

# White Paper

## Ambulatory EMR

### *Establishing a Business Case*



Center, Boston, MA | BJC

| Carilion Health System,

System, Fargo, ND | Mid-America Cardiology, Kansas

Miami, FL | Noran Neurological, Minneapolis, MN

Riverside Health System, Newport News, VA |

Washington Primary Care Physicians, Washington, D.C.

Allina Health System, Minneapolis, MN | Beth Israel Deaconess Medical

Health System, St. Louis, MO | Capital Region Healthcare, Concord, NH

Roanoke, VA | Community Hospital, Indianapolis, IN | MeritCare Health

City, MO | Neurologic Center of South Florida,

| Providence Health System, Portland, OR |

Wasatch Internal Medicine, Salt Lake City, UT |



MedicalLogic

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# Ambulatory EMR

## *Establishing a Business Case*

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### The Numbers Don't Tell the Whole Story



## Introduction

The economics of healthcare are changing dramatically. Healthcare providers are increasingly challenged to continuously improve the productivity of their practices even as they must spend more time documenting and reporting on the care they deliver. They must effectively meet the often conflicting demands of payors, regulators, and patients.

These pressures not only affect the way providers use their time; they affect their financial health and their ability to deliver quality care. And, there is no sign of relief.

In this complex environment, it is no longer sufficient to do nothing. Even the most basic trend analysis of patient volume and revenues illustrates this point. In the words of Peter Basch, M.D., Washington Primary Care Physicians, Washington, DC: “A lot of people make the assumption that doing nothing is standing still. Doing nothing, I feel, is moving backwards.”

Dr. Basch and others have seen that implementing an Electronic Medical Record (EMR) system can change this dynamic—often dramatically. The more commonly cited returns include cost savings related to reduced chart pulls, lower transcription costs, less duplication of tests, and better management of pharmacy costs. Less visible at first, but equally significant, is the potential to increase revenues as a result of more accurate E&M (Evaluation and Management) coding, improved clinical productivity, and more complete documentation. Medicare reimbursement requests more accurately reflect the level of care provided, and claims are handled more quickly.



**New Medication**

Name: Judy S. Palmer  
Birth: 06/29/1958  
Age: 56 Year Old Female  
Height: 54 in (162.56 cm)  
Weight: 122 lb (55.398 kg)  
BSA: 1.60000 sqm  
Creatinine: 0.9 mg/dL (11/02/1988)  
Insurance: CHC (0041 Plan)

**Current Medications**

PROVENTIL AERS 80 MICROACT  
BECLOVENT AER 42MCG  
PREDISONE TAB 10MG

**Find Medication**

Custom List: Internal Medicine

**Pharmacy: CHC Gold**

LUVOX TABS 25 MG is off formulary.  
There are multiple alternatives.

**Define Medication**

Medication: LUVOX  
Instructions:

Paxil 10 MG TABS \$\$\$
Paxil 20 MG TABS \$\$\$
Paxil 30 MG TABS \$\$\$
Paxil 40 MG TABS \$\$\$
Paxil 10 MG/KML SUSP \$\$\$
Prozac 10 MG CAPS \$\$\$
Prozac 20 MG CAPS \$\$\$
Prozac 20 MG/5ML LIQD \$\$\$
Zoloft 50 MG TABS \$\$\$





## Three Stages of Economic Return

As the implementation of EMR progresses within a clinic and across the enterprise, healthcare organizations can expect to experience growing economic returns on their investments. As we described in our white paper, “Implementing Ambulatory EMR Enterprise-wide: Critical Success Factors,” return on investment (ROI) can be anticipated to build in several stages.

The first stage is characterized by operational efficiencies and workflow automation achieved through process re-engineering and faster access to accurate information. The benefits gained in this stage include reduced overhead costs and professional liability rate reduction.

In the second stage, benefits are derived from increased clinic productivity and decision support at the point of care. As more information is entered into the EMR, standard care protocols, order management, and outcomes analyses can be supported. EMR customers experience quality improvements, compliance with regulatory requirements, and reduced exposure to risk.

In the longer term, investments in EMR can provide healthcare organizations with a distinct competitive advantage. Looking forward, MedicaLogic customers anticipate using EMR as a tool to manage the business of delivering care efficiently and cost-effectively, and to provide more responsive care to an increasingly selective consumer.

This paper provides a look at the returns achieved by a variety of healthcare institutions that have implemented ambulatory EMR. It presents both their quantitative and qualitative returns. Finally, it suggests a framework for establishing your own return on investment measures, based on best practices identified through the experience of our customers.

## EMR Reduces Costs and Protects Revenues

### *Market pressures continue to bear down on healthcare providers*

“We’ve watched our operating margins shrink over the last three years. We’re all being challenged by declining reimbursements and the need to tighten the ways we manage our care. Physicians today probably make 85-90% of the decisions that ultimately end up in our cost structure,” said David Weiss, CIO, BJC Health System, St. Louis, MO.

Through an EMR, however, providers can manage their overhead expenses and improve their revenues with more timely, complete reimbursement for services delivered. As a result, they are better able to respond effectively to these market pressures.

## Reductions in overhead can be significant

Quantitative benefits can be identified at three months, six months, and one year after EMR implementation.

The cumulative reductions in overhead expenses documented by a wide range of providers, from specialty clinics to integrated-delivery networks, are dramatic. For example:

A two physician/two nurse practitioner clinic owned by Capital Region Healthcare, Concord, NH, has eliminated all transcription costs by utilizing structured flowsheet views, note templates, and point-of-care documentation. The practice generates approximately 14,000 visits per year and approximately 35 lines of transcription per patient. At a cost of \$0.11 per line, the practice estimates a savings of \$53,900. However, it does take approximately one hour longer per week per provider to generate the documentation. That time at a blended rate of \$55.00 per hour for four providers for 46 weeks equates to about \$10,120. The net savings to the practice is \$43,780.



### A 51% to 100% reduction in chart pulls

*At Cox Health Systems, Springfield, MO, one eight-physician clinic has reduced chart pulls by 54% over the first nine months after implementation. Similarly, daily chart pulls for medication refills and messages for the 19 neurologists at Noran Neurological in Minneapolis, MN, have decreased by 80%. Family Care of Concord, a two-physician clinic owned by Capital Region Healthcare in Concord, NH, has eliminated chart pulls completely, saving \$24,500 per year on this activity alone.*



### A 50% to 100% reduction in transcription costs

*Allina Health System, Minneapolis, MN, (the largest integrated-delivery network in the country) has realized a 51% decrease in transcription costs at one nine-physician clinic, a savings of almost \$150,000 per year.*

*In addition, miscellaneous costs such as courier service and copying can add to this expense item. Cox Health Systems reduced its outside copying expenses by 75% within the first year.*



### More effective allocation of staff resources

*As a result of reducing chart pulls, a six-physician practice at Community Hospital of Indianapolis has reduced medical records staff hours from 80 hours per week to 40. This has translated to a savings of \$28,050 in the first year. At Riverside Health System, Newport News, VA, medical records personnel now handle electronic document scanning duties which would otherwise have required dedicated staff.*

*Storage space and supply costs can be significant. Within an ambulatory setting, the chart room in a mid-size to large clinic (e.g., 50 physicians) requires as much space as three exam rooms, which could support one revenue-generating clinician. This represents an opportunity cost of \$200,000 to \$300,000 per year.*

*Supply costs, at this time, appear to be reduced slightly by EMR. The cost of chart folders, dividers, and filing cabinets are estimated to average \$3 per record, which could total \$10,000 per physician, including files on past patients.*



### Malpractice premium discounts of 5% to 10%

*Many malpractice insurance carriers now offer premium discounts for using an EMR. For example, Neurologic Center of South Florida, a specialty practice with nine physicians, has reduced its malpractice premiums by \$25,000 per year as a result of the improved documentation, reminders, and alerts provided by Logician.*

### *Pharmacy costs can be managed more effectively*

Excess pharmacy expenses can represent a significant cost for providers. As an example, one health maintenance organization (HMO) in the Pacific Northwest determined that \$6 million of its \$30 million annual budget (20%) for pharmaceuticals was attributed to lack of formulary compliance.

EMR systems such as Logician help providers manage pharmacy costs more effectively through increased formulary compliance and improved medication management. With direct access to plan-specific formularies and patient drug history at the point of care, physicians are assured of prescribing the most cost-effective and appropriate drugs.

### *Average coding levels and per-visit charges increase*

According to an August 25, 1998, article in *Medical Economics*, one physician regularly “down coding” by just one level costs a practice \$40,000 to \$60,000 each year. Advising physicians of appropriate E&M coding eliminates the tendency to “under-code” just to be safe. Accurate coding plus complete documentation of the encounter not only speeds reimbursement, but also results in appropriate reimbursement for services delivered.

In addition, EMR users are billing for more services per patient visit. One health system has documented an 11.7% increase in the average charge per patient visit clinic-wide within four months after “go-live.” Wasatch Internal Medicine, a six-physician clinic in Salt Lake City, UT, which went live in September, 1996, not only has increased the average charge per visit by 62.3%, but also has increased the number of patient visits per hour.

### *“Lost revenues” are captured*

Cash flow can be improved through better documentation and greater visibility on outstanding receivables. Published estimates on improvements in charge capture range from 3%-15%.

Allina Health System’s nine-physician pilot clinic has realized a \$20,000 to \$25,000 per year improvement in collections resulting from accurate billing. It also achieved a \$15,000 improvement in revenues in the first year—and expects to realize an additional \$35,000 in year two—as a direct result of its ability to recover “lost” charges. This particular clinic has a “service-charge-to-entry” timeframe 50% shorter than those which have not yet implemented EMR.

“In 1996, . . . nearly 30 percent of claims submitted to HCFA contained errors resulting in nonpayment or severely delayed reimbursement. Half of those contained insufficient documentation.” (“Know the Code,” *Healthcare Informatics*, November 1998.)

At Allina, improvements in coding quality have reduced their claims denial rate from 3% to 1%.





## Quality and Productivity are Both Improved

While productivity can be dampened in the first few weeks after “go-live,” MedicaLogic customers have found that clinics typically are back to a full appointment schedule within a period of three weeks.

Equipped with an EMR system, clinics become more efficient, physicians and staff spend less time filing and searching for data, and patient satisfaction is increased.



We were able to search our Logician database by medication lists to identify patients who were currently taking or had taken the drugs fenfluramine and dexfenfluramine, both of which had been recalled from the market. We created a letter, merged it with the demographic information in Logician, and mailed it to all patients. We were able to adequately evaluate almost all former fen and Redux users.

David Shein, M.D.,  
Beth Israel Deaconess  
Medical Center,  
Boston, MA

### *Automated workflows save time*

By capturing more patient information and facilitating communications among clinic staff, EMR systems have a significant impact on operating efficiency.

At Allina Health System, the time required to get information into patient charts has decreased 83%, reducing a six-week backlog to five days. Nurses there have documented a 20% to 80% decrease in the time they spend looking for patient information.

For most clinics, documentation on patient visits is incorporated into the chart sooner. At Riverside Health System, 50% of charts are completed immediately following patient visits, making them available on the same day. A six-physician practice at Community Hospitals, Indianapolis, IN, reports that 85% to 90% of charting now takes place during or at the end of the patient visit. Notes are entered within ten minutes to four hours, compared to 24 to 72 hours prior to implementing EMR.

Referrals also are streamlined with EMR. Capital Region Healthcare’s pilot clinic, a two-physician practice, generates about 3,600 referrals per year. It estimates a savings of approximately 420 hours of staff time by generating them electronically during the patient encounter. Overall turnaround time has been reduced from one day to less than one hour. This practice also has saved \$5,525 or 325 hours of staff time by implementing direct lab interfaces that reduce data entry and filing time.

Laboratory interfaces provide yet another example of increased efficiencies gained through an EMR. One hospital has reduced the elapsed time between patient visit and posting lab results from an average of 24-36 hours to less than 24 hours. As a result, it can now notify patients of their results within a week, increasing patient satisfaction.

### *Patient services are improved*

EMR provides an array of tools for improving patient satisfaction and loyalty. With instant access to patient charts, nurses and administrators can answer questions promptly and can easily provide important patient education material.

New prescriptions and refills require a fraction of the time it can take without an EMR. Capital Region Healthcare has reduced the average time to complete a prescription from 15 minutes to less than three. With 400 prescriptions per week, the practice estimates a time savings of approximately 4,200 hours, or about \$71,400 per year. As an added benefit, prescriptions can easily be changed when formularies change—which can happen frequently.



## The Economic Benefits of EMR Extend System-Wide

Healthcare institutions which have begun to roll out ambulatory EMR beyond their initial pilot clinics recognize that important benefits can be obtained through broader access to the patient record. As more clinics are brought online and workstations are deployed in hospitals and physician homes, health systems can ensure consistent management of patient care across the continuum.

“Cost savings could be in the range of \$2.25 million to \$3 million if the ambulatory EMR system is successfully implemented in the rest of the health system’s practices consisting of 75 providers,” said Deane Morrison, CIO, Capital Region Healthcare, Concord, NH.

### *Manage the health of patient populations*

For example, physicians at Mid-America Cardiology, a 30-physician specialty clinic in Kansas City, MO, can access patient charts from their homes as well as from the echo reading rooms of two area hospitals. The clinic is also in the process of placing Logician workstations in the emergency rooms of the local hospitals. Such access, in addition to access by nurses and administrative staff, is very important in caring for the clinic’s aging patient population.

An EMR system also helps health systems gather the information necessary to establish care guidelines for patient groups requiring proactive disease management. Riverside Health System used the information compiled by Logician to establish a set of clinical parameters for treating diabetes patients, who now receive recommended care plans for HgbA1C, foot and eye care, diet, exercise, and medications.

A two-physician clinic at Capital Region Health Care, Concord, NH, uses Logician to report its quality indicators to qualify for managed care payor’s incentive bonus programs. Typical areas targeted include the pap smears, mammograms, and diabetic eye exams. For one managed care company, the average compliance is approximately 60% for providing diabetics with annual eye exams. By capturing discrete data through the system, it was able to document that 199 of 200 patients received such exams. Compared to the average compliance estimate of 60%, the practice performed approximately 80 more eye exams. Nationally, 40% of all diabetics tested will have a surgically correctable complication detected. Therefore, the practice estimates that it diagnosed and prevented complications in 32 patients that otherwise may have gone undetected. Based on these results, the practice has qualified for the maximum quality bonuses provided by this payor.



John Janas III, M.D.  
Capital Region Healthcare  
Concord, NH

### *Support health system wellness and quality goals*

An EMR system like Logician provides the documentation and reporting capabilities to demonstrate compliance with quality initiatives such as JCAHO and NCQA. Physicians now have the tools to clearly demonstrate the high quality of care they provide.

Adoption of clinical protocols and outcomes reporting are also facilitated by EMR. Riverside Health System, for example, uses Logician to conduct quality assurance checks on preventive healthcare provided to patients. The results have increased physician attention to preventive regimens system-wide, supporting wellness goals set by the organization for its entire patient population.

## Select Appropriate ROI Measures: Best practices

The determination of return on investment can be affected by a number of variables. To ensure a valid assessment of the full impact of EMR on your organization, and on the clinics which have implemented it, you need to establish the assumptions, metrics, and methods for analyzing your results before you start.

Each organization will take a different approach. However, through the experience of our customers, we can suggest a number of issues and steps that provide a basis for “best practices” in determining your ROI.



### *Establish a framework before EMR implementation*

Establish a framework for determining ROI as part of your strategic plan for EMR. This framework should define the potential benefits anticipated at various stages of EMR implementation, along with the key drivers expected to contribute to those benefits. It will help guide discussions and decisions on the development, use, and interpretation of the metrics you choose.

### *Include all stakeholders in your determinations*

Make sure that all stakeholders in your EMR initiative are represented in determining and evaluating the measures and indicators you will use to determine your ROI. Establish consensus across the organization on exactly what will be measured and how. Early discussion and buy-in to your plan will ensure widespread support for the results of your analysis.

### *Establish relevant, meaningful metrics*

It is important to select metrics that will be relevant and valuable to your organization. Select indicators that will provide a meaningful measure of the value delivered by your EMR.

Be aware that variances in factors like payor mix and capitation rates can affect your analysis and should be accommodated for in your analysis models. You might also need to be able to adjust for differences between owned and affiliated clinics, as well as employed and contracted providers.

Once the final list of metrics has been agreed upon, develop specific measurement parameters for each. Include the sources of specific data elements needed, preferred method of collection, tools needed to support collection, and appropriate collection intervals for both pre and post-live data collection.



Five Physicians  
Providence Health System  
Portland, OR

### *Define the process for capturing and reporting data*

Many organizations fail to assign sufficient resources or to allow for the time required to collect and input data. Make sure that you identify and empower individuals to undertake this task early in your planning process. Provide them with continued support as the EMR is rolled out.

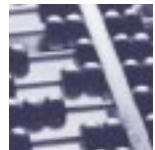
Data collection can be accomplished in a number of ways, including personal interviews, structured questionnaires, and surveys. In addition, existing financial and productivity reports provide valuable data. Results can be captured and analyzed using standard desktop productivity software.

### *Capture baseline data*

Collecting and documenting baseline data on key measures and indicators are crucial. You need a clear picture of “pre-EMR” conditions to accurately determine your ROI.

### *Continue monitoring ROI over time*

Your plans for monitoring ROI should extend over a period of time as your clinics gain more experience with EMR, continue to add more interfaces to external systems, and increase their technical infrastructure. MedicaLogic customers have found it valuable to make these determinations six months, one year, and two years after “go-live.”





## The Numbers Don't Tell the Whole Story



At the 39 practices currently using Logician, we have achieved a level of workflow efficiency, staff productivity, clinical decision making, improved documentation, and patient service that would be impossible to achieve otherwise.

Susan Klass  
EMR Project Director  
Riverside Health System  
Newport News, VA

As the economics of healthcare become more challenging, healthcare organizations need to base their long-term strategic advantage on more than the numbers we have seen here. A sustainable advantage requires systemic improvements in the way providers do business—from the front office, to the nurse, to the physician, to the enterprise.

In re-evaluating business processes as part of their EMR implementations, providers are realizing that activities beyond the exam room affect their patients' experience of the care they deliver. An EMR solution like Logician gives them the tools and the information they need to identify problem areas, adjust those activities, and change basic processes in ways that enhance that experience.

These providers are using Logician to change the way they schedule patient visits, handle episodic illnesses, and make referrals. For example, a physician on call, who is speaking with a patient, may schedule an appointment with a colleague, send appropriate referral information, and establish reminders for a follow-up visit before hanging up. This type of accessibility gives physician practices a strategic advantage while providing great customer service.

At Riverside Health System, where 400 people use the full capabilities of Logician, clinics use the system to electronically make appointments, notify nurses of their arrivals, and send phone messages to providers. Patients call a dedicated phone line to obtain medication refills.

By implementing EMR solutions and re-designing fundamental processes, healthcare providers gain the ability to better manage the delivery of care in the fullest sense of the term, to achieve higher levels of quality, and to control costs. As a result, they are better equipped to respond effectively to the shifting dynamics of the healthcare industry.

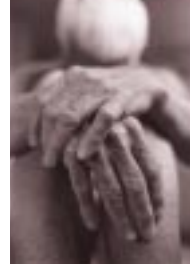
“It is important to note that the numbers do not tell the whole story. What is clear, however, is that even when ‘only’ hard financial benefits and costs are quantified, the implementation of EMR is definitely justified,” said Linda Zdon, Director, Information Services, Allina Health System, Minneapolis, MN.



### *For your information...*

MedicaLogic will continue to publish at our Web site, [www.medicallogic.com](http://www.medicallogic.com), customer and industry research that addresses the analysis of value from ambulatory clinical information systems. Additional research may be obtained from the Computer-based Patient Record Institute located at [www.cpri.org](http://www.cpri.org).

Other clinical offerings, such as our customer-contributed shared knowledge tools available at the KnowledgeBank<sup>®</sup>, will be updated and shared at our Web site, with the aim of helping healthcare organizations realize and measure the greatest possible value from electronic medical records.



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*Practice with Knowledge*

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