# Sources of value from healthcare IT

Analysis of the HIMSS Value Suite database suggests that investments in healthcare IT can produce value, especially in terms of improved treatment and clinical care. However, gaps remain that the industry must fill before value from healthcare IT can be fully understood and maximized.

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Health systems around the globe continue to invest in healthcare IT, but the extent of the value being captured from the investments has not always been clear. To better understand the types of value providers are deriving from those investments, we analyzed 1,370 case studies of healthcare IT use collected by the Healthcare Information and Management System Society (HIMSS) in its Value Suite database. As far as we know, it is the world's largest database containing such information, and we are the first outside organization to have the opportunity to analyze it in full.[1]

The information in the database contains an important input health systems can use to sharpen the focus of IT optimization programs and new investments in healthcare IT: which sources of value are being reported most often. This data, when combined with other critical inputs (e.g., the technology capital and operating costs and implementation timelines[2]), may provide a foundation for calculating return on investment more accurately and help strategically direct investments for improved clinical efficiency and patient outcomes.

Admittedly, there are limitations in the available data, as we discuss below, and the industry has a long way to go before it can fully understand the long-term value being generated by healthcare IT in quantitative manner. Nevertheless, analysis of the database provides useful insights into how to extract value from healthcare IT.

## The Value Suite database

The cases in the Value Suite database cover a range of technologies (Exhibit 1). Data sources include press and academic articles, award submissions, websites, and other publicly available information. Examples of what can be found in the cases appear on p. 8.

To classify the types of value cited in each case, HIMSS uses its STEPS™ framework. The categories in this framework are **S**atisfaction, **T**reatment/clinical, **E**lectronic secure data, **P**atient engagement/population health, and **S**avings. HIMSS then identifies the

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[1] HIMSS provided access to the Value Suite database. All the analyses and findings detailed in this article are McKinsey's and McKinsey retained full editorial control of this article.
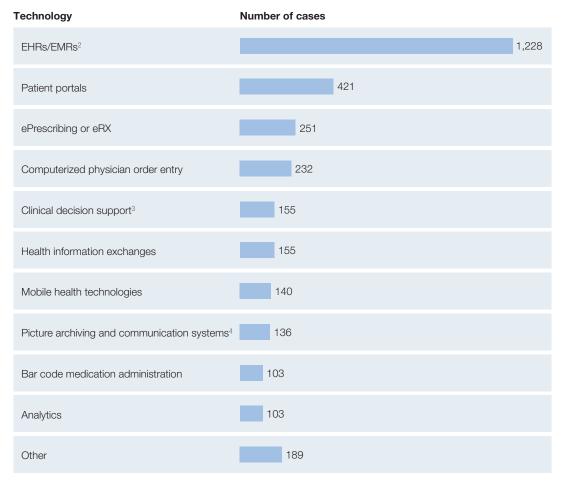[2] Information about costs and implementation timelines are rarely included in the Value Suite database and thus were not included in our analysis.

specific types of value reported (e.g., improved clinical documentation, improved quality of care). Many of the cases included in the database cite more than one type of technology and one source of value. However, the reports the cases are based on may not have mentioned every source of value gained from healthcare IT.

In many ways the Value Suite database is similar to a survey (in that it is based on self-reporting), but it has several unique benefits that make it an important resource for understanding healthcare IT value capture:

- **Size.** The 1,370 cases in the database reflect the experience of about 1,200 different providers and report over 12,000 specific instances of value.

- **Breadth.** The database includes information from a variety of providers around the world, including hospitals, large health systems, and other care delivery organizations.

EXHIBIT 1  **Technologies discussed in the cases**[1]

| Technology | Number of cases |
|---|---|
| EHRs/EMRs[2] | 1,228 |
| Patient portals | 421 |
| ePrescribing or eRX | 251 |
| Computerized physician order entry | 232 |
| Clinical decision support[3] | 155 |
| Health information exchanges | 155 |
| Mobile health technologies | 140 |
| Picture archiving and communication systems[4] | 136 |
| Bar code medication administration | 103 |
| Analytics | 103 |
| Other | 189 |

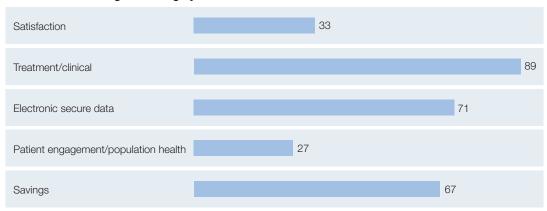[1] Numbers sum to more than 100 because many cases mentioned more than one category of value.
[2] 953 cases discussed electronic health records (EHRs); 292 discussed electronic medical records (EMRs).
[3] Including remote and patient management systems.
[4] Used to store, manage, retrieve, and archive medical images; this category includes radiology information systems.

Source: McKinsey analysis of the HIMSS Value Suite database

EXHIBIT 2 **Categories of value reported in the cases**

**% of cases mentioning each category**[1]

| Category | % |
|---|---|
| Satisfaction | 33 |
| Treatment/clinical | 89 |
| Electronic secure data | 71 |
| Patient engagement/population health | 27 |
| Savings | 67 |

[1] Percentages sum to more than 100 because many cases mentioned more than one category of value.
Source: McKinsey analysis of the HIMSS Value Suite database

- **Validation.** Sixty-four percent of the cases have been validated in whole or in part by a third party (e.g., HIMSS, other industry associations, or a government organization) or were reported in the press. The remaining 500 cases were derived directly from vendor websites or provider press releases. (We analyzed the database both with and without the unvalidated data to check for potential bias.)

However, it is also important to be aware of the database's current limitations:

- **Non-comprehensive.** The database contains information from only a subset of all provider organizations, and most cases discuss only a limited range of topics.

- **Positive-oriented.** For the most part, the database contains only "positive" experiences (i.e., instances of value gained) and does not include instances where value was not captured or may even have been destroyed.

- **Largely qualitative.** Although all cases include detailed information about the type of value derived, many of them provide only limited quantitative information about the amount of value. Most of the cases also say little about the cost, time, etc., to achieve that value.
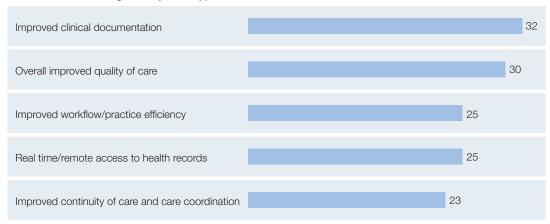
## Categories of value

The category of value mentioned in the highest proportion of cases was treatment/clinical (Exhibit 2). These cases describe how healthcare IT improved the quality, safety, and/or efficiency of care. This finding reflects that electronic health/medical records (EHRs/EMRs) were the predominant technology discussed in 90% of the cases.

The category of value cited second-most often was improvements in electronic secure data. In these cases, the technology strengthened data reporting or sharing, communications, or the practice of evidence-based medicine, all of which help enable better clinical and managerial decision making.

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EXHIBIT 3  **The five types of value reported most often**

**% of cases mentioning each specific type of value**[1]

| | |
|---|---|
| Improved clinical documentation | 32 |
| Overall improved quality of care | 30 |
| Improved workflow/practice efficiency | 25 |
| Real time/remote access to health records | 25 |
| Improved continuity of care and care coordination | 23 |

[1] Percentages sum to more than 100 because many cases mentioned more than one category of value.

Source: McKinsey analysis of the HIMSS Value Suite database

Savings were mentioned almost as often as improvements in electronic secure data. The savings were derived from labor efficiencies, operational improvements (e.g., better use of space), or financial benefits (e.g., malpractice premium reductions).

The other two categories of value, satisfaction and patient engagement/population health, were cited far less often. One-third of the cases mentioned an increase in satisfaction either by patients, care providers, or other staff members. This score is consistent with calls from many directions that healthcare IT still has a long way to go before it becomes a leader in user experience.
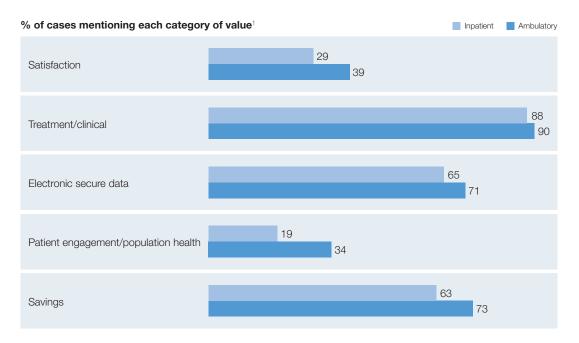
Slightly more than one-quarter of the cases cited improvements in patient engagement/population health. Most of these cases discussed how IT was used by patients to increase their level of engagement with their health and care plan. However, a few of the cases described evidence that a technology helped change patient behavior (e.g., by increasing screening and immunization rates).

As noted earlier, 500 cases were drawn from vendor websites or provider press releases. To investigate whether the results described above were influenced by this fact, we eliminated those cases and re-ran our analysis. Our findings changed only slightly—the percentage of cases that cited savings and/or satisfaction dropped a few points, and the percentage describing improvements in patient engagement/population health rose a few points. Scores for the other two categories were unchanged.

## Specific types of value

The STEPS™ framework includes 75 different specific types of value. Each case was assigned one or more types of value based on the benefit(s) mentioned in the underlying report. As a result, even the most common types of value cited were listed in less than one-third of the cases (Exhibit 3). This does not necessarily mean that these types of value were absent in the other two-thirds, merely that they were not specifically mentioned in the underlying reports.

EXHIBIT 4 **Differences in value categories reported by inpatient and ambulatory care cases**

**% of cases mentioning each category of value**[1]

■ Inpatient ■ Ambulatory

Satisfaction
- Inpatient: 29
- Ambulatory: 39

Treatment/clinical
- Inpatient: 88
- Ambulatory: 90

Electronic secure data
- Inpatient: 65
- Ambulatory: 71

Patient engagement/population health
- Inpatient: 19
- Ambulatory: 34

Savings
- Inpatient: 63
- Ambulatory: 73

[1] Percentages sum to more than 100 because many cases mentioned more than one category of value.
Source: McKinsey analysis of the HIMSS Value Suite database

The type of value reported most often was improved clinical documentation. This makes sense given that most of the cases discussed EHR/EMR systems, which often require more complete documentation than the paper processes they replaced. Improved quality of care—the anticipated benefit of better documentation—was mentioned in 30% of the cases. Improved workflow efficiency was cited in 25% of the cases, evidence against fears that more extensive documentation impairs workflow efficiency. Altogether, 46% of the cases reported improvements in quality, efficiency, or both.

Real-time, remote access to health records[3] was also mentioned in 25% of the cases. This capability, which many EHR/EMR systems provide, may have contributed to the quality and efficiency gains. Improved continuity of care/care coordination was cited in 23% of the cases. Until recently, EHR/EMR systems were not commonly used for this purpose, but many health systems now make it a point of emphasis.

Again, our findings did not change much when we removed the cases sourced from vendor websites or press releases. The percentage of cases reporting improved clinical documentation or real-time, remote access to health records decreased slightly, and the percentage citing improved continuity of care/care coordination rose a few points.

[3] The term "access to health records" was used when the source document mentioned that records were easily available, could be viewed by multiple physicians, or were not lost. The term "real-time, remote access to health records" was used when the document also described the ability to access office records from home, or hospital records from an outpatient office.
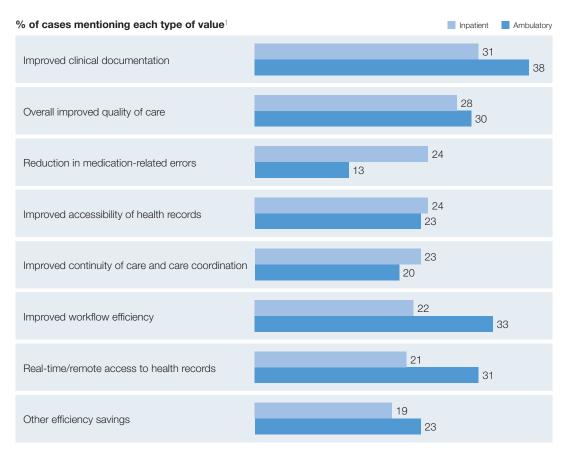
# Comparing the value cited by different provider types

The cases in the Value Suite database cover a variety of care organizations, including inpatient providers, ambulatory care providers, and multidisciplinary groups (e.g., integrated delivery networks). When we compared the 417 cases focused on inpatient providers with the 624 cases based on ambulatory care providers, some interesting similarities and differences emerged.

Although the two sets of cases ranked the categories of value in roughly the same sequence, the percentage of cases citing a given category was consistently higher in the ambulatory care set (Exhibit 4). Scores were fairly similar for treatment/clinical and electronic secure data. However, there were marked differences in the other three categories. In comparison with the inpatient cases, the ambulatory care cases were:
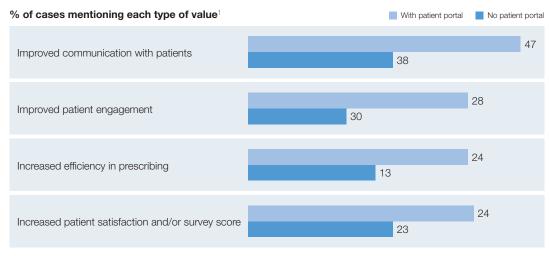
• 16% more likely to mention savings

• 36% more likely to mention satisfaction

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EXHIBIT 5  **Differences in value types reported by inpatient and ambulatory care cases**

**% of cases mentioning each type of value**[1]



Legend: ■ Inpatient  ■ Ambulatory

| Value type | Inpatient | Ambulatory |
|---|---|---|
| Improved clinical documentation | 31 | 38 |
| Overall improved quality of care | 28 | 30 |
| Reduction in medication-related errors | 24 | 13 |
| Improved accessibility of health records | 24 | 23 |
| Improved continuity of care and care coordination | 23 | 20 |
| Improved workflow efficiency | 22 | 33 |
| Real-time/remote access to health records | 21 | 31 |
| Other efficiency savings | 19 | 23 |

[1] Percentages sum to more than 100 because many cases mentioned more than one category of value.
Source: McKinsey analysis of the HIMSS Value Suite database

EXHIBIT 6 **Differences in value types reported by cases with—or without—a patient portal**

**% of cases mentioning each type of value[1]**
<span style="float:right">■ With patient portal ■ No patient portal</span>

| | With patient portal | No patient portal |
|---|---|---|
| Improved communication with patients | 47 | 38 |
| Improved patient engagement | 28 | 30 |
| Increased efficiency in prescribing | 24 | 13 |
| Increased patient satisfaction and/or survey score | 24 | 23 |

[1] Percentages sum to more than 100 because many cases mentioned more than one category of value.

Source: McKinsey analysis of the HIMSS Value Suite database

• 79% more likely to mention patient engagement/population health

Differences between the inpatient and ambulatory care cases became more pronounced when we analyzed specific types of value (Exhibit 5). Improved clinical documentation was cited most often in both sets, and three value types (improved quality of care, improved access to health records, and improved care continuity/coordination) were mentioned in roughly equal proportions in both sets. However, reductions in medication-related errors were reported almost twice as often in the inpatient cases as in the ambulatory care cases. Conversely, the ambulatory care cases reported improvements in workflow efficiency and real-time/remote access to health records much more often than the inpatient cases did.

## Evaluating a specific technological feature: Patient portals

Patient portals are becoming an increasingly common feature of EHR/EMR systems. The 421 cases in the HIMSS database that included a discussion of patient portals were more likely than those without them to mention several types of value (Exhibit 6). Specifically, they were:

• 122% more likely to cite improved patient engagement

• 93% more likely to cite improved communication with patients

• 72% more likely to cite increased efficiency in prescribing

• 58% more likely to cite increased patient satisfaction and/or better patient survey scores

These findings are consistent with the functionality patient portals provide—the portals open an additional channel of communication with patients and place more information at their fingertips.

## Implications

The sources of value described in this paper highlight the progress being made by healthcare IT. However, they also reveal gaps the industry must fill before the technology's potential can be realized.

**Productivity and efficiency gains may be lagging.** Although 67% of the cases reported some form of savings, only 25% of them described gains in workflow or practice efficiency. As noted earlier, the fact that many cases did not mention these specific value types does not indicate that such gains were not achieved. Nevertheless, it is possible that healthcare IT is not yet delivering the kinds of benefits that would enable a more productive workforce. Over the past few decades, the healthcare industry has lagged other sectors in terms of productivity improvements. However, most providers are likely to need productivity improvements if they are to control the cost of care in coming years. Going forward, healthcare IT must be tightly coupled with changes in provider operations if significant value is to be captured.

**Satisfaction is still a barrier.** User satisfaction has long been a stumbling block for healthcare IT, as the data in this paper confirm. The physicians and staff at many health systems continue to express dissatisfaction with the EHRs/EMRs and other IT tools they are asked to use. Although this may simply reflect resistance to change in some cases, there are many instances in which systems and processes have not been optimized for clinicians. This must change if greater value is to be captured.

## Examples of what the Value Suite database contains

**A multisite inpatient and ambulatory health system**
*Savings.* This health system, which includes four hospitals and about 1,300 physicians, reported that its integrated and automated electronic health record (EHR) and revenue cycle management systems created several types of value, including improved cost-to-collect payments, a lower write-off rate, and higher revenues from payor incentive programs. The expected ROI over 10 years is 12.3% on an expenditure of $57 million.

*Patient engagement/population health.* This provider also used its EHR system to implement a population management program by taking advantage of the system's ability to ease data analysis and care team coordination and to facilitate communication with patients through a web/mobile patient portal. Care coordinators were able to iden-tify patients with care gaps (e.g., those who were overdue for mammograms or colonoscopies); they would then contact the relevant patients and care teams, and schedule the required interventions. As a result of the program, the provider's screening rates rose from below the 50th percentile nationally to above the 75th percentile within 12 months.

**A large urban academic medical center**
*Treatment/clinical.* This provider used its EHR system to efficiently and accurately identify patients who were at risk of being readmitted to the hospital. Historical EHR admissions data was used to create a readmissions risk algorithm (based primarily on patient demographics and the presence of comorbidities) to predict a patient's readmission risk. Patients with high scores were enrolled in the follow-up program and given appropriate care, which lowered their readmission rate by 56%.

Improving patient satisfaction may be even more important for capturing value given today's focus on consumer engagement and population health. We expect that patient satisfaction will improve as health systems increasingly implement processes and tools to engage patients in a more consumer-like manner (e.g., including through IT tools such as improved patient portals and online scheduling). And, as population health-centric payment models become more prevalent, better consumer engagement could unlock additional value-capture avenues through prevention and patient education.

Quantitative value (i.e., return on investment) remains poorly understood. Providers have been making major investments in IT, often supported by subsidies or driven by mandates. As the cases in the HIMSS database show, many providers believe they are deriving value from these investments, but business leaders are growing frustrated that they cannot always quantify it directly or make strategic decisions based on where the greatest sources of value lie. This is particularly true for hospitals because healthcare IT typically accounts for a significant portion of their budgets. Now that most hospitals have established EHRs/EMRs and numerous other clinical IT systems, their executives want to understand the return on the investments made—and IT vendors must be able to help them calculate it.

In the future, the value derived from healthcare IT will need to be quantified much more rigorously. Additional investments in healthcare IT will likely require a higher bar for initial funding.

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We are still relatively early in the evolution of healthcare IT. At this stage, most providers understand the benefit of capturing more data and retrieving it more efficiently. Providers are also reporting secondary benefits, such as improvements in quality of care. However, many opportunities to derive value from healthcare IT remain to be captured, and the ability to quantify the value is becoming increasingly important. As the evolution continues, healthcare IT is likely to play a significant role in controlling the cost of care while improving patient outcomes.

For more information, contact McKinsey_on_Healthcare@mckinsey.com

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