

Using an EMR to Improve Efficiency in Outpatient Wound Centers



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Abstract

Electronic Medical Records (EMR) systems are gradually being implemented in healthcare facilities to replace paper records and charts. However, the advantages and benefits of such systems are not always easy to quantify. Moreover in niche areas, such as wound care, EMR systems have been applied far less, due to the need for extensive documentation of wounds and wound-specific care. Intellicure EMS software, such as IntelliTrak™ and HyperTrak™, however, was developed specifically for wound care centers and its use can greatly enhance the efficiency of such operations, and increase revenue. In this study, the results of implementing Intellicure software, in three Texas-based wound care centers are presented. In one center, a 280% increase in front-office staff was observed, and overtime fell from \$12.57 per patient encounter in January 2001, to \$0.31 per patient encounter in June 2001, avoiding an additional \$178,000 in staffing expenses from June 2001 to June 2003. In another center, after 10 months of software utilization, the collection ratio improved from \$0.22 to \$0.38, which turned an annual loss of \$10,000 into a positive balance of \$75,000. The third center was facing \$250,000 in denials for its hyperbaric medicine service, and a 26-month CMS review. After software implementation, \$440,000 in revenue was billed without denial, despite the intensive oversight by CMS. Many other benefits exist in using EMR systems, and one challenge in the future will be developing methodologies to demonstrate them.

Introduction

An electronic medical record or EMR is an integration of patient information systems that captures and stores demographic, financial, and medical information. EMRs have the potential to produce better health outcomes while improving the efficiency of care and reducing costs.¹ Although all healthcare providers have the same mission, that is, to care for patients, there are financial realities in delivering that care. A proposed change, such as adopting an EMR, will be supported only if it produces easily recognizable advantages to either patient care or business practices, but preferably both.

In the past several years, the use of EMRs has increased dramatically. However, implementing such a system can be complicated and expensive. It is difficult to assess the cost/benefit of an EMR using traditional cost/benefit justifications as improved patient outcomes, health service efficiency, and faster access to more complete medical information are important benefits for which it is difficult to affix a monetary value. For example, unlike handwriting, EMRs are always legible. EMRs also permit the creation of templates, so that reports on diagnostic studies or interventional treatments can be completed easily, accurately, and immediately without the delays of dictation, transcription, or filing. Moreover, they can automate correspondence with referring physicians.

To highlight the benefits of an EMR system, Erstad suggested that they be organized into 4 categories: clinical, workflow, administrative, and revenue enhancement.² Clinical benefits include improved chart access, enhanced documentation, and the elimination of “the lost chart.” Charts are legible and organized, and visits documented consistent to the level of service provided. The EMR improves workflow by preventing the unnecessary duplication of existing data through improved data intake, reduction in nurse intake, reduced labor costs, and improved communication.³ Patients are no longer frustrated by having to record the same information reiteratively on paper forms. When clinicians complete documentation at the point of care, the need for transcription is obviated, which has been estimated to save \$300 to \$1000 per month, per physician.⁴ Staffing and overtime can also be significantly reduced.⁵ Abandoning paper means abandoning filing, storage, and costs for paper supplies, which are estimated at approximately \$3 per chart. Lastly, the structured data in an EMR enables managers to easily generate reports on clinical and business activities. Gathering the data to prepare reports can be time-consuming and costly if information must be manually abstracted from paper records, but with an EMR, reporting on aggregate data is a byproduct of capturing the medical information. Revenue is concomitantly increased due to the increased legibility and accuracy of charting, thus reducing denials.⁶

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Despite these advantages, EMR implementation can be difficult in many niche applications, such as wound care. For example, documenting dressing products and wound characteristics, and archiving

digital photos are important parameters that must be captured. Currently, wound-care specific EMR program implementation is in its infancy, and little information exists on the effect of a wound-care specific EMR on clinic operations.

To qualify as a complete EMR, according to HIMSS (the Healthcare Information and Management Systems Society) a program must meet eight specific criteria.⁷

Thus, automated health records (AHRs) which collect only certain metrics of interest, or systems in which the legal chart continues to be the paper chart because the above criteria are not met, do not qualify. The proprietary EMR software created by Intellicure, Inc., has been marketed to wound care centers since 2000. It takes advantage of the repetitive nature of wound and hyperbaric documentation requirements, automatically calculating both the physician and the facility level of service at the completion of the visit. Simultaneously, information, such as digital photos, wound measurements, and dressing products are archived, and this allows automation of forms and reports, including home nursing orders, follow-up letters, and certificates of medical necessity for specialty products and medical equipment. The EMR ensures correct coding by guiding the physician through all the pertinent ICD-9 wound codes so that the correct diagnosis code can be selected, as well as linking any procedure codes to the correct diagnosis. Computers are present in every room, with the program running on a server in the clinic or hospital, so that “point of service” (i.e., bedside documentation) is possible. Paper charts can be generated from the EMR, but are no longer required. This is quite different from “Outcomes” software packages in which the clinic continues its paper charting, and at the end of the day, a designated individual (not necessarily a clinician) enters a few specific metrics of interest (e.g. wound diagnosis, wound size, and a limited list of medical conditions) into an AHR. In the “point of service documentation” with an EMR, all medical information is

HIMSS EMR Criteria

- (1) Provide secure, reliable, real-time access to patient health record information (i.e., “point of service”).
- (2) Capture and manage episodic and longitudinal information.
- (3) Be the clinicians’ primary information resource (i.e., it must be “the” medical chart).
- (4) Assist with the work of planning and deliverance of evidence-based care.
- (5) Capture data used for continuous quality improvement, utilization review, risk management, resource planning, and performance management.
- (6) Capture the information needed for reimbursement.
- (7) Provide appropriately masked information to support clinical research.
- (8) Support clinical trials and evidence-based research.

entered into the software by the caregiver at the point of service. It is also different from programs in which, at the conclusion of the visit, the clinician must “select” the level of service from an options list. Such programs do not meet the HIMSS definition of an EMR.

Nearly all the literature regarding the economic benefits accrued from implementing EMRs involve large primary care settings. It is difficult to find information on small EMR projects, and to date, there have been no publications focusing on the effect of an EMR system with regard to the economic health of wound centers. The purpose of this paper is to demonstrate how a wound-care specific EMR positively impacted clinical, workflow, administrative, and revenue functions in 3 Texas outpatient wound centers.

Methods

A wound center in Texas (Center 1) had maintained a procedural volume of approximately 500 procedures per year from 1994 to 1998. A new clinic manager was hired in 1998 and procedures began to climb (see Figure 1) so that over a 2-year period, procedural volume had increased to nearly 2,000 per year. In year 2000, the clinic started implementing Intellicure software, including IntelliTrak™, which was rolled out during the first half of 2001.

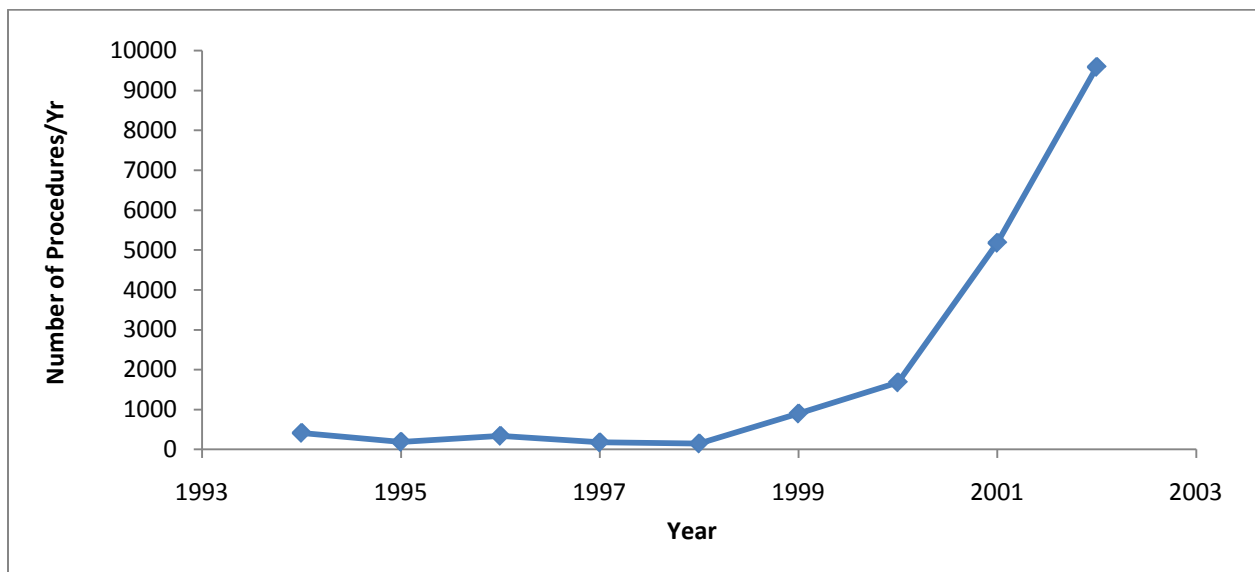


Figure 1 - Procedural volume at Center 1 1994-2002

Another hospital in East Texas (Center 2) purchased the Intellicure software in October 2002 for their Respiratory Department, which operated a hyperbaric service that was collecting only \$0.22 on the dollar.

In late 1999, a different Texas wound center (Center 3) was faced with writing off \$250,000 in denials for its hyperbaric medicine service. The facility implemented the Intellicure EMR which has HyperTrak™, a hyperbaric-specific documentation program. The implementation of the program also coincided with the beginning of a 26-month, focused medical review process by CMS.

Results

At Center 1, a rapid rise occurred in clinic volume between 2000 and 2002 to almost 10,000 procedures per annum (Figure 1). Figure 2 shows the facility's monthly overtime in dollars divided by the number of monthly patient encounters, as well as patient volume for reference. The key point to note is that overtime fell dramatically from \$12.57 per patient encounter in January 2001, to \$0.31 per patient encounter in June 2001. Had the previous overtime trend been allowed to continue, the facility would have paid an additional \$178,000 from June 2001 to June 2003. After implementing the Intellicure EMR, Center 1 continued to utilize 3 FTEs to perform the same job duties for approximately 2100 combined patient encounters per month. This represented a 280% increase in efficiency of front office personnel. In addition, as a result of computer driven co-pay collections, provided at the time of encounter by the software, an additional \$2,000 per month was collected.

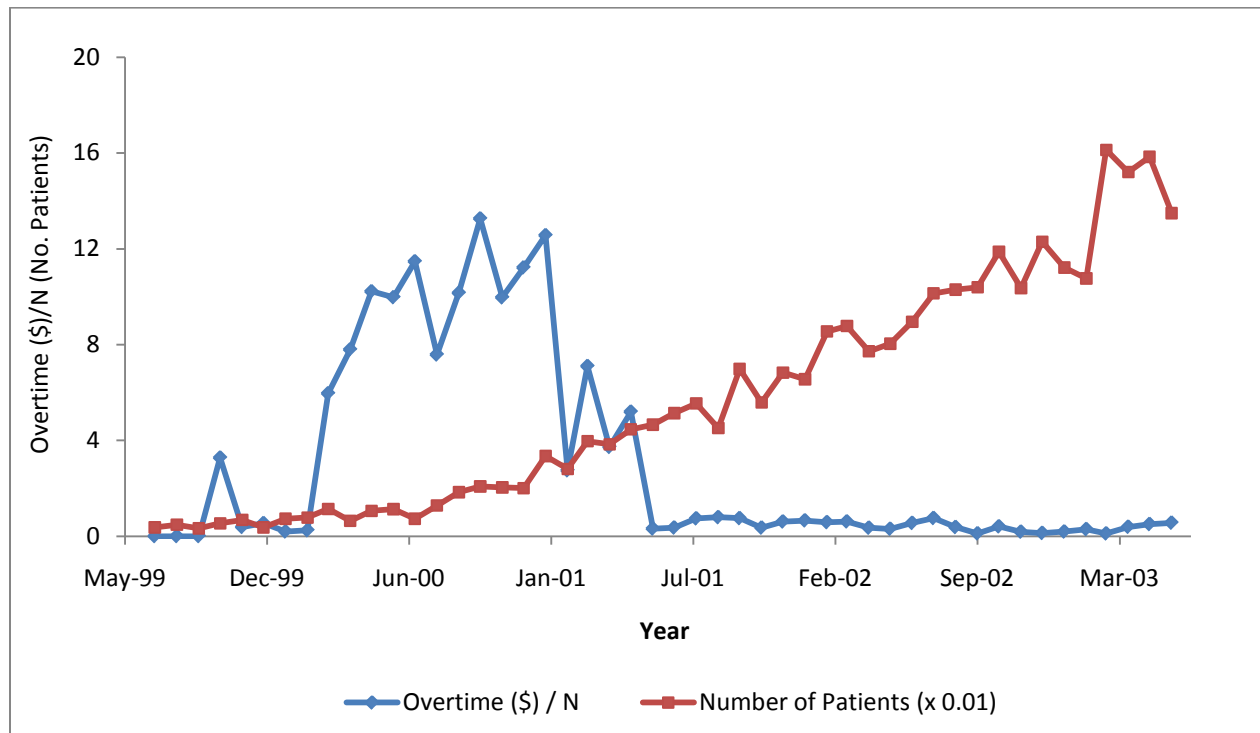


Figure 2 - Center 1: monthly overtime in dollars/number of monthly patient encounters (N), and patient volume.

At Center 2, after 10 months of software utilization, the collection ratio improved from \$0.22 to \$0.38, which caused a change from a loss of \$10,000 to positive balance of \$75,000 annually. Following further software updates and training directed at specific issues, collections were further increased to \$0.50 by the end of December 2003. At Center 3, by the end of the medical review process, \$440,000 in revenue was billed without denial, despite the intensive oversight by CMS.

Conclusions

The implementation of a wound-specific and hyperbaric-specific EMR resulted in a significant impact on quality improvement by decreasing billing and coding errors, eliminating chart illegibility, increasing documentation compliance, increasing customer service and quality of patient care, and substantially increasing revenue. When averaged over 5 years, the annual hardware and software costs are approximately \$17,000, which equates to a full-time employee with benefits paid at a rate of \$6.60 per hour, though competent staff member filling this role often cost a minimum of \$11.00 per hour. This is slightly less than half the cost of an FTE. In return, increases in efficiency of up to 300% are possible, utilizing existing front-office staff members.

As a measure of return on investment (ROI) considering only the Wound Center's Front Desk activities, increases in efficiency of up to 300% were seen, utilizing existing front-office staff members.

Despite the clear benefits of EMRs, as shown in this study, EMRs are not yet standard in today's healthcare systems. In the case of wound-care centers, the barriers of cost, leadership, return on investment (ROI) issues, and concern over security issues have prevented its adoption. Costs include software, hardware, infrastructure development and maintenance, implementation, education, planning, and administration. Software costs include development or purchase, maintenance and upgrades over time, while hardware costs include the purchase of workstations. Infrastructure development and maintenance costs include servers, interfaces, workstations, network cables, and network maintenance, while implementation costs include training, and employee resistance to change.

ROI is problematical to calculate because each wound center has its own business objectives, and it is difficult to compare baseline and post-EMR data as the manual (baseline) system of doing business does not lend itself easily to cost analysis. It is also hard to measure the economic value associated with less tangible benefits, such as higher quality of care, patient service, provider and employee satisfaction, and competitive advantage. Moreover, to optimally use an EMR system, it must be implemented in all departments, thus allowing the organization to realize full potential benefits across the delivery system. Despite these issues, the wound care center examples presented here demonstrate several advantages in implementing EMR systems, and it is hoped that future research will delineate all the advantages of EMR systems more precisely.

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