

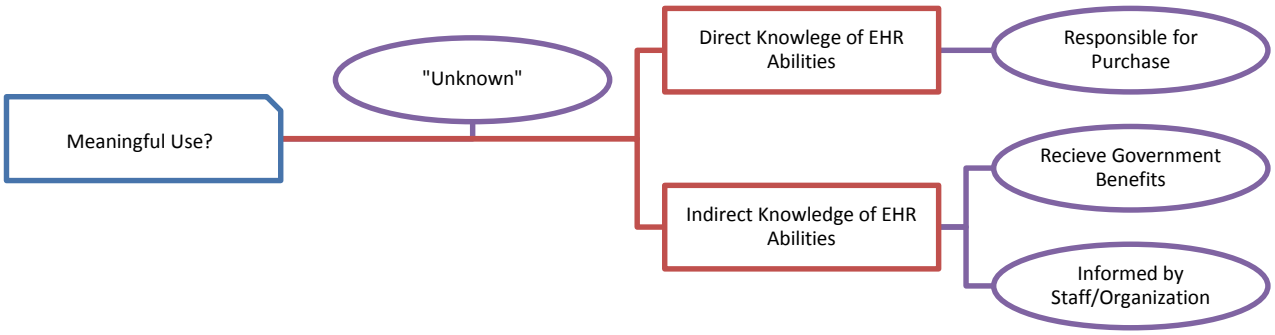


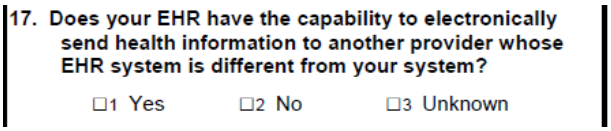
Figure 5: Response Schema for Question 16

A few respondents reported "unknown." These doctors used a heuristic and did not consider what "meaningful use" might include or compare and contrast their system's abilities with these potential criteria. Rather, they simply knew that this question was asking about an area that was not within their expertise, and immediately used the "don't know" response option.

Some respondents did indicate that they had direct knowledge of their EHR system and whether or not it met meaningful use. These respondents either were the owners of small group or solo practices and had been responsible for originally purchasing the system, or were their practice's medical directors and were required to be more involved in the business side of the practice than most physicians. For example, one primary care physician explained her "yes" answer by noting that she knew the system met the meaningful use criteria because, "I did the research when I bought it!"

Most respondents, however, had to reply on indirect knowledge in order to answer Q16. These physicians relied on two sources of to inform their response. Some respondents reasoned that since they either received or did not receive the benefits that meaningful use allowed, their system (correspondingly) either did or did not meet the criteria. For example, one OB/GYN explained that meaningful use is "certain criteria we have to meet in terms of reporting data and offering patients certain tests in order to get compensation by Medicaid." This respondent noted that they did get this compensation, and thus their system met meaningful use.

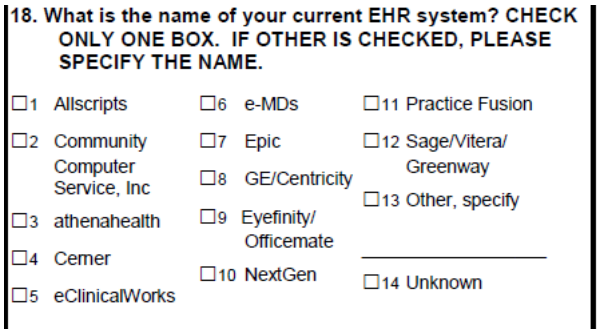
Other respondents relied on the fact that they were either informed or not informed about meeting meaningful use by people who are involved in the business or technology sides of their practice. Some doctors were thinking about staff they worked with on a daily bases, such as business or office managers, while others (particularly respondents at large, multi-location practices) were mainly thinking about their company's IT staff. For instance, one surgeon answered Q16 "yes" and explain that "I think it does, [Her Company] takes care of it," thinking about her organization's IT department.



17. Does your EHR have the capability to electronically send health information to another provider whose EHR system is different from your system?

This question was difficult for many respondents to answer, with four answering "unknown." The respondents who did answer "yes" were evenly split between those who included "E-Fax" (a computer-to-fax machine transmission) as an electronic method of sending information, and those who only considered direct EHR-to-EHR system communication. All respondents who answered "no" were thinking about this latter interpretation.

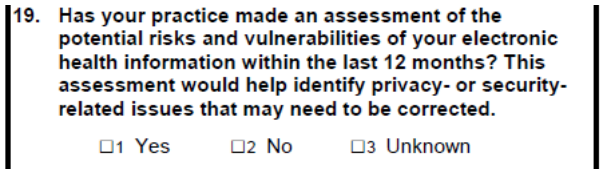
In addition to this confusion over what the term "electronically" means, a few respondents again expressed confusion because this question was asking about something they themselves did not deal with. These respondents all had office managers or assistants who were responsible for obtaining and sending medical records, and the doctors themselves were not sure how the information ended up in their charts.


18. What is the name of your current EHR system? CHECK ONLY ONE BOX. IF OTHER IS CHECKED, PLEASE SPECIFY THE NAME.

☐1 Allscripts
☐2 Community Computer Service, Inc
☐3 athenahealth
☐4 Cerner
☐5 eClinicalWorks
☐6 e-MDs
☐7 Epic
☐8 GE/Centricity
☐9 Eyefinity/ Officemate
☐10 NextGen
☐11 Practice Fusion
☐12 Sage/Vitera/ Greenway
☐13 Other, specify _____
☐14 Unknown

18. What is the name of your current EHR system?

Respondents all understood this question to be asking about the commercial brand name of their reporting location's current EHR system. This question was not probed systematically, and no cognitive findings are available.


19. Has your practice made an assessment of the potential risks and vulnerabilities of your electronic health information within the last 12 months? This assessment would help identify privacy- or security-related issues that may need to be corrected.

☐1 Yes ☐2 No ☐3 Unknown

19. Has your practice made an assessment of the potential risks and vulnerabilities of your electronic health information within the last 12 months? This assessment would help identify privacy- or security-related issues that may need to be corrected.

Overall, respondents comprehended Question 19 in one of two ways. Most believed that it was asking, "Has your EHR system had a risk assessment in the last year?" However, some other respondents believed it was asking specifically about their own, personal actions, and was asking, "Have you personally performed a risk assessment of your EHR?"

Besides this important variation over comprehension, and similar to the response process seen above in Q16 (about meaningful use), respondents reported some difficulty while answering Q19 because they tended to not be involved with the technology side of their EHR systems. Figure 6 illustrates the cognitive schema used to judge the respondents' answers to this question

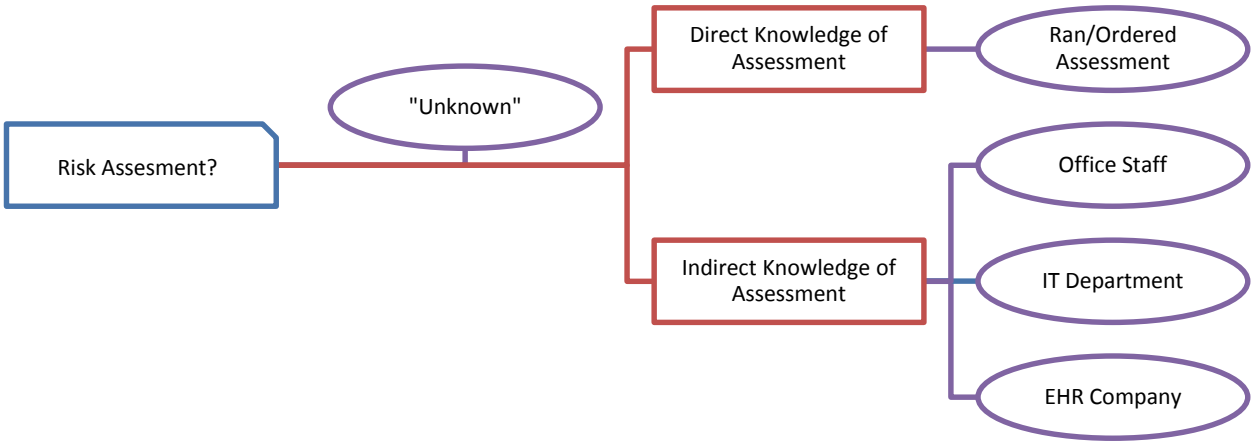
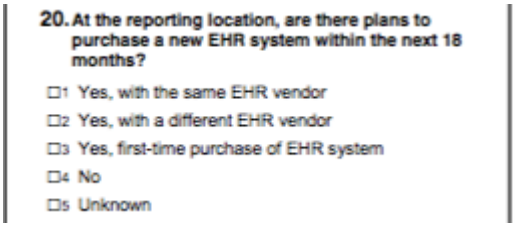


Figure 6: Judgement Schema for Question 19

Like what was observed in Q16, respondents either used their direct knowledge of the technical workings of the EHR, or—much more commonly in the cognitive interviewing sample—relied on indirect knowledge to answer the question. Only two physicians in the sample had direct knowledge of their EHR's risk assessment, and this was because both of them had personally ordered it themselves. For example, one dermatologist answered "yes" and explained, "I initiated it myself—it's just me here [at the practice] so I have to take care of it."

Most respondents relied on indirect knowledge of their EHR systems' risk assessments when answering this question. Just like in Q16 (see Figure 5), these physicians based their answers on what their office or business managers told them, or what the IT department of their larger medical organization relayed to them. For instance, an OB/GYN explained her "yes" answer by noting that her office manager had hired a technology consultant for the explicit purpose of doing a risk analysis of the EHR system. In addition, some other respondents based their answers not on the indirect knowledge provided by their staff or organization, but by the EHR providers themselves. For example, a psychiatrist who answered "yes" explained during probing that she said this "…because as a part of the EHR, it comes with the support. And they [the EHR provider] do all these things checking risks and vulnerabilities."

A number of respondents also simply answered "unknown" to Q19, again in a similar heuristic fashion as to what was seen in Q16. These respondents knew that the technical workings of their EHR were outside the scope of their expertise, and immediately answered using the "don't know" option.

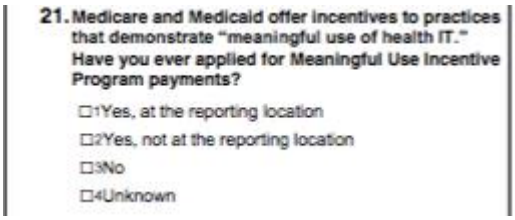

20. At the reporting location, are there plans to purchase a new EHR system within the next 18 months?

☐1 Yes, with the same EHR vendor
☐2 Yes, with a different EHR vendor
☐3 Yes, first-time purchase of EHR system
☐4 No
☐5 Unknown

20. At the reporting location, are there plans to purchase a new EHR system within the next 18 months?

By and large, respondents understood this question to be asking about whether or not their practices would adapt a new EHR soon. One respondent, on the other hand, focused her attention on the word "purchase" in the question text, and answered "no" even though she also reported they would be adopting a new system within the next few months. When asked about this apparent contradiction, this OB/GYN explained that the new EHR was open-source, and they would not actually be *purchasing* it because it is free.

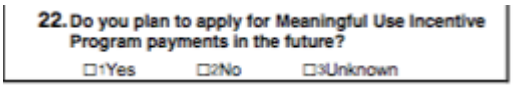
It is important to note that the respondents universally considered whether or not there were *current plans* or decisions to change EHR providers. They *did not* consider the "18 months" reference period given in the question text.


21. Medicare and Medicaid offer incentives to practices that demonstrate "meaningful use of health IT." Have you ever applied for Meaningful Use Incentive Program payments?

☐1Yes, at the reporting location
☐2Yes, not at the reporting location
☐3No
☐4Unknown

21. Medicare and Medicaid offer incentives to practices that demonstrate "meaningful use of health IT." Have you ever applied for Meaningful Use Incentive Program payments?

Respondents continued using the general response processes seen in previous questions asking about business and technical matters here in Question 21. Respondents with direct knowledge of the business affairs of their practice—such as owners and directors—were able to provide a yes/no answer based on their knowledge of the payments either coming in or not. On the other hand, respondents without direct knowledge of their practices' business affairs either answered "unknown," or relied on indirect information or guesswork to answer this question.


22. Do you plan to apply for Meaningful Use Incentive Program payments in the future?

☐1Yes ☐2No ☐3Unknown

22. Do you plan to apply Meaningful Use Incentive Program payments in the future?

This question was not probed systematically during the cognitive interviews, and no cognitive findings are available.

23. Indicate whether the reporting location has each of the computerized capabilities listed below and how often these capabilities are used. CHECK NO MORE THAN ONE BOX PER ROW.	Yes, used routinely	Yes, but not used routinely	No	Unknown
Recording patient history and demographic information?	☐1	☐2	☐3	☐4
Recording patient problem list?	☐1	☐2	☐3	☐4
Recording and charting vital signs?	☐1	☐2	☐3	☐4
Recording patient smoking status?	☐1	☐2	☐3	☐4
Recording clinical notes?	☐1	☐2	☐3	☐4
Recording patient's medications and allergies?	☐1	☐2	☐3	☐4
Reconciling lists of patient medications to identify the most accurate list?	☐1	☐2	☐3	☐4
Providing reminders for guideline-based interventions or screening tests?	☐1	☐2	☐3	☐4
Ordering prescriptions?	☐1	☐2	☐3	☐4
If yes, are prescriptions sent electronically to the pharmacy?	☐1	☐2	☐3	☐4
If yes, are warnings of drug interactions or contraindications provided?	☐1	☐2	☐3	☐4
Ordering lab tests?	☐1	☐2	☐3	☐4
If yes, are orders sent electronically?	☐1	☐2	☐3	☐4
Viewing lab results?	☐1	☐2	☐3	☐4
If yes, can the EHR automatically graph a specific patient's lab results over time?	☐1	☐2	☐3	☐4
Ordering radiology tests?	☐1	☐2	☐3	☐4
Viewing imaging results?	☐1	☐2	☐3	☐4
Identifying educational resources for patients' specific conditions?	☐1	☐2	☐3	☐4
Reporting clinical quality measures to federal or state agencies (such as CMS or Medicaid)?	☐1	☐2	☐3	☐4
Identifying patients due for preventive or follow-up care in order to send patients reminders?	☐1	☐2	☐3	☐4
Generating lists of patients with particular health conditions?	☐1	☐2	☐3	☐4
Electronic reporting to immunization registries?	☐1	☐2	☐3	☐4
Providing patients with clinical summaries for each visit?	☐1	☐2	☐3	☐4
Exchanging secure messages with patients?	☐1	☐2	☐3	☐4
Ability for patients to electronically view their online medical record?	☐1	☐2	☐3	☐4
Ability for patients to download their online medical record?	☐1	☐2	☐3	☐4
Ability for patients to electronically send their online medical record to a third party (e.g., another provider, Personal Health Records)?	☐1	☐2	☐3	☐4

23. Indicate whether the reporting location has each of the computerized capabilities listed below and how often these capabilities are used.

Question 23, a full-page, table-formatted question was burdensome, but was universally understood by the respondents to be asking whether or not their reporting locations had access to the various items in computerized form or not.

Respondents *did not* uniformly think only about EHR systems, with many considering a wider range of computer systems such as web portals and billing databases. Not all of the 23 sub-items were systematically probed during the cognitive interviews, and only three are highlighted below.

<u>Overall Usability</u>

This question is very long and visually daunting. Many respondents noted the question's length during its administration. Some respondents stopped considering each item one-by-one and simply "straight-lined"

their answers (in a few cases, they did so literally, with the respondents actually drawing a vertical line across many of the items).

Besides the length of the question, the other major cross-item area of concern with Q23 was the fact that the question text asked respondents to not only answer a yes/no question, but then to also estimate a frequency of use for those items to which they answered "yes." Three issues emerged surrounding this format. First, many respondents simply answered this as a yes/no question, and did not break out their "yes" answers by frequency. These respondents almost universally used just the first "yes" answer category ("yes, used routinely") for all their affirmative answers. Across the sample, 40% of respondents only used one yes answer category (in addition to the "no" and "unknown" categories).

Secondly, even for those respondents who did answer the frequency sub-question, they did not do so consistently across the full page question. Many of these physicians started the question answering both the yes/no and frequency questions, but by the end of the question reverted to just answering yes/not. In addition to the 40% of respondents noted above who only answered Q23 with one "yes" category, another 15% of sample respondents answered the second half of the items (from "Ordering radiology tests" downward) with a single "yes" category.

Third, and perhaps most importantly from a construct validity standpoint, the frequencies given in the question text ("yes, used routinely" and "yes, but not used routinely") were not comprehended in any sort of consistent manner by the respondent who did actually use them. For example, one OB/GYN explained that she was thinking of using the items every day as "routinely," while another OB/GYN said routinely referred to using something "most days, but not all of them" Furthermore, not all respondents maintained the same meaning of the frequencies across the various items in Q23. One primary care physician, for instance, not that he reconciled lists of patients' medicines every time he saw a patient, but only used the computer to view lab results when he needed results for a specific set of tests. However, he answered "yes, routinely" for both items.

Viewing Imaging Results

Respondents understood this item in one of two distinct ways—either they considered whether or not radiological *reports* were available to them on the computer, or they considered whether or not they could view actual radiological *images* on the computer. For instance, one pediatrician who answered this item "yes" explained, "I can't see the images themselves—really there's no need. I just see the [radiology] reports on my EHR." Likewise, a surgeon who answered "yes, routinely, said "I do use it to view imaging studies," thinking about the reports he receives from the radiologist.

On the other hand, another surgeon who answered "yes, routinely" was just thinking about the images, and that she uses a web portal to get the images from her radiologist to view. Similarly, a primary care physician who answered "no" explained that he could not get the images on his computer, and had to order them specially and see them in hard copy form if he needed them. Upon follow-up probing, this physician explained that he could get the imaging *reports* through a web portal, but was only thinking about the images themselves when reporting "no."

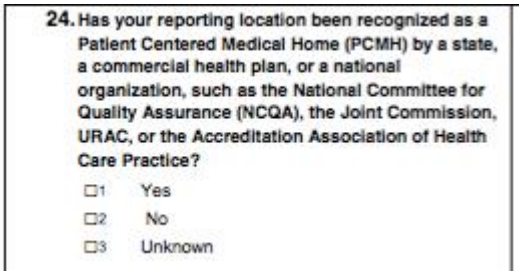
Exchanging Secure Messages with Patients

While all the respondents uniformly interpreted this item as asking whether or not they were able to send and receive encrypted electronic messages with their patients, some social desirability bias appeared to impact a few of the respondents' answers. A few respondents expressed hesitation when answering this, even though they never actually used this feature. These doctors indicated that they did not use this feature not because it was not available, but rather because their patients did not want to (or know how to) use it. They, therefore, felt that "no" was incorrect and answered using one of the "yes" categories. For

example, one medical specialist who answered, "yes, but not routinely," explained his answer by saying that he never actually uses it—"I don't think patients would appreciate getting their results that way—they prefer face-to-face conversations. The EHR allows it, I just don't do it." He used his answer to, therefore, indicate that he *had* the capability, even though his answer was incorrect on the face.

Ability for patients to…

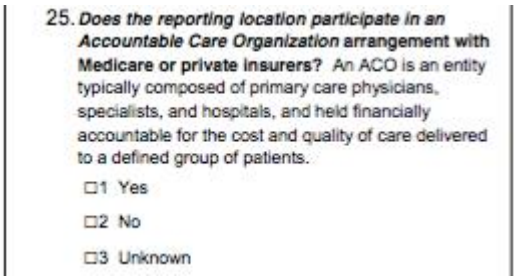
The final three items in Q23 ask the physicians about their patients' abilities to view, download, and send their electronic health records. Respondents understood these items *not* as simply asking about their EHRs' abilities, but rather about the *behavior* of their patients. As such, almost all the respondents expressed confusion over how to answer these items. For example, one OB/GYN expressed: "I don't know what my patients do!" As a result, these three items had the highest "uncertain" answer rate of any of the items in the cognitive evaluation.


24. Has your reporting location been recognized as a Patient Centered Medical Home (PCMH) by a state, a commercial health plan, or a national organization, such as the National Committee for Quality Assurance (NCQA), the Joint Commission, URAC, or the Accreditation Association of Health Care Practice?

☐1 Yes
☐2 No
☐3 Unknown

24. Has your reporting location been recognized as a Patient Centered Medical Home (PCMH) by a state, a commercial health plan, or a national organization, such as the National Committee for Quality Assurance (NCQA), the Joint Commission, URAC, or the Accreditation Association of Health Care Practice?

When answering this question, the only respondents who indicated that they knew what the term "Patient Centered Medical Home (PCMH) meant were those who answered "yes." Those respondents who did not know what a PCMH was answered either "no" or "unknown." There was no clear distinction between these respondents who answered using the no and don't know options. For instance, one medical specialist said, "I've never heard of those" and went on to answer "no." On the other hand, an OB/GYN explained her answer similarly, saying, "I don't even know what any of that is," but then went on to answer Q24 "unknown" instead of "no."


25. ***Does the reporting location participate in an Accountable Care Organization* arrangement with Medicare or private insurers?** An ACO is an entity typically composed of primary care physicians, specialists, and hospitals, and held financially accountable for the cost and quality of care delivered to a defined group of patients.

☐1 Yes

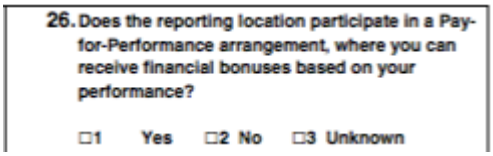
☐2 No

☐3 Unknown

25. Does the reporting location participate in an Accountable Care Organization arrangement with Medicare or private insurers? An ACO is an entity typically composed of primary care physicians, specialists, and hospitals, and held financially accountable for the cost and quality of care delivered to a defined group of patients

Question 25 is similar to Q24 in that it asks respondents say whether or not their practice was associated with a specific industry group or concept—in this case, an Accountable Care Organization (ACO). However, unlike Q24, this question include a definition of the term that is being asked about in the question text. Possibility because of this, fewer respondents expressed uncertainty about the term ACO than they did for either "PCMH" or "NCQA" in the previous question. For instance, one pediatrician who answered "no" said she appreciated the definition, and "would have answered unknown, probably, if it wasn't there. But reading that, I'm pretty sure we aren't in one."

Throughout the cognitive examination of this (and the previous) question, the idea that doctors are not the best people to ask for business practice information continued to emerge. For example, one OB/GYN who answered "unknown" explained her answer by saying, "I have no idea…I think [the office manager] would probably say 'no,' but I'm not sure. This respondent went on to explain that she was not involved in business decisions at that level, and that she is just responsible for providing patient care. A number of other doctors—especially primary care physicians and physicians at larger group practices—expressed similar feelings.


26. **Does the reporting location participate in a Pay-for-Performance arrangement, where you can receive financial bonuses based on your performance?**

☐1 Yes ☐2 No ☐3 Unknown

26. Does the reporting location participate in a Pay-for-Performance arrangement, where you receive financial bonuses based on your performance?

Respondents used a series of separate, non-overlapping patterns when interpreting this question, which asked about a "pay-for-performance arrangement…based on your performance." Figure 7 illustrates the cognitive schema respondents used during the comprehension stage of this question:

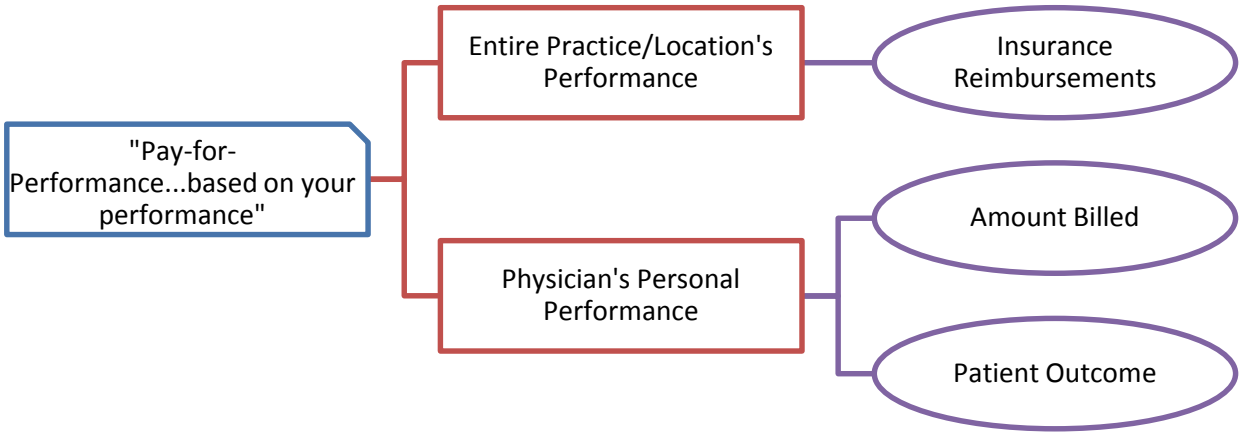


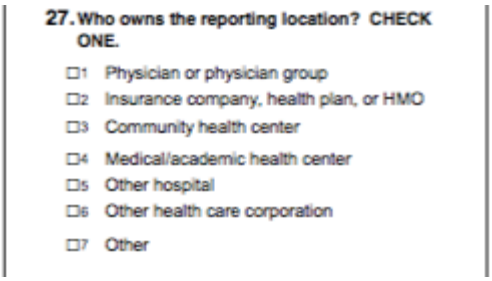
Figure 7: Cognitive Schema for Question 26

While more respondents understood this question as asking about themselves personally, the ambiguous term "your performance" led some others to not just think about themselves personally, but also about their entire *location* or *practice's performance.* This interpretation was probably framed in part by the fact that *all* of the previous questions on the questionnaire since Q5 were about either a reporting location or practice. The respondents who used this interpretation tended to not think about any specific pay-for-performance program, but rather about their practice's realization rates on its insurance or government reimbursements. For example, one surgeon who answered "no" said that his practice did not accept Medicare and explained he was thinking about reimbursement from the Centers for Medicare and Medicaid Services (CMS): "They give you a set fee for a knee replacement and will give you $20,000 for this, and it is shared between the hospital [staff] and physician."

Respondents who instead considered their own personal performance thought about two separate types of pay-for-performance schemes. The first was more business-oriented, and was based on how many patients they saw or how many hours they billed. For instance, one orthopedic surgeon answered "yes," and when asked what he was thinking about said, "if we bill a certain amount for three months straight, then we get a bonus" from the larger medical organization with which his solo practice was associated.

The second personal pay-for-performance scheme respondents considered were those centered on their patients' health outcomes. For example, another surgeon who answered "no" said he was thinking "I think that is where Medicare gives rewards for patient outcomes." This respondent went on to explain that his practice's location did not participate in a program like this because he disagreed with using outcomes as a measurement of the quality of his service—"I could have given the best surgery, but the patient might not feel better…it's subjective [based on] how the patient feels post-surgery."

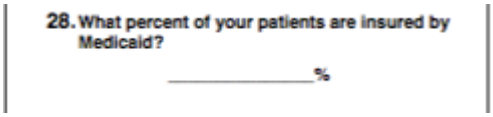
While there was some variation in how respondents interpreted what, exactly, pay-for-performance programs were, they were uniform in their pattern of judgement. With the exception of the doctors who knew they were in a program because they were involved in the practice's business operation, the respondents simply considered whether or not they (or their practice) got extra money. If they did, they answered "yes" and if they did not, they answered either "no" or "unknown."


27. Who owns the reporting location? CHECK ONE.

☐1 Physician or physician group
☐2 Insurance company, health plan, or HMO
☐3 Community health center
☐4 Medical/academic health center
☐5 Other hospital
☐6 Other health care corporation
☐7 Other

27. Who owns the reporting location?

Question 27 was not probed systematically, and no cognitive findings are available.

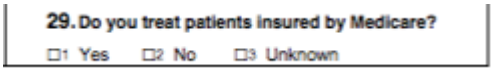

28. What percent of your patients are insured by Medicaid?

_____%

28. What percent of you patients are insured by Medicaid?

Respondents experienced similar difficulties when answering Question 28 as to what they did when answering Q13 (about the various forms of insurance their practice accepts) earlier in the questionnaire. This is, many physicians (again, with the exception of those who are involved with the business operations of their practice) do not know about their billing and payment systems, as that is the job of support staff such as office managers.

However, even though a vast majority of respondents expressed uncertainly during probing, only one of these respondents wrote "unknown" into the question blank. The rest provided a number, and revealed during probing that they were simply guessing or estimating.


29. Do you treat patients insured by Medicare?

☐1 Yes ☐2 No ☐3 Unknown

29. Do you treat patients insured by Medicare?

Question 29 was not probed systematically, and no cognitive findings are available.

The following questions are about how you and the organization where you see the most ambulatory patients send and receive patient health information.

30. How often do you send patient health information to other outside providers and public health agencies using the following methods?	Often	Sometimes	Rarely	Never	Uncertain
Paper-based method (e.g. mail, fax)	1☐	2☐	3☐	4☐	5☐
eFax	1☐	2☐	3☐	4☐	5☐
EHR (not eFax)	1☐	2☐	3☐	4☐	5☐
Web Portal (separate from EHR)	1☐	2☐	3☐	4☐	5☐

30. How often do you send patient health information to other outside providers and public health agencies using the following methods?

Both Question 30 and Question 31 are complex table-format questions that require the respondents to 1) interpret the terms "patient health information" and "outside providers," 2) interpret the four "methods" for sending and receiving information, and judge which of them correspond to their practice's workflow, and 3) format their response to one of the four relative frequency terms given as answer categories.

Interpretation of Question Text

The first task that respondents had to complete to answer Qs 30 and 31 were to interpret what they were being asked. There were three basic types of health information that respondents thought about: consultation or referral notes, health records, discharge notices, and insurance requests. These forms of health information appeared to correspond with who the respondent thought the term "outside providers" referred to: specialists or other physicians outside their practice, hospitals, insurance companies, and lawyers. Thus, respondents who were thinking about sending information to other physicians mostly answered the question thinking about sending either consultation or referral notes or health records. Those thinking about sending or receiving information from hospitals thought about health records and discharge notices, while the respondents who thought about insurance companies mainly answered the question considering how they send insurance requests. Finally, the two respondents (both surgeons) who thought about sending information to lawyers were thinking about health records.

A few respondents broke their interpretation of "outside provider" down further, and considered the difference between providers inside their medical organization or corporation (and not just their practice) and those who were outside this corporation. In each of these cases, the respondents focused their responses on physicians outside their corporation, saying that they didn't really send or receive information from doctors within the organization because the data was simply present on the company's EHR, and thus no active sending or receiving occurred. For instance, one surgeon who answered never to the EHR sending question explained, saying "It's not sending, really. It's just there."

Interpretation and Judgement of the Four Methods for Sending and Receiving

Once the respondents determined what the question was specifically asking, they then had to consider their practice's workflow and assign their methods to the four presented in the question: paper-based, e-fax, EHR, and web portal. Overall, there were consistent interpretations of these methods. The respondents understood paper-based methods to include mail, fax, and courier; e-fax to be faxing from a computerized source, EHR to be sending/receiving directly from their EHR system, and web portal to be sending or downloading information from a secure internet site.

The biggest source of confusion stemmed from e-faxing and how it overlapped with some of the other three categories. A number of respondents noted that they did not know whether the information they received came in through fax, e-fax, or their EHR, as all they *saw* was the final product on their computer screen or a print out. For example, one primary care physician pulled out a stack of patient health records on her desk and, going through them, noted that she could not tell whether something had originated as a fax or as an e-fax—"they all look the same to me. How can I tell what system they used?" Similarly, other respondents noted that when they sent information from their EHR, it was either transmitted via e-fax or directly to another physician's EHR, depending on whether or not that physician had the same system as they did.

A few other respondents also expressed confusion over the term web portal. In fact, most respondents did use a web portal system—particularly for sending lab requests (the two major lab service companies that the respondents mentioned during the interviews both have secure web portals set up through which physicians can order their services). However, they did not necessarily use this term to describe these web sites. One specialist who answered "never" to the web portal sub-question in Q30 had previously explained (in Q23) that he used the web site set up by LabCorp to order his lab tests. When asked what he was thinking about when answering this sub-question, he said, "I don't even know what a web portal is."

Formatting Responses to the Relative Frequencies

The final task respondents had to do to answer Qs 30 and 31 was to apply their workflow to the four relative frequencies given as answer categories—often, sometimes, rarely, and never. Overall, respondents used the "often" response option for methods they always or almost always used, and the "never" option for those methods they absolutely did not use. However, respondents appeared to use the middle two response options—"sometimes" and "rarely"—interchangeably. For example, one specialist who said they only occasionally use EHR when dealing with other physicians inside their medical organization answered the EHR sub-question of Q30 "rarely." However this same respondent, who noted that they only received paper when getting records from the very few number of referring physicians who did not e-fax, answered the paper sub-question of Q31 using the "sometimes" category.

31. How often do you receive patient health information from other outside providers and public health agencies using the following methods?	Often	Sometimes	Rarely	Never	Uncertain
Paper-based method (e.g. mail, fax)	1☐	2☐	3☐	4☐	5☐
eFax	1☐	2☐	3☐	4☐	5☐
EHR (not eFax)	1☐	2☐	3☐	4☐	5☐
Web Portal (separate from EHR)	1☐	2☐	3☐	4☐	5☐

31. How often do you receive patient health information from other outside providers and public health agencies using the following methods?

Respondents carried over their interpretations of Q30 into Question 31. Please see Q30 for a detailed description of the response process and schemata.

32. Do you refer patients to the following types of providers? If yes, how often do you send patient health information electronically through either your EHR or web portal?						
	No	Yes	Often	Sometimes	Rarely	Never
Ambulatory care providers outside your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Ambulatory care providers within your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals unaffiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals affiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Behavioral Health providers	1☐	2☐ →	1☐	2☐	3☐	4☐
Long-term care providers	1☐	2☐ →	1☐	2☐	3☐	4☐

32. Do you refer patients to the following types of providers? If yes, how often do you send patient health information electronically through either your EHR or web portal?

Questions 32 and 33 are a set of table questions that follow the same pattern as the previous two questions (Qs 30 and 31), with the first asking about sending health information, and the second asking about receiving patient health information. However, these two questions are even more complex than the previous two—requiring respondents to follow within-question skip patterns—and were correspondingly more difficult for respondents to answer. These questions asked respondents to 1) interpret what two separate questions were asking about, 2) judge their workflow in relation to a set of six separate types of providers, 3) follow an internal skip pattern depending on their interpretation of their workflow for each type of provider, and 4) format their response to a series of relative frequencies. Overall, respondents did not interpret these questions consistently across the sample, and many expressed confusion and frustration in regards to these two questions.

Nearly all the respondents understood that the first set of columns (corresponding to the first question presented in the text—"Do you refer/see patients to/from the following types of providers?") to be asking whether or not they referred patients directly to, or saw patients directly from, the various types of providers. However, a large number of respondents expressed confusion over what to answer if they did not have either ambulatory care providers or hospitals within their organization. Instead of simply answering "no," these respondents wanted a "not applicable" option that indicated that referring or seeing patients was not a possibility. This was particularly an issue with physicians who worked at small group or solo practices that were not associated with any larger medical corporation or organization. As a result of this, many respondents simply left these rows blank instead of answering "no," while others wrote in "N/A."

A few respondents who answered "yes" to the first set of columns, and correctly continued on to the second set of columns (corresponding to "…how often do you send/receive patient health information electronically…?") understood this second question to be asking not about frequency of sending/receiving, but rather about how often they referred or saw patients from the various types of providers. For example, one family medicine physician who responded this way said that the question was asking "How often do I refer patients to other people?"

The same muddled interpretations surrounding the relative frequency designations used as the answer categories in the second set of columns that emerged in Qs 30 and 31 were also present here in Qs 32 and 33. Namely, respondents used the two extreme frequencies to mean "always" or "never," while using the middle two categories interchangeably to mean "sometimes."

33. Do you see patients that have received care from the following types of providers? If yes, how often do you receive patient health information electronically through either your EHR or web portal?	No	Yes	Often	Sometimes	Rarely	Never
Ambulatory care providers outside your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Ambulatory care providers within your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals unaffiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals affiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Behavioral Health providers	1☐	2☐ →	1☐	2☐	3☐	4☐
Long-term care providers	1☐	2☐ →	1☐	2☐	3☐	4☐

33. Do you see patients that have received care from the following types of providers? If yes, how receive do you send patient health information electronically through either your EHR or web portal?

Respondents carried over their interpretations of Q32 into Question 33. Please see Q33 for a detailed description of the response process and schemata.

34. For other outside providers including public health agencies, do you electronically send and receive, send only, or receive only the following types of patient health information?	Both send and receive electronically	Send electronically only	Receive electronically only	Do not send or receive electronically
Medication lists	1☐	2☐	3☐	4☐
Patient problem lists	1☐	2☐	3☐	4☐
Medication allergies lists	1☐	2☐	3☐	4☐
Imaging reports	1☐	2☐	3☐	4☐
Laboratory results	1☐	2☐	3☐	4☐
Registry data (e.g. immunizations, cancer)	1☐	2☐	3☐	4☐
Referrals (e.g. referral requests or reports)	1☐	2☐	3☐	4☐
Hospital discharge summaries			3☐	4☐
Emergency Department notifications			3☐	4☐
Summary of care records for transitions of care or referrals	1☐	2☐	3☐	4☐

34. For other outsider providers including public health agencies, do you electronically send and receive, send only, or receive only the following types of patient health information?

Question 34 was the fifth table question respondents received in a row, and many expressed frustration. For example, one primary care physician's immediate reaction to seeing this question was to say, "Oh my gosh, there are too many options!" while another respondent, an OB/GYN, appeared to simply give up on the questionnaire at this point and straight-lined the "Do not Send or Receive" option while remarking, "This questionnaire makes me feel stupid…"

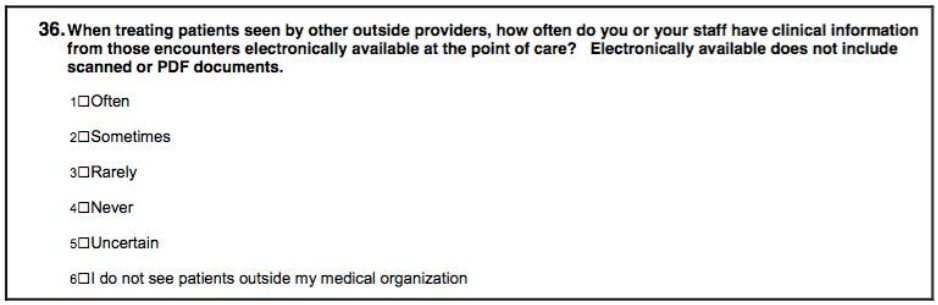
Interestingly, while this frustration may lead to item non-response, straight-lining, or break-offs, it did not appear to affect the response patterns of most respondents. The only small amount of variation that emerged was, as seen before, around whether or not to include e-faxing as an "electronic" medium. Those respondents who had decided to include e-fax as an electronic form back in Q17, continued to do so throughout the rest of the questionnaire, including in this question.

35. When electronically receiving information from other providers, are you able to integrate the following types of patient health information into your EHR without special effort like manual entry or scanning?	Yes	No	Uncertain	Not Applicable
Medication lists	1☐	2☐	3☐	4☐
Patient problem lists	1☐	2☐	3☐	4☐
Medication allergies lists	1☐	2☐	3☐	4☐
Imaging reports	1☐	2☐	3☐	4☐
Laboratory results	1☐	2☐	3☐	4☐
Registry data (e.g. immunizations, cancer)	1☐	2☐	3☐	4☐
Referrals (e.g. referral requests or reports)	1☐	2☐	3☐	4☐
Hospital discharge summaries	1☐	2☐	3☐	4☐
Emergency Department notifications	1☐	2☐	3☐	4☐
Summary of care records for transitions of care or referrals	1☐	2☐	3☐	4☐

35. When electronically receiving information from other providers, are you able to integrate the following types of patient health information into you EHR without special effort like manual entry or scanning?

Across the sample, nearly all the respondents answered Question 35 either using the "Not Applicable" or "No" response categories, regardless of the type of patient information. In a way, respondents appeared to approach this question not as a set of 10 separate sub-questions, but rather as a single question. In fact, 14 of the 20 respondents straight-lined this question—their answers did not deviate across the ten sub-questions in Q35. The one type of information that seemed to pull respondents away from this pattern was "imaging reports," which a few respondents noted were sent electronically to them through the web portal their lab services provider or providers had set up.

A few respondents did answer "yes" to these questions, but with the exception of the lab reports noted above, these were all response errors. When asked to explain their answer these four respondents all explained that they received e-faxes from other providers that then were scanned in by their staff. For instance, one surgeon said "Yes, well we get them from referring doctors and then my office manager either scans them or prints them off." Upon further probing, this respondent explained that he was thinking about e-fax, and not information sent directly from another doctor into his EHR. These respondents understood the question to be asking whether or not "you are able to integrate the following types of patient health information into your EHR?" and were ignoring the final clause of the question text about specific efforts including manual entry or scanning.


36. When treating patients seen by other outside providers, how often do you or your staff have clinical information from those encounters electronically available at the point of care? Electronically available does not include scanned or PDF documents.

1☐Often

2☐Sometimes

3☐Rarely

4☐Never

5☐Uncertain

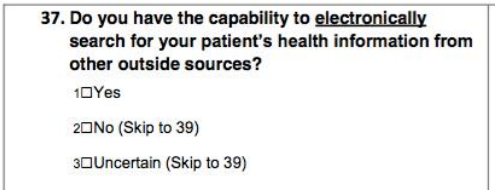
6☐I do not see patients outside my medical organization

36. When treating patients seen by other outside providers, how often do you or your staff have clinical information from those encounters electronically available at the point of care? Electronically available does not include scanner or PDF documents.

While Question 36 asks about a very similar concept as the prior question, Q35, none of the response difficulties or potential response errors that were seen previously emerged here. Respondents understood this question as asking whether health information from outside providers was automatically available in their EHR, or whether it had to be scanned and entered into their system.

Only one respondent in the cognitive sample understood this question in a different way. This medical specialist thought the question was asking whether or not she *used* the information electronically, and answered "no" because she prefers to use paper copies of records, which her staff prints out for her. Upon probing, she said that in some cases the information was transmitted directly into the EHR (from other providers in her larger medical corporation). However, she reiterated that since she used paper for patient care, the correct answer was "no."

The one area of variation that occurred in the interpretation of this question was centered upon the term "outside providers." Small group and solo practices that were not associated with any larger medical organization or corporation universally understood this as any physician outside their practice. However, respondents whose practices were associated with larger medical corporations or organizations employed two distinct interpretations: either limiting their response to physicians outside of their larger medical organization, or thinking about all physicians outside of their own practice. This split in interpretation had an impact on the respondents' answers, as practices within a medical organization typically shared EHR systems (and therefore allowed electronic sharing of patient health records). Thus, those respondents who used the first interpretation answered "never" or "uncertain," while those who were using the latter interpretation answered "sometimes" or "rarely" (depending on the frequency with which they worked with other physicians in their medical organization). No respondents in the cognitive sample answered using the "often" response category.


37. Do you have the capability to electronically search for your patient's health information from other outside sources?

1☐Yes

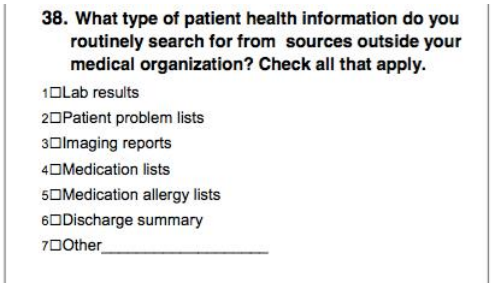
2☐No (Skip to 39)

3☐Uncertain (Skip to 39)

37. Do you have the capability to electronically search for your patient's health information from other outside sources?

Respondents universally understood Question37 to be asking whether or not they could search for various types of health information using a computer. While there was again some variation around what respondents whose practices belonged to medical organizations understood "outside sources" to mean, this variation did not appear to affect the respondents' answers like it did in Q36 because they were considering a wider set of patient health information in Q37.

Some respondents noted some confusion over what types of patient health information to consider, but they all looked ahead to the next question (Question 38), and seeing a list of types of patient health information there as the answer categories, deduced that it included lab results, problem lists, imaging reports, medication and allergy lists, and discharge summaries.


38. What type of patient health information do you routinely search for from sources outside your medical organization? Check all that apply.

1☐Lab results

2☐Patient problem lists

3☐Imaging reports

4☐Medication lists

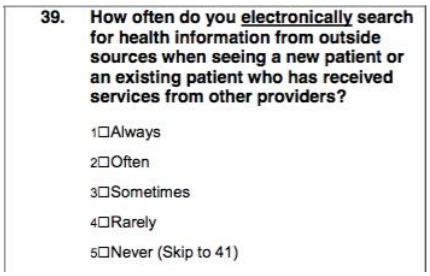
5☐Medication allergy lists

6☐Discharge summary

7☐Other_____

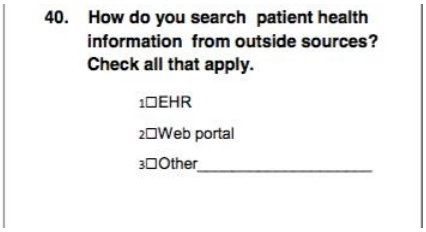
38. What types of patient health information do you routinely search for from sources outside your medical organization? Check all that apply

13 respondents answered "yes" to Q37 and correctly skipped into Question 37. This question was not systematically probed, and no cognitive findings are available.



39. How often do you <u>electronically</u> search for health information from outside sources when seeing a patient or an existing patient who has received services from other providers?

All respondents understood this question to be asking how often they search for health information about new patients, and they carried forward their interpretations of "health information" from Qs 37 and 38. Most respondents indicated that they did not search for this kind of information frequently (only one respondent answered "often" and one other answered "always"), but rather preferred to call their patients' previous physicians to get information. For instance, one pediatrician who answered "rarely" explained saying, "It's a lot faster to just call up the other doctor than to try and see if that [information] is available online or somewhere."



40. How do you search patient health information from outside sources? Check all that apply

Eight respondents answered "never" to Q39 and skipped directly to Question 41, while the other 12 continued on to receive Question 40. This question was not probed systematically, and no cognitive findings are available.

41. To what extent do you agree or disagree with the following statements about electronic information exchange? Electronically exchanging clinical information with outside sources _____.	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Not Applicable
"improves my practice's quality of care."	1☐	2☐	3☐	4☐	5☐
"increases my practice's efficiency."	1☐	2☐	3☐	4☐	5☐
"reduces duplicate test ordering."	1☐	2☐	3☐	4☐	5☐
"prevents medication errors."	1☐	2☐	3☐	4☐	5☐
"is cumbersome to do with our EHR."	1☐	2☐	3☐	4☐	5☐
"is limited;providers in my referral network do not have the electronic capability to exchange data."	1☐	2☐	3☐	4☐	5☐
"provides me with complete clinical information, both current and historical, from sources outside my medical organization."	1☐	2☐	3☐	4☐	5☐
"provides me with clinical information that I can trust."	1☐	2☐	3☐	4☐	5☐

41. To what extent do you agree or disagree with the following statements about electronic information exchange?

Question 41 is a series of eight attitudinal questions that ask respondents whether they agree or disagree with a series of statements about "electronically exchanging clinical information with outside sources." Two overall areas of interpretative variation, and one usability issue emerged.

First, most respondents did not read the second paragraph of the question text ("Electronically exchanging clinical information with outside sources____"). Rather, these physicians simply considered the statements in terms of "electronic information exchange," which is found in the question text's first paragraph (and is the topic of many of the previous questions on the survey questionnaire). Additionally, other respondents did not consider ALL forms of electronic information exchange, but only thought about EHR systems.

Those respondents who just thought about EHR systems approached the attitudinal statements in two ways. Most thought about the current state of electronic health systems, and their experiences with their own system. For example, when explaining her "somewhat disagree" answer to the fourth statement, an OB/GYN said that she didn't trust that the information on the EHR was complete (as she did not know if other physicians' information was included or not), so she always re-checked medication lists herself. Thus, it was not the EHR that prevented medication errors, but her own legwork.

Others, particularly those respondents who did not belong to a larger medical organization and had very little to no experience with health information exchange over EHR systems, answered not based on their experiences, but on the *goals* of the overall switch to EHRs. Thus, one primary care physician who answered "strongly agree" to the fourth statement explained that "well that's why we're moving to EMRs. One day, those things will just be automatic."

The second area of variation has to do with the answer categories. As seen previously with the relative frequency categories in Qs 30-33, there was little consistency in how the respondents mapped their responses to the answer categories. Some respondents treated these questions as simple agree/disagree questions and used either the extreme categories or the middle categories as binary pairs. Other respondents attempted to break down their attitudes into the four categories provided, while others broke down their attitudes into three categories and either only used one of the middle categories to indicate an attitude akin to "somewhat agree."

Finally, one major usability issue emerged across Q41. While the first, second, third, fourth, seventh, and eight statement is presented in the "positive" position—meaning that an agree answer means that the electronic exchange of information provides a benefit—the fifth and sixth statements have a reversed polarity, with an agree statement meaning that electronic exchange of information does not provide a benefit. Nearly all the respondents missed this change in attitudinal valance. Thus for example, a surgeon answered the fifth option "strongly disagree" and explained that "we can't just send it to other EHRs. The systems aren't set up that way. It's really hard—we need to scan in information, it doesn't just appear." This respondent was actually *agreeing* with the statement, but answered using one of the *disagreeing* answer category because he was carrying the agree/disagree pattern used in the first four statements forward. The few respondents who did notice the shift in valance universally complained about it, with one OB/GYN calling it "a trick." This change in valence leads to response errors and causes more frustration, and should be eliminated.

Works Cited

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Appendix A: Questionnaire

OMB No. 0920-1015: Approval expires 04/30/2017

NOTICE - Public reporting burden of this collection of information is estimated to average 60 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: CDC/ATSDR Information Collection Review Office; 1600 Clifton Road, MS D-74, Atlanta, GA 30333, ATTN: PRA (0920-0234).

Assurance of Confidentiality - All information which would permit identification of an individual, a practice, or an establishment will be held confidential, will be used only by NCHS staff, contractors, and agents only when required and with necessary controls, and will not be disclosed or released to other persons without the consent of the individual or the establishment in accordance with section 308(d) of the Public Health Service Act (42 USC 242m) and the Confidential Information Protection and Statistical Efficiency Act (PL-107-347).

National Electronic Health Records Survey 2015

The National Electronic Health Records Survey is affiliated with the National Ambulatory Medical Care Survey (NAMCS). The purpose of the survey is to collect information about the adoption of electronic health records/electronic medical records (EHRs/EMRs) in ambulatory care settings. Your participation is greatly appreciated. Your answers are completely confidential. Participation in this survey is voluntary. If you have questions or comments about this survey, please call 866-966-1473.

1. We have your specialty as:

Is that correct?

□1 Yes

□2 No → What is your specialty?

_____

*This survey asks about **ambulatory care**, that is, care for patients receiving health services without admission to a hospital or other facility.*

2. Do you directly care for any ambulatory patients in your work?

□1 Yes → *Continue to Question 3*

□2 No

□3 I am no longer in practice

Please stop here and return the questionnaire in the envelope provided.

*The next question asks about a **normal week**.*
We define a normal week as a week with a normal caseload, with no holidays, vacations, or conferences.

3. Overall, at how many office locations (excluding hospital emergency or hospital outpatient departments) do you see ambulatory patients in a normal week?

_____ locations

4. Do you see ambulatory patients in any of the following settings? CHECK ALL THAT APPLY.

1□ Private solo or group practice
2□ Freestanding clinic/urgicenter (not part of a hospital outpatient department)
3□ Community Health Center (e.g., Federally Qualified Health Center (FQHC), federally funded clinics or "look-alike" clinics)
4□ Mental health center
5□ Non-federal government clinic (e.g., state, county, city, maternal and child health, etc.)
6□ Family planning clinic (including Planned Parenthood)
7□ Health maintenance organization or other prepaid practice (e.g., Kaiser Permanente)
8□ Faculty practice plan (An organized group of physicians that treats patients referred to an academic medical center)

} *If you see patients in **any** of these settings, go to question 5*

9□ Hospital emergency or hospital outpatient departments
10□ None of the above

} *If you select **only** 9 or 10, go to Q34*

5. At which of the settings (1-8) in question 4 do you see the most ambulatory patients?
WRITE THE NUMBER LOCATED NEXT TO THE BOX YOU CHECKED.

_____ (For the rest of the survey, we will refer to this as the "reporting location.")

For the remaining questions, please answer regarding the **reporting location** indicated in question 5 even if it is not the location where this survey was sent.

6. What are the county, state, zip code, and telephone number of the *reporting location*?

Country USA County _____ State _____

Zip Code _____ Telephone ( )

7. How many physicians, including you, work at the reporting location? _____

8. How many physicians, including you, work at <u>this practice</u> (including physicians at the reporting location, and physicians at any other locations of the practice)?

☐1 1 physician
☐2 2-3 physicians
☐3 4-10 physicians
☐4 11-50 physicians
☐5 51-100 physicians
☐6 More than 100 physicians

9. Is the reporting location a single- or multi-specialty (group) practice?

☐1 Single ☐2 Multi

10. How many mid-level providers (i.e., nurse practitioners, physician assistants, and nurse midwives) are associated with the reporting location?

_____ mid-level providers

11. How many patients do you currently take care of at the reporting location?

_____ Number of patients

12. At the reporting location, are you currently accepting new patients?

☐1 Yes ☐2 No ☐3 Unknown

13. If yes, from those new patients, which of the following types of payment do you accept?

	Yes	No	Unknown
1. Private insurance capitated	☐1	☐2	☐3
2. Private insurance non-capitated	☐1	☐2	☐3
3. Medicare	☐1	☐2	☐3
4. Medicaid/CHIP	☐1	☐2	☐3
5. Workers' compensation	☐1	☐2	☐3
6. Self pay	☐1	☐2	☐3
7. No charge	☐1	☐2	☐3

14. Does the reporting location <u>use</u> an electronic health record (EHR) system? Do not include billing record systems.

☐1 Yes, all electronic
☐2 Yes, part paper and part electronic
} *Go to Question 15*

☐3 No
☐4 Unknown
} *Skip to Question 20*

15. In which year did you install your current EHR system?

Year: _____

16. Does your current EHR system meet meaningful use criteria as defined by the United States Department of Health and Human Services?

☐1 Yes
☐2 No
☐3 Unknown

17. Does your EHR have the capability to electronically send health information to another provider whose EHR system is different from your system?

☐1 Yes ☐2 No ☐3 Unknown

18. What is the name of your current EHR system? CHECK ONLY ONE BOX. IF OTHER IS CHECKED, PLEASE SPECIFY THE NAME.

☐1 Allscripts
☐2 Community Computer Service, Inc
☐3 athenahealth
☐4 Cerner
☐5 eClinicalWorks
☐6 e-MDs
☐7 Epic
☐8 GE/Centricity
☐9 Eyefinity/ Officemate
☐10 NextGen
☐11 Practice Fusion
☐12 Sage/Vitera/ Greenway
☐13 Other, specify _____
☐14 Unknown

19. Has your practice made an assessment of the potential risks and vulnerabilities of your electronic health information within the last 12 months? This assessment would help identify privacy- or security-related issues that may need to be corrected.

☐1 Yes ☐2 No ☐3 Unknown

20. At the reporting location, are there plans to purchase a new EHR system within the next 18 months?

□1 Yes, with the same EHR vendor
□2 Yes, with a different EHR vendor
□3 Yes, first-time purchase of EHR system
□4 No
□5 Unknown

21. Medicare and Medicaid offer incentives to practices that demonstrate "meaningful use of health IT." Have you ever applied for Meaningful Use Incentive Program payments?

□1Yes, at the reporting location
□2Yes, not at the reporting location
□3No
□4Unknown

22. Do you plan to apply for Meaningful Use Incentive Program payments in the future?

☐1Yes ☐2No ☐3Unknown

23. Indicate whether the reporting location has each of the computerized capabilities listed below and how often these capabilities are used. CHECK NO MORE THAN ONE BOX PER ROW.	Yes, used routinely	Yes, but not used routinely	No	Unknown
Recording patient history and demographic information?	☐1	☐2	☐3	☐4
Recording patient problem list?	☐1	☐2	☐3	☐4
Recording and charting vital signs?	☐1	☐2	☐3	☐4
Recording patient smoking status?	☐1	☐2	☐3	☐4
Recording clinical notes?	☐1	☐2	☐3	☐4
Recording patient's medications and allergies?	☐1	☐2	☐3	☐4
Reconciling lists of patient medications to identify the most accurate list?	☐1	☐2	☐3	☐4
Providing reminders for guideline-based interventions or screening tests?	☐1	☐2	☐3	☐4
Ordering prescriptions?	☐1	☐2	☐3	☐4
If yes, are prescriptions sent electronically to the pharmacy?	☐1	☐2	☐3	☐4
If yes, are warnings of drug interactions or contraindications provided?	☐1	☐2	☐3	☐4
Ordering lab tests?	☐1	☐2	☐3	☐4
If yes, are orders sent electronically?	☐1	☐2	☐3	☐4
Viewing lab results?	☐1	☐2	☐3	☐4
If yes, can the EHR automatically graph a specific patient's lab results over time?	☐1	☐2	☐3	☐4
Ordering radiology tests?	☐1	☐2	☐3	☐4
Viewing imaging results?	☐1	☐2	☐3	☐4
Identifying educational resources for patients' specific conditions?	☐1	☐2	☐3	☐4
Reporting clinical quality measures to federal or state agencies (such as CMS or Medicaid)?	☐1	☐2	☐3	☐4
Identifying patients due for preventive or follow-up care in order to send patients reminders?	☐1	☐2	☐3	☐4
Generating lists of patients with particular health conditions?	☐1	☐2	☐3	☐4
Electronic reporting to immunization registries?	☐1	☐2	☐3	☐4
Providing patients with clinical summaries for each visit?	☐1	☐2	☐3	☐4
Exchanging secure messages with patients?	☐1	☐2	☐3	☐4
Ability for patients to electronically view their online medical record?	☐1	☐2	☐3	☐4
Ability for patients to download their online medical record?	☐1	☐2	☐3	☐4
Ability for patients to electronically send their online medical record to a third party (e.g., another provider, Personal Health Records)?	☐1	☐2	☐3	☐4

24. Has your reporting location been recognized as a Patient Centered Medical Home (PCMH) by a state, a commercial health plan, or a national organization, such as the National Committee for Quality Assurance (NCQA), the Joint Commission, URAC, or the Accreditation Association of Health Care Practice?

☐1 Yes

☐2 No

☐3 Unknown

25. ***Does the reporting location participate in an Accountable Care Organization* arrangement with Medicare or private insurers?** An ACO is an entity typically composed of primary care physicians, specialists, and hospitals, and held financially accountable for the cost and quality of care delivered to a defined group of patients.

☐1 Yes

☐2 No

☐3 Unknown

26. Does the reporting location participate in a Pay-for-Performance arrangement, where you can receive financial bonuses based on your performance?

☐1 Yes ☐2 No ☐3 Unknown

27. Who owns the reporting location? CHECK ONE.

☐1 Physician or physician group

☐2 Insurance company, health plan, or HMO

☐3 Community health center

☐4 Medical/academic health center

☐5 Other hospital

☐6 Other health care corporation

☐7 Other

28. What percent of your patients are insured by Medicaid?

_____**%**

29. Do you treat patients insured by Medicare?

☐1 Yes ☐2 No ☐3 Unknown

The following questions are about how you and the organization where you see the most ambulatory patients send and receive patient health information

30. How often do you <u>send</u> patient health information to other outside providers and public health agencies using the following methods?	**Often**	**Sometimes**	**Rarely**	**Never**	**Uncertain**
Paper-based method (e.g. mail, fax)	1☐	2☐	3☐	4☐	5☐
eFax	1☐	2☐	3☐	4☐	5☐
EHR (not eFax)	1☐	2☐	3☐	4☐	5☐
Web Portal (separate from EHR)	1☐	2☐	3☐	4☐	5☐

31. How often do you <u>receive</u> patient health information from other outside providers and public health agencies using the following methods?	**Often**	**Sometimes**	**Rarely**	**Never**	**Uncertain**
Paper-based method (e.g. mail, fax)	1☐	2☐	3☐	4☐	5☐
eFax	1☐	2☐	3☐	4☐	5☐
EHR (not eFax)	1☐	2☐	3☐	4☐	5☐
Web Portal (separate from EHR)	1☐	2☐	3☐	4☐	5☐

32. Do you refer patients to the following types of providers? If yes, how often do you send patient health information <u>electronically</u> through either your EHR or web portal?

	No	Yes	Often	Sometimes	Rarely	Never
Ambulatory care providers outside your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Ambulatory care providers within your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals unaffiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals affiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Behavioral Health providers	1☐	2☐ →	1☐	2☐	3☐	4☐
Long-term care providers	1☐	2☐ →	1☐	2☐	3☐	4☐

33. Do you see patients that have received care from the following types of providers? If yes, how often do you receive patient health information <u>electronically</u> through either your EHR or web portal?

	No	Yes	Often	Sometimes	Rarely	Never
Ambulatory care providers outside your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Ambulatory care providers within your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals unaffiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Hospitals affiliated with your organization	1☐	2☐ →	1☐	2☐	3☐	4☐
Behavioral Health providers	1☐	2☐ →	1☐	2☐	3☐	4☐
Long-term care providers	1☐	2☐ →	1☐	2☐	3☐	4☐

If you do not have an EHR system please skip to Question 36.

34. For other outside providers including public health agencies, do you electronically send and receive, send only, or receive only the following types of patient health information?	**Both send and receive electronically**	**Send electronically only**	**Receive electronically only**	**Do not send or receive electronically**
Medication lists	1☐	2☐	3☐	4☐
Patient problem lists	1☐	2☐	3☐	4☐
Medication allergies lists	1☐	2☐	3☐	4☐
Imaging reports	1☐	2☐	3☐	4☐
Laboratory results	1☐	2☐	3☐	4☐
Registry data (e.g. immunizations, cancer)	1☐	2☐	3☐	4☐
Referrals (e.g. referral requests or reports)	1☐	2☐	3☐	4☐
Hospital discharge summaries			3☐	4☐
Emergency Department notifications			3☐	4☐
Summary of care records for transitions of care or referrals	1☐	2☐	3☐	4☐

35. When electronically receiving information from other providers, are you able to integrate the following types of patient health information into your EHR without special effort like manual entry or scanning?	**Yes**	**No**	**Uncertain**	**Not Applicable**
Medication lists	1☐	2☐	3☐	4☐
Patient problem lists	1☐	2☐	3☐	4☐
Medication allergies lists	1☐	2☐	3☐	4☐
Imaging reports	1☐	2☐	3☐	4☐
Laboratory results	1☐	2☐	3☐	4☐
Registry data (e.g. immunizations, cancer)	1☐	2☐	3☐	4☐
Referrals (e.g. referral requests or reports)	1☐	2☐	3☐	4☐
Hospital discharge summaries	1☐	2☐	3☐	4☐
Emergency Department notifications	1☐	2☐	3☐	4☐
Summary of care records for transitions of care or referrals	1☐	2☐	3☐	4☐

36. When treating patients seen by other outside providers, how often do you or your staff have clinical information from those encounters electronically available at the point of care? Electronically available does not include scanned or PDF documents.

1☐Often

2☐Sometimes

3☐Rarely

4☐Never

5☐Uncertain

6☐I do not see patients outside my medical organization

These questions ask about electronically searching, finding, or querying patient health information from sources outside your medical organization

37. Do you have the capability to <u>electronically</u> search for your patient's health information from other outside sources?

1☐Yes

2☐No (Skip to 39)

3☐Uncertain (Skip to 39)

38. What type of patient health information do you routinely search for from sources outside your medical organization? Check all that apply.

1☐Lab results

2☐Patient problem lists

3☐Imaging reports

4☐Medication lists

5☐Medication allergy lists

6☐Discharge summary

7☐Other_____

39. How often do you <u>electronically</u> search for health information from outside sources when seeing a new patient or an existing patient who has received services from other providers?

1☐Always

2☐Often

3☐Sometimes

4☐Rarely

5☐Never (Skip to 41)

40. How do you search patient health information from outside sources? Check all that apply.

1☐EHR

2☐Web portal

3☐Other_____

41. **To what extent do you agree or disagree with the following statements about electronic information exchange?** **Electronically exchanging clinical information with outside sources _____.**	**Strongly Agree**	**Somewhat Agree**	**Somewhat Disagree**	**Strongly Disagree**	**Not Applicable**
"improves my practice's quality of care."	1☐	2☐	3☐	4☐	5☐
"increases my practice's efficiency."	1☐	2☐	3☐	4☐	5☐
"reduces duplicate test ordering."	1☐	2☐	3☐	4☐	5☐
"prevents medication errors."	1☐	2☐	3☐	4☐	5☐
"is cumbersome to do with our EHR."	1☐	2☐	3☐	4☐	5☐
"is limited;providers in my referral network do not have the electronic capability to exchange data."	1☐	2☐	3☐	4☐	5☐
"provides me with complete clinical information, both current and historical, from sources outside my medical organization."	1☐	2☐	3☐	4☐	5☐
"provides me with clinical information that I can trust."	1☐	2☐	3☐	4☐	5☐

42. **What is a reliable E-mail address for the physician to whom this survey was mailed?**

43. Who completed this survey? ☐1The physician to whom it was addressed ☐2Office staff ☐3Other

Thank you for your participation. Please return your survey in the envelope provided. If you have misplaced the envelope, please send the survey to: 2605 Meridian Parkway, Suite 200, Durham, NC 27713.

Boxes for Admin Use

Appendix B: Advance Letter

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control and Prevention

National Center

for Health Statistics

3311 Toledo Road
Hyattsville,

Maryland 20782
Date

Full name
Street address
City, State, Zip

Dear [Fill]:

The Centers for Disease Control and Prevention's National Center for Health Statistics will be conducting a study on the National Medical Ambulatory Care Survey and the National Electronic Health Records Survey. The survey is designed to enable an accurate understanding of the types of medical organizations in which physicians work, the patients cared for, daily activities of physicians (including clinical and nonclinical time), and emerging issues affecting physician practices, with the ultimate goal of informing future policy.

I hope you will be willing to help us with some preliminary research to improve the survey before it is fielded. If you are willing to participate in a one-hour, in-person interview, you will receive $100 as a token of our appreciation. Participation is, of course, voluntary, and you may refuse to answer any question or may stop participating at any time without penalty or loss of benefits. All of the information you provide will be kept confidential.[6]

Someone from the National Center for Health Statistics' Questionnaire Design Research Laboratory will call to ask if you are willing to participate in a research interview. However, if you would like to schedule an interview or if you have any questions about this research, please call Lauren Creamer at 301-458-4674. If you have any questions about your rights as a respondent in this research study, please call the Research Ethics Review Board at the National Center for Health Statistics toll-free at 1-800-223-8118. Please leave a brief message with your name and phone number. Say that you are calling about Protocol #[INSERT # after ERB approval]. Your call will be returned as soon as possible.

We greatly appreciate your interest and your help, and do look forward to working with you on this important topic.

Sincerely,

Charles J. Rothwell
Director
National Center for Health Statistics
3311 Toledo Rd
Hyattsville, MD 20782

[6] This study is authorized by Section 306 of the Public Health Service Act (Title 42, U.S. Code 242k). All information collected as part of this study will be used for statistical purposes only and held in the strictest confidence according to Section 308(d) of the Public Health Service Act (42, U.S. Code 242m(d)) and the Confidential Information Protection and Statistical Efficiency Act (Title 5 of PL 107-347).