If your hospital or health system is like most in the United States, you recently spent tens or even hundreds of millions of dollars on a new or upgraded electronic health record system. That’s primarily due to meaningful use, the Centers for Medicare & Medicaid Services’ EHR incentive program. CMS has paid more than $23 billion in incentives to hospitals and physicians for EHRs today, while promising penalties tomorrow for those that don’t comply. Stage 1 of meaningful use, which had a 2012 deadline, focused on data capture and sharing. Stage 2, which deadlines this year, focuses on advancing clinical processes. However, Stage 3, which has a 2017 deadline, is when hospitals will have to show improvements in quality, safety and efficiency.

In their rush to comply with meaningful use requirements, many hospitals have not fully understood the long-term consequences of investing in these systems. A more advanced EHR costs more to operate — more people, higher maintenance and support costs, and a larger technology footprint to support. In addition, once the system is installed, it is common for users to request expanded use of the EHR, often with additional costs. Unless a hospital can substantially improve quality, safety and efficiency with its EHR, leaders may find that they have overspent their capital budgets, increased their overall cost structures and have little to show for it.

EHR-related costs have resulted in credit rating downgrades for some health systems. Ratings agencies generally have been willing to overlook EHR investments’ short-term adverse financial impacts because of the promise of future benefits, but many hospitals aren’t realizing them. According to a 2012 study by the National Bureau of Economic Research, hospitals that invested in advanced EHR systems and did not have the expertise to innovate to improve operations wound up increasing their overall costs, even many years after go-live.

Innovation, Not Automation
Only 15 to 20 percent of potential EHR benefits are the result of automation — those benefits that happen because of a successful technical installation. The rest of the potential benefits require innovation — using EHR technology to help drive changes in process, culture and behavior. For these benefits, an EHR system is necessary but not sufficient. The difference between and examples of these two types of benefits are illustrated below.

In the first example, merely implementing the EHR and training doctors to enter their drug orders virtually guarantees the benefit. In the second example, it may take years of trial and error before the right combination of decision support tools, training, motivation and change management yields the expected safety benefits.

The Good, Bad and Ugly
The good news is that there are a growing number of high-performing organizations that have documented large strategic benefits from their innovative use of commercial EHRs. These leading institutions include Allina Health, Banner Health, Geisinger Health System, Maimonides Medical Center, MultiCare Health System, Sentara Healthcare, Texas Health Resources and many others. The most commonly reported inpatient EHR benefits include length-of-stay reductions, medication safety improvements, nursing time savings, lab and drug cost reductions, order turnaround-time reductions, and increased compliance with preventive care. The financial returns from these benefits add up to more than $4 million to $10 million annually for a typical 300-bed hospital (see Commonly Reported EHR Benefits, Page 29).

The bad news is that most hospitals do not have a good track record in EHR-driven innovation. Studies
information technology

cited in *Health Affairs* and by the Congressional Budget Office have shown that, on average, hospitals with EHRs do not have better clinical quality or lower costs.

The ugly truth is that hospitals that don’t get the expected strategic benefits from their electronic record systems may be worse off than they were before the EHR. Given the enormous clinical and financial leverage represented by an EHR and the high cost of these systems both in time and money, it is critical that providers realize promised benefits.

### The Essential Difference

What is the difference between the average hospital, which gets no measurable benefits from its EHR and the high-performing hospitals previously described? Three things: their attitude, their goals and the methods they use to implement and optimize their EHR.

1. **Leadership attitudes.** How an organization’s leaders think about their EHR makes all the difference in terms of the results they will get [see Influential Attitudes, below].

2. **Establishment of goals and focus.** Many executives are under the mistaken impression that most EHR benefits are a result of automation. They believe that all they have to do to realize those benefits is to install the EHR and train users. As a result, they do not devote much time to planning for benefits or pursuing them in an organized manner. But because most EHR benefits derive from innovation, not automation, it is important to target specific benefit areas, and organize hospital resources in a sustained effort to achieve them.

   Good EHR project management includes a risk monitoring and management plan to achieve goals. Great project management includes a benefits monitoring and management plan to attain successful outcomes. This plan requires well-organized resources focused on deliberate, sustainable efforts to achieve them.

   Without this focus, many EHR benefits — worth patient lives and millions of dollars — will not be realized.

3. **Best practice methods.** There are six best practices for EHR implementation and optimization that reflect the attitudes and goal-driven thinking described. Each is supported by detailed methods, organization structures and tools. These six best practices are:

   - **Benefits framework:** Senior executives, clinicians and functional leaders agree on a short list of strategic outcomes to be achieved with the help of the EHR.
   - **Benefit sentences:** Expectations about how the EHR will produce its benefits are clearly described, along with the timing and amount of benefit, in a single sentence.
   - **Benefits modeling:** Detailed analysis of current processes and performance, existing and planned system capabilities, and successful case studies are used to model the EHR’s expected impact on specific metrics.
   - **Benefit requirements:** Detailed technology requirements and required process changes are mapped to each benefit model.
   - **Organizing for benefits:** Responsibility for benefit realization cascades from senior executives to automation and optimization that reflect the attitudes and goal-driven thinking described.

### Automation vs. Innovation

Two types of potential EHR benefits

<table>
<thead>
<tr>
<th>Automation: Drug order placement</th>
<th>Innovation: Drug selection and dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What the EHR does</strong></td>
<td>Requires physicians to enter drug orders directly into the computer rather than writing them on paper or saying them to a nurse.</td>
</tr>
<tr>
<td><strong>Process impact</strong></td>
<td>Direct provider order entry eliminates paper and the need for nurses or clerks to copy or transcribe drug orders. This eliminates transcription errors, a major safety issue with the drug ordering process.</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Most hospitals are able to virtually eliminate transcription errors and their associated adverse drug events. A typical 300-bed hospital can be expected to prevent 111 transcription-related ADEs annually with computerized provider order entry, saving $560,000*.</td>
</tr>
<tr>
<td></td>
<td>Makes physicians aware of drug selection and dosing risks through active alerts, on-screen information and dosing calculators for some situations.</td>
</tr>
<tr>
<td></td>
<td>Gives physicians information in a convenient, timely manner and allows them to easily change their drug orders. However, physicians may disregard this information, alerts may be poorly designed and ineffective, and alerts may not target many potentially dangerous situations.</td>
</tr>
<tr>
<td></td>
<td>A well-designed and highly used drug selection and dosing decision support system can be expected to prevent 343 ADEs annually in a typical 300-bed hospital, saving $1.7 million*.</td>
</tr>
</tbody>
</table>

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*ADE-reduction model described in "EMRs in the fourth stage: the future of electronic medical records based on the experience at Intermountain Health Care," *Journal of Healthcare Information Management: Summer, 2007*
functional leaders and clinicians, and cross-functional teams are organized to pursue each strategic benefit.

- **Benefit measurement:** Outcome, process and system use metrics are specified for each major benefit area; baseline metrics are collected; and post-implementation metrics are reported each month to guide improvement cycles.

These best practices are sequential. Each one has independent value, but hospitals that gain the most substantial benefits use all of them together. They apply to the entire life cycle of EHR use, including planning, design, implementation, optimization and ongoing use, as illustrated in Structured Approach to Innovation.

In practice, applying structured innovation to the EHR adoption process begins with defining a vision of expected benefits (using benefits framework and benefit sentences) prior to or during the EHR planning initiative. This focuses the entire organization on a few key strategic benefits, aligned with organizational strategy, and guides the EHR design process to deliver a system that is capable of supporting them.

Current performance in each of the benefit areas should be documented along with the processes and information technology that support that performance. Then, with a vision, goals and an understanding of the current state providing the framework, innovative ideas can be generated and prioritized to support strategic benefits. High-priority innovations should be implemented in rapid improvement cycles.

Monthly measurement of progress toward the key strategic benefits is essential, with new plans for EHR optimization and innovation based on the latest data.

**Commonly Reported EHR Benefits**

<table>
<thead>
<tr>
<th>Benefit Area</th>
<th>Potential Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Save 28 to 36 minutes of time per nurse, per shift</strong></td>
<td>Reduce lab test use and drug costs by 15%</td>
</tr>
<tr>
<td><strong>Reduce lab test use and drug costs by 15%</strong></td>
<td>Reduce average length of stay by 5 to 10%</td>
</tr>
<tr>
<td><strong>Prevent 344 to 481 ADEs annually</strong></td>
<td>Reduce order turnaround time by at least one hour</td>
</tr>
<tr>
<td><strong>Ensure 99% compliance with vaccinations</strong></td>
<td>Reduction in paper forms costs (67% reporting)</td>
</tr>
<tr>
<td><strong>Improvement in charge capture (64% reporting)</strong></td>
<td>Reduction in the costs of transcription (61% reporting)</td>
</tr>
</tbody>
</table>

Sources: Thompson, D.I., Classen, D.C., Haug, P.J. “EMRs in the fourth stage: the future of electronic medical records based on the experience at Intermountain Health Care,” Journal of Healthcare Information Management: Summer, 2007; HIMSS Analytics and Advisory Board Co. survey of EMRAM Stage 6 and 7 hospitals, 2011

**The Board: Learning and Leading**

The board plays a key role in EHR benefits realization. Trustees should:

1. **Become educated.** Learn about the ways in which EHRs can drive strategic benefits to the organization and how those benefits are achieved. Arrange for a presentation by an expert on EHR benefits realization for your board. Research benefits, ask questions of your project leaders, read the hospital submission documents for the Davies Award of Excellence.

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**Influential Attitudes**

Board and executive leadership can make the difference by:

<table>
<thead>
<tr>
<th>Key leadership attitudes</th>
<th>Don’t do this</th>
<th>Do this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision of EHR as change driver</td>
<td>Leaders support electronic health records to earn meaningful use funds or for tactical or technical reasons.</td>
<td>Leaders understand how an EHR can be a source of competitive advantage.</td>
</tr>
<tr>
<td>Commitment to EHR benefits</td>
<td>Leaders delegate responsibility for EHR benefits to the information technology department and allocate minimal funding for EHR optimization.</td>
<td>Leaders are personally involved in doing what is necessary to realize value from their EHR; clinicians are engaged.</td>
</tr>
<tr>
<td>Willingness to dig for problems</td>
<td>Leaders don’t want to tackle difficult problems, fearing the legal and public relations risks of “knowing too much.”</td>
<td>Leaders want to know the full extent of problems and are fully committed to improvement.</td>
</tr>
<tr>
<td>Empowering approach</td>
<td>Leaders want to control information and improvement activities and approve all major decisions and actions.</td>
<td>Leaders push information and decision-making down to the lowest levels possible.</td>
</tr>
</tbody>
</table>
a program that recognizes achievement in implementing and realizing value from EHRs by the Healthcare Information and Management Systems Society (www.himss.org/davies), and speak with executives and board members from hospitals that have achieved substantial EHR-related benefits.

2. **Insist on best practices.** Direct executives to learn about and use the best practices described in this article. Ask specific questions about what benefits are expected, how they will be pursued and who is responsible for each area of benefit.

3. **Be supportive.** Ensure that sufficient resources are allocated to these efforts and that your executive team has the knowledge and expertise required for success. Encourage them as they work to learn and apply these principles and best practices.

4. **Demand accountability.** Ask for and review benefit metrics on a monthly or quarterly basis. Ensure that project updates are not just focused on budgets, timelines and technical details, but that they include details on benefit realization and measurement, including a report on progress toward each major area of benefit by the individual assigned responsibility for that benefit.

**Framework for Value Realization**

Many, if not all, of the best-known health care organizations that have reported substantial clinical and financial benefits from their EHRs are known to have used the six best practices previously described. Their experience and results differ markedly from the great majority of hospitals that have implemented EHRs to date.

Given the need to realize EHR benefits and consequences for failing to do so, every hospital and system board member and senior executive needs to be aware of and actively push for benefits realization using an organized approach incorporating best practices.

Although this article has focused exclusively on the use of EHRs, it is important to note that health information technologies are much broader than EHRs alone. Any substantial undertaking to expand the use of HIT should embrace the methodology discussed here. HIT investments should be treated with the same rigor as with more familiar hard assets.

**Structured Approach to Innovation**

1. **Define the vision**
2. **Understand current state**
3. **Generate ideas**
4. **Prioritize for benefits**
5. **Improvement cycles**

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