

American Medical **News**

December 16, 2002

Running the numbers: Making sure your spending pays off

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REPRINT

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If you're going to invest in new technology, you want to be assured that it will eventually pay for itself. Here are four steps to ensure you're spending wisely.

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Technology is touted as, among other things, a cost-saving device. But how do you know a new system will save you any money, especially if it comes with a hefty price tag?

The answer is to do a return-on-investment analysis, which is easier than you might think. It boils down to a four-step process: figuring out the cost of the technology compared with the cost of the business process you're trying to replace; determining the financial benefits you can reap; determining when you'll recoup the cost of technology; and checking after you buy to determine how your initial projections held up.

"You've got to know if you can afford it, and that's one way to go about it," said Steven J. Mash, MD, an orthopedic surgeon and CEO of M&M Orthopaedics, an 18-member group in Downers Grove, Ill.

Since 1998, the group has committed \$1.3 million to buy an electronic medical record and two other technologies, after ROI analyses showed it would earn its money back on each system in three years. M&M, as well as Mount Carmel Health Providers, a 50-doctor primary care group in Columbus, Ohio, share information and tips on how you can do your own ROI analysis.

1. Figure out the cost of the process to be replaced. The first thing you have to determine when considering buying technology is why you want it. M&M wanted an EMR to improve quality of

Happy returns

Things to consider when debating whether to buy expensive technology:

- What is your objective? What to you want to achieve?
- What business process are you trying to replace and what costs are associated with it?
- What benefits can the purchase offer in terms of additional revenue, lower costs or improved efficiency?
- What time frame is acceptable for a payback on your investment?
- Measure only tangible benefits.
- Keep forecasts conservative.
- Divide the projected annual cost savings or revenue by 12 to figure out how much you're saving or earning monthly. Take that monthly figure and divide it into the cost of the technology to determine projected return on investment.

SOURCE: M&M ORTHOPAEDICS

care and efficiency by giving staff and doctors electronic access to patient information so they would not have to make clinical decisions without charts or waste time in paper chases, Dr. Mash said.

In 1998, senior staff prepared a preliminary cost justification for an EMR, from CHARTCARE Inc., and identified \$58,794 in potential annual savings:

- \$10,800 saved by eliminating the cost of creating charts for new patients, based on \$1.50 per chart for 7,200

new patients.

- \$4,850 saved by halving the number of daily courier runs from two to one.

- \$144 saved by eliminating faxing of patient records, based on 100 faxes a month times an average transmission time of three minutes each at four cents a minute.

- \$43,000 saved in salary and benefits through the reduction of two full-time clerks.

Mount Carmel, which also wanted to buy an EMR, to increase physician productivity, projected \$267,000 in material and labor savings. It estimated that a new chart cost \$6. It assumed that the paper, tabs and labels cost \$3.50 and that the 15 minutes it took staff to assemble the chart cost \$2.50, resulting in annual savings of \$96,000 based on 16,000 new patients.

The group also projected \$171,000 in labor savings. It guessed that a clerical employee spends at least four minutes maintaining a paper chart. With 250,000 annual visits, that's 1 million minutes, which collectively require the labor of eight full-time clerks earning \$21,341 each in salary and benefits, said Paul C. Schutte, whose ROI analysis led the group's corporate parent, Trinity Health, of Novi, Mich., to give the group about \$1.1 million to purchase an EMR from Medical Manager, a unit of WebMD Corp.

2. Determine the benefits you can reap from technology. Mount Carmel conservatively estimated that doctors would see one additional patient per day. Assuming a physician works four days a week for 46 weeks, that's an additional 184 annual visits.

"After we pay our doctors a percentage of receipts, our net revenue is \$31.05 per visit. That's \$5,713 per physician," or \$371,345, based on the 65 doctors that the group had when it pre-

pared its analysis in 2000, Schutte said.

The group came up with an average of one additional visit per physician after one of its most productive physicians said he could see two additional patients a day if it connected the EMR with the health system hospital's laboratory system, letting him review results throughout the day instead of at the end of the day, Schutte said.

While some systems can generate revenue, others can lower costs. For example, M&M recently leased a speech recognition system from Dictaphone Corp. because it will lower the group's transcription expenses by \$9,000 a month.

The group employs transcriptionists in-house, but its dictation volume is so high that it also uses an outside service that costs \$14,000 a month. The speech recognition system will let the practice do all its transcription internally at a lower cost. "I'm going to pay \$5,000 a month [for the system], saving \$9,000 a month," said Rik Baier, executive director M&M Orthopaedics.

When M&M initially used cost as a means to justify buying an EMR for

\$200,000, it also thought it would move the paper records to the basement, freeing up space for two additional exam rooms. Assuming eight visits daily

**M&M is saving
\$65,000 a year.
Based on those
projected savings, it
estimates a payback
in about three years.**

per room for 40 weeks, five days a week and \$75 in net revenue per visit, those two rooms would have generated \$240,000 in additional revenue.

But instead, the group acquired an MRI machine for \$1 million and installed it the now-empty room. Before it leased the MRI in 1999 for \$200,000 a year, M&M looked at how many MRI studies doctors had ordered at the office where the group planned to install the machine. Doctors were ordering

eight daily, but the group discounted that down to six a day because "we weren't going to get all of those based on insurance companies' preference, patient preference or whatever," Baier said.

Then Baier called insurers to ask about MRI rates and came up with a conservative reimbursement of \$600.

"Six MRIs times 20 days a month times \$600 means we're looking at \$72,000 in additional revenue a month," he said. Next he figured that he would have to hire and pay two technicians \$60,000 a year in salary and benefits so that the group could operate the machine from 7 a.m. to 7 p.m. five days a week. "That's \$120,000 a year. Divide that by 12 months and you figure it costs \$10,000 a month for the technicians, and our lease and maintenance cost is about \$27,000 a month, and \$2,500 a month for [the space it takes]. You do your math and you're making about \$32,500 a month."

3. Determine when you'll recoup your cost. "I think all in all that you want to see an ROI that's probably under five

How it ended up

M&M Orthopaedics calculated its return on investment before purchasing an electronic medical records system. The practice identified five areas where it could lower costs or generate revenue, then boiled those down to three: chart supplies, labor and the cost of devoting space to a filing room. Here's how its projections held up.

Chart creation

- **Cost per chart:** \$1.50
- **New patients per year:** 7,200
- **Projected annual savings:** \$10,800
- **What happened:** The practice hasn't updated the cost of a paper chart now but says it sees 13,000 new patients a year.

Courier service

- **Projected annual savings from reducing service:** \$4,850

- **What happened:** No reduction because the practice uses couriers to deliver x-rays from one office to another.

Faxing costs

- **Number of faxes:** 100 per month
- **Average time per fax:** 3 minutes
- **Phone cost:** 4 cents per minute
- **Projected annual savings:** \$144
- **What happened:** Practice doesn't take this item into account because savings are so small.

Labor costs

- **Staff reduction:** Equivalent of 2 full-time employees
- **Average salary and benefits:** \$21,500
- **Projected annual savings:** \$43,000
- **What happened:** The practice did not lay off anybody, but left a vacant position unfilled, saving \$35,000 in salary and benefits.

Exam room revenue

- **New rooms:** 2

- **Visits per room:** 8 per day, 5 days a week
- **Average net revenue per visit:** \$75
- **Number of weeks of use:** 40
- **Projected revenue:** \$240,000
- **What happened:** Instead of building exam rooms, the practice used the file room space for an MRI machine that is generating more than \$500,000 annually.

The bottom line

- **Projected savings:** \$58,794
- **What happened:** The practice saved \$65,000, including \$35,000 for the clerical position it did not fill, \$15,000 for chart supplies and \$15,000 for the space that had been used for files.
- **Projected return on investment:** 3 1/2 years based on 1998 projected savings of \$58,794.
- **What happened:** Practice installed EMR in 2001. Based on projected annual savings of \$65,000, it will recoup its investment by 2004.

years, preferably 2 1/2 to three years," Dr. Mash said. "Otherwise you couldn't afford it, because the business cycle in medicine, like other business cycles, doesn't go much longer than that."

M&M figures it will take three years to get a return on its speech recognition system. It came up with that figure by dividing the \$9,000 in projected monthly savings into the \$270,000 cost of the system, Baier said.

The practice projected that the MRI would generate \$30,500 in net income a month, or \$366,000 a year, which means its \$1 million investment should be recouped in about three years.

4. Check if projections held up. Because the working environment is so fluid, it is difficult to measure a return on investment for an EMR, Baier said.

"We knew that going in we weren't necessarily going to be able to let people go when we put in our EMR," he said. "We lost one position through attrition, but we run pretty lean and mean anyway. Our file clerks all of a

sudden didn't have to worry about shuffling paper in the paper record, but they did have to work on scanning

Payback projections do not include the intangible benefits of patient satisfaction and being able to readily access information.

them into the EMR."

M&M is saving \$65,000 a year, including \$15,000 for supplies, \$35,000 in salary and benefits from the vacant clerical position it did not fill, and \$15,000 from the 500 square feet a file room would occupy, at \$30 per square foot. Based on those projected savings, the group estimated it would get a payback in about three years.

But in reality, the group will get its money back sooner as a result of intan-

gible benefits that it couldn't measure. Those include improved quality of care and improved patient satisfaction from doctors and staff being able to readily access information when seeing patients or answering questions over the phone, Baier said.

Since it implemented the EMR, the group has added a fifth location. It had to hire and pay \$35,000 for an additional clerk, but without the EMR, probably would have had to spend an additional \$100,000 for two more clerks, a file room and supplies for paper charts. If the group were to take that into account, it would have recouped its investment over 18 months, he said.

M&M projected it would recoup its MRI investment in three years. But it got its money back a year earlier because it underestimated the volume of MRI studies. The MRI is generating net income of more than \$500,000 annually, double the value of extra exam rooms, Baier said.

Mount Carmel got its purchase power from its corporate parents and hasn't checked whether its projections have held up, Schutte said.



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