



## **Section B: Riverpoint Pediatrics--An Independent Primary Care Practice**

### **I. The Organization**

Riverpoint Pediatrics is a single site solo practice located in the Lakeview area of Chicago. This is an urban area. I founded this practice in 1978 at another location and have moved the practice four times, in 1981, 1990, 1995 and finally in 2000. I currently work with a Physician Assistant and two Medical Office Assistants (MOA). I also employ a billing specialist and a part time receptionist. The PA is part time; however, the MOAs are full time. My office has a staff-to-provider ration of 3.75. The average full time employee (FTE) to doctor ratio of a pediatric practice is 3.79.

My practice currently serves 5800 active patients. We have no Medicaid patients; however, HMO patients make up 20% of the practice. I deployed an Electronic Health Record (EHR) on January 9, 2000, which has changed my outlook on Pediatric practice and has made it possible for me to evolve in this era of managed care, shrinking reimbursements, and smaller patient volumes. Six months after going intranet my office was able to store all of our paper charts. Except for scanning, I have a totally paperless office.

The office performs the following services: Well Child Care, immunizations, tympanometry, vision screening, minor injury evaluation and management, sick visits, school, preschool, and disability forms, as well as family leave forms. We also give nebulized aerosol treatments.

### **II. Management**

My experience with medical office computer usage began in 1981. I leased a Sony computer with practice management software. The computer and program were slow and certainly not "user friendly." However, for billing I saw benefits in data management and account tracking, and decided even then that the use of computers in medical offices was the future. I started looking for electronic medical chart software in 1984, but the cost for the software and installation was prohibitive: the software alone was 30K. In 1990 I integrated my Pediatric practice with a multi-specialty hospital managed group. The hospital took responsibility for billing and collections and installed hospital-based practice management software and Compaq computers. The hospital did not, however, have software for an EMR. The internist and I started looking at several different packages, but they were not customizable, the screens were complicated, data had to be keyed in, and the operating system was not Windows-based. In 1995 the group moved to a new location. The Internist, Orthopedist, Podiatrist, and Ob/Gyn left the practice, and I was left with 2 Pediatricians and myself from 1995 until 1999. The hospital had bought my practice in 1995 and decided in 1999 to close the facility. It was then that I decide to buy back my practice and find an efficient EMR. I did so in November of 1999. EncounterPRO was installed in January 2000 and the rest of the story starts there.

**A. Business Objectives.** Below were my business objectives in January 2000:

1. **Increase Time with Patients:** My primary business objective was to increase the quality of care by spending more time with patients and less time documenting.
2. **Increase Revenues:** My gross revenues in 1999: \$301,080
3. **Increase Physician profit:** My profits in 1999 were \$120,000
4. **Increase charges per visit:** My average charge in 1999 was \$56.00
5. **Increase number of patients visits per day:** In 1999, 15-20
6. **Increase patient volume:** In 1999, 2200 active
7. **Increase IMZ rate:** In 1999, 70%
8. **Increase collection rate:** In 1999, 44%
9. **Decrease claims denied due to coding errors:** In 1999, 30%
10. **Decrease Insurance turnaround time:** In 1999, 60-90 days
11. **Increase Managed care reimbursement:** In 1999: \$60,216
12. **Increase staff:** 1999 staffing: 2 FTEs and 0.5 FTE, staff provider ratio 2.5
12. **Track total operating cost as % of medical revenue:** In 1999, \$120,594/ 55%
13. **Eliminate chart pulls:** Daily chart pulls in 1999: 15-30
14. **Decrease charting time:** In 1999, 30 plus minutes per encounter
15. **Make more productive use of charting space:** In 1999, 200 square feet used for paper charts
16. **Eliminate transcription cost:** In 1999, \$500/ month
17. **Expand Office space:** In 1999, I used 10% of office space for chart storage: I had 4 examination rooms.
18. **Decrease patient waiting time :** In 1999, average patient waiting time was approximately one hour
19. **Decrease drug refill time:** 1999 average: 24 hrs
20. **Decrease telephone turnaround time:** In 1999, usually 12-24 hrs

**B. Project Organization: Roles and Responsibilities.** With the help of my business manager and accountant, I made the initial decision to purchase the hardware and software. I took sole responsibility for arranging the purchase of the hardware with input from the IT person that would do the installation. I took responsibility for installation and maintenance, while the office manager took responsibility for the training schedule. The lead MOA was responsible for ongoing staff education on updates, training new staff members, and reporting hardware and software issues. In a small solo practice the Pediatrician is ultimately responsible for every aspect of new equipment installation from purchase to maintenance.

**C. Decision Process.** As early as 1981 I made the decision to computerize my office billing. I leased a Sony brand CPU with billing software. I continued to scan the medical literature for electronic medical record software, but the cost of such systems was prohibitive; the same was true for those packages that were marketed at Pediatric medical meetings. Cost was not the only issue, but integration with a practice management system, user friendliness, and maintenance were also considered. In November of 1999 I found the right combination in JMJ's EncounterPRO. My decision was finally made.

### **III. Implementation**

**A. EHR System.** The EHR system is EncounterPRO<sup>®</sup> developed by JMJ Technologies in Atlanta, Georgia ([www.jmjtech.com](http://www.jmjtech.com)). EncounterPRO was developed according to the primary attributes as defined by the Institute of Medicine and is further evolving to meet the “Key Capabilities of an Electronic Health Record System” described by the IOM in 2003. EncounterPRO is HL7 compliant.

EncounterPRO is not merely a workflow system but rather a full-fledged workflow management system. A useful analogy is between a database management system and a workflow management system. A database usually comes with a database management system that is used to execute and manage it. The database management system creates, executes (creates, retrieves, and updates data), manages, and edits the database, but is not itself the database. Similarly, a workflow management system creates, executes, monitors, and edits a workflow system, but is not itself a workflow system. The main advantage to EHR users of getting both a workflow system and a workflow management system—together—is that they can further customize the EHR workflow system to reflect their clinical needs, personal preferences, and business requirements.

#### **B. Core functions.**

- 1. History and Physical.** Histories and physical exams are captured in templates that are customizable while in a patient encounter. The templates are supplemented with free text and the ability to attach images and documents.
- 2. Visit Notes.** To record notes and patient narratives, I use structured-data templates and free text.

**3. Problem List.** The EHR displays several versions of a “hot” problem list that allows me to navigate to several functions related to the problems and the associated treatments.

**4 Medications.** Frequently-used medications for each assessment are selected from treatment lists and print automatically.

**5. Radiology Reports.** The EHR stores reports and images from radiology.

**6. Reports and correspondence from outside the practice.** The EHR imports, stores and displays laboratory, radiology, and referral reports. It supports various types of media files, including images, audio files, scanned documents, and movies.

**7. Lab results.** The EHR displays outstanding labs (which, when touched, show the details of the specific lab) and maintains a tickler for lab results that have not yet come back. It also provides generates reports of tests still open, and reports about who was supposed to do something that is overdue.

**8. Patient Support.** Several patient reports are available from the EHR, including a take-home report that includes medications, all care instructions, and a summary of labs and tests.

**9. Internal Reports.** Again, many reports are available to help me provide better service and care to my patients. For example, I can get reports that show my current immunization rates, or the identity of patients for whom I prescribed a drug that was discontinued or recalled.

**C. Interface to Billing.** The EHR is integrated with my practice management system “Lytec.” Lytec is a billing/scheduling software package. The patient is registered first in Lytec that generates a patient account number (PAN). This PAN is then transferred to EncounterPRO along with the patient name. When the patient arrives for a visit the check-in button in EncounterPRO brings up the patient with the account number. The examination is documented and coded by EncounterPRO, and all ICD and procedure codes are transmitted to Lytec through a software link called “X-Link.” In Lytec a file is created for electronic claim transmission and then transmitted to a billing clearing house. The running of the X-Link process, creating a claim file and transmission to the clearing house, takes no more than 15 minutes per day.

#### **D. Technical Infrastructure.**

**1. Technology Platform.** EncounterPRO is a client-server application that runs on Microsoft Windows 2000 or 2003 Server and Microsoft SQL Server 2000. In addition, it is a Workflow Management System (WfMS) as defined by the Workflow Management Coalition. The EHR uses touchscreen monitor systems as seen in restaurants and on some automatic teller machines, as well as Tablet PCs. The examination, subjective, objective, assessment and plan are done by touch, and the chart is signed off on by use of an electronic signature pad. We employ both Wacom and Apitek graphic tablets.

**2. Interfaces.** The EHR fully interfaces with the Lytec practice management system in our office. The EHR also interfaces with other practice management systems and with medical devices, including the Midmark spirometer and EKG, and the Welch Allyn vitals machines, but those interfaces are not implemented in my practice. A lab interface will be available in May 2004.

**3. Document Management.** Paper in the form of laboratory, consultations, X-ray and other reports are scanned into the EHR and attached to the appropriate chart. We use an HP Scanjet with an automatic document feeder. This process is so user friendly that we have high school students providing this service.

**4. Internet Resources.** We have internet access in each examination room that allows us to reduce the EHR windows screen without closing the visit and research signs and symptoms, medications, educational material, insurance websites, etc. These materials are also printed at the front desk and picked up at checkout. We can also jump from Windows screen to Windows screen without data loss or the need to close a visit and go into another screen or software interface such as Barton Schmitt's clinical reference system patient educational program.

**5. Role of Practice in Managing Technology.** The EHR vendor has not been at my practice to manage the hardware or interfaces since it was installed over four years ago. I continue to do some of the network management myself, and I hired a local technician for some tasks. Support for the EHR is accomplished remotely through a VPN connection to my server. I make decisions, based upon recommendations from my local technician and the EHR vendor, about infrastructure upgrades.

## **E. System Implementation.**

**1. Rollout Approach.** I immediately began using the EHR to chart all patient encounters. However, I chose not to scan in all of the existing paper charts. I brought the paper chart into the exam room for the first few months, but stopped that practice within about six months. We charted chronic illnesses so that we could leave the paper chart on the shelf if the patient had already had at least one encounter charted in the EHR. The staff also keyed in the vaccine histories. We later moved the paper charts off-site to free up more floor space.

**2. Process Redesign.** I am using an EHR with a workflow management system. This means that the templates and computer networking are configured to processes of the office and not the other way around.

**3. Staff Training and Support.** My staff and I were originally trained during a single week of onsite training. I continued to chart patients on paper for the first two days, and then charted every patient on the EHR beginning the third day of training. My staff were trained by a second trainer. Since the original implementation, new staff have been trained by existing staff. When the EHR is upgraded, the staff and I review the release notes to learn what is new. We get complete support on the application by telephone and email from the EHR vendor.

**F. Current State.** Our system has evolved over the past 4 years. We started with an IBM Netfinity server and have upgraded the CPU from 512 RAM to 1 gigabyte, and went from two 18 gigabyte drives to four with dual processors. We also went from fat to thin clients and exchanged our router for a switch, which increased our speed tenfold. This past year we upgraded our touch screen overlays to Princeton graphics touch screen monitors, and added several new Dell and E-machine processors. We have 6 exam rooms and have continued to use our original IBM processors in all but two.

**1. Intended Users.** Intended users for the EHR include physicians, nurses, and all staff members—the entire practice. In addition, insurance and managed care plan auditors can be given a temporary password for access to medical records. This allows the auditor to sit at one desk and review problem lists, asthma action plans, immunization records and other audit bullets. I can also access the EHR and the practice management system from my home desktop or laptop (any location) through either a remote access or VPN. This is very handy when on call or when away from the office but in need of patient information.

**2. Uses of the EHR.** As described above.

**3. Clinical Decision Support in Routine Use.** Clinical decision support tools in routine use include integrated and aggregated displays of patient data either one visit at a time or in summary. Problem lists, IMZ records, medication lists, and allergies to food, drugs or other are displayed. The visits are documented in the traditional SOAP method. Diagnosis-based options (assessment and plan) are also standard but are customizable in all EncounterPRO packages. Allergy alerts feed from allergy input and flash a warning when a drug the patient is allergic to is chosen. Immunization alerts show on the opening screen of each chart along with a digital picture of the child. There is a section for notes that are not meant to made part of the chart but act as a reminder to the physician or staff. There is also screen sequencing by touch that goes from HPI), ROS, Growth and Development (plotted and printable per nurse input), vaccinations and letters (i.e., scanned documents).

## **IV. Value**

**A. Success in Meeting the Business Objectives.** Since going live with EncounterPRO in January of 2000 Riverpoint Pediatrics has experienced vast improvements in patient care, collections and insurance audits. The details are below.

### ***Productivity Increases***

**1. Increased time with patients.** I have chosen to use some of the time saved by my EHR to spend extra time with my patients rather than to merely increase my number of patient encounters.

**2. Increased revenues (see chart below)**

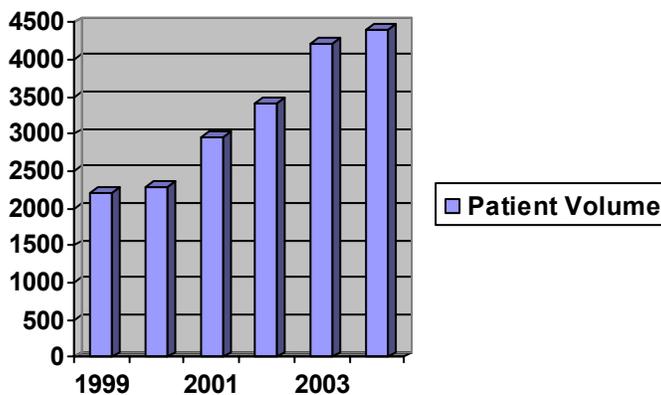
**3. Increased physician profit (see chart)**

	<b>1999(Before EHR)</b>	<b>2003 (After EHR)</b>	<b>% Increase</b>
<b>Revenue</b>	\$301,080	\$534,556	77.5%
<b>Profit</b>	\$120,000	\$229,000	90.8%

**4. Increased charges per visit.** In 1999 my average charges per visit were \$56.00 per encounter. Today my average charges per visit are \$78.00, an increase of almost 50%.

**5. Increased number of patient visits per day.** In 1999 my office saw 15-20 patients per day with one provider and an office staff of 2. With 1.5 providers and an office staff of 3.75, we now serve an average of 28 plus patients per day, an increase of 50%.

**6. Increased patient volume.** In 1999 my active patient volume was around 2200. At the beginning of 2002 I had 3400. In 2003 my patient volume was 4225. My patient volume now is 4416, an increase from 1999 of over 100%. (See graph below) So far this year office encounters between 1/1/2004 and 4/15/2004 total 1575.



**7. Increased immunization rate.** My immunization rates increased from an average of 50% to an average of 95%.

**8. Increased collection rate.** Collections in 1999 were a dismal 52%, but as a result of the link between the EHR and the practice management system (billing software) my collections rose to 73% in 2001 and to 88% in 2003.

**9. Decreased number of claims denied due to coding and other errors on the HCFA forms.** We now have zero claims denied due to coding and other HCFA errors.

**10 . Decreased insurance turnaround time.** Insurance turnaround time decreased from 30–60 days to an average 15 days due to the link between the EHR and the PMS, as well as due to the electronic transmission of bills to most of the major insurers.

**11. Increase staff.** At the time of installation of the EHR I had 2.5 FTE. Currently I have 1 FTE MD, .5 FTE PA, 3 FTE support staff.

**12. Eliminate chart pulls.** In 1999 I had an average of 20-30 chart pulls per day due to phone calls and patient visits. Now I have zero.

**13 .Decrease charting time.** Charting time, depending on the complexity of the visit, took 30-60 minutes in 1999; it now takes 10-15 minutes at most, a reduction of 72%.

**14. Make more productive use of chart storage room.** I have no chart storage area in my new office.

**15 . Elimination of transcription costs.** After installation of the EHR my transcription cost went from \$500/ month to zero.

**16. Expand Office space.** I moved to a larger office in a building I was able to purchase due to increase in collections. I now have 6 examination rooms. Two are on a separate floor for adolescents.

### *Quality of Care Improvements*

**17. Decreased patient wait time.** In 1999 patient waiting time from check-in to check-out was an hour or more. That has been reduced to an average of 36 minutes over all encounters, a decrease of 40%.

**18. Decrease drug refill time.** Drug refill time decreased from 24–48 hrs to 15 minutes or less, a decrease of over 9600%.

**19. Decrease telephone call turnaround time.** Average telephone turnaround time decreased from 24 hours or more to less than 15 minutes, a reduction of 9600%. The physician can also react more efficiently to the telephone calls, as I can now decide which calls are urgent (based on a text message that displays on our screen) while seeing patients in the exam room without going to voice mail or leaving the room. The calls are placed in the system by the nurse and pulled up with the chart.

**20. Physician Satisfaction..** Since the installation of the EHR, I have more time with family and friends. I have no delayed charting.

**22. Transformed Processes.** Many of the most wasteful and time-consuming practices of a small business have been eliminated or streamlined. The EHR's ability to integrate my workflow with the workflow of the staff has made all of our lives easier and better, and my business more efficient and profitable. Many of my processes were easily engineered into the EHR, so my staff and I were able to conduct business without tossing out the efficient processes that we had developed. I have found that my practice is much quieter now that I am able to communicate with my staff through the EHR and each clinical staff member knows the location of the others through the display on the office view screen of the EHR.

**23. Improved Customer Service.** My nursing staff and I are now able to spend more time with our patients and provide them with better, more accurate and more legible prescriptions and reports, including school and vaccine reports. In addition, my patients spend less time waiting because my staff and I are able to operate more efficiently.

**B. Costs and Benefits Offsetting Costs—**

**1. Improvements in my Quality Review Scores.** My quality review scores have increased from 65% in 1999 to above 95% in 2004.

**2. Lower training costs for new personnel.** The EHR helped to refine and streamline several processes, so that training new personnel is easier and cheaper.

**4. Increased Patient Safety.** Medication errors are vastly reduced or eliminated when an EHR like EncounterPRO is used. Errors based on weight, allergy, drug interaction are completely preventable through the automatic alerts module. Other examples of alerts are duplicate name or chart number alert, allergy alert, study participation alert. Alerts to get proper address, lab follow up alert, vaccine alert, and many other custom alerts are available.

**5. Anticipated and Actual Return.** My actual return astounded me. The leased system paid for itself in 3 years.

<b>Cost Element</b>	<b>Initial</b>	<b>Ongoing</b>
<b>EHR Software</b>	\$7000	None
Hardware	\$18,500	\$1500
Installation	\$1300	None
Implementation Support	None other than training	None
Training	4 days training at \$700 per day for total of \$2800	None
Coverage for physicians during training or lost revenue (if any)	10% loss of revenue for two days. The third day I went live with no loss of revenue.	None
Interfaces or EDI connections	PMS Interface-No Charge	None
Annual Support Fees	None	Annual support Fee \$2610

**V. Lessons Learned**

**1. Critical Success Factors**

- Accurately, efficiently, and simultaneously accomplishing office tasks is a great time saver. The ability to see a patient, code the visit and transmit the bill almost instantaneously is invaluable in today’s managed care market. It is no longer a matter of volume, but rather a matter of working smarter in this environment.

- The automated workflow follows the physician training. We were taught to take the vital signs, gather a subjective history, do an objective examination, come up with an assessment and develop a plan. This is exactly what is needed in any EHR record. This is not new territory and therefore easily fits our preset frame of mind. This is how we were taught.
- EHR's must make this process more efficient, user friendly, accurate, reproducible, and accessible to multi-users. EncounterPRO does just this.
- The EHR must be customizable to all medical disciplines. New procedures, codes, medications, vaccines are developed yearly and the system must be compatible to those changes.
- Charting must be easy and fun. Converting from paper to chartless must be painless and efficient. Any system that requires long hours and long manuals to learn its use is counterproductive.
- The EHR must be faster than paper entry, especially at point of use. The physician must be able to chart more accurately and more efficiently on the computer than on paper; the touchscreen technology that EncounterPRO uses makes this a reality.

## **2. Reasons why I was successful**

- I saw the value in computerizing the medical office long before the technology was affordable.
- The SOAP flow of the EHR conformed to my training and charting on paper.
- I chose wisely based on review and input from tech professionals.
- I integrated the EHR with my practice management system immediately thus enhancing the business process of the practice.
- The office staff was excited about installation of a system that would save time and energy.
- I recognized early in my profession the advantage and time efficiency of practice management and EHR systems.
- I bought hardware from reputable online auction sites, i.e., Egghead.com or Ebay.com, and leased and insured as needed.
- I learned to use the EHR system and to customize it to my practice advantage.
- I got great support from the vendor and interacted with them as much as possible.

## **3. What I wish I had known beforehand**

- System administrators come with all levels of certification. I wish I had known those levels and certificates at the onset. Cisco and Microsoft certifications are most important when relying on someone to set up a network and install software.
- Learn the basics of hardware and software maintenance; this will be invaluable to you in the long run.
- Some computers are better than others. Stick with name brands that are tried and true.
- Backups: make sure you have two or three backup systems to save data and programs on a daily basis. Check your backup and restore capabilities on a regular basis.
- Use security on your workstations; a screensaver will suffice with an alpha numeric password access.

#### **4. What I think is important**

- User friendliness and usability are of the utmost importance; if data input is cumbersome and time-consuming, the EHR will be of little use to a busy practice. The EHR must be a time-saving tool for the physician.
- Support and maintenance must also be user-friendly. There is nothing worse than having a hard time reaching the tech support or getting the feeling that you are “imposing” on the support team.
- Workflow and documentation. Being able to work at a known pace using learned skills makes using an EHR much easier to learn and more efficient to use.
- The EHR has made it possible for me to work faster and make my reimbursements higher by documenting more coding per visit.
- The EHR has allowed me to comply with insurance and managed care audits much better than my competition, giving me high EHR evaluations and making it possible for me to negotiate better contracts and therefore higher reimbursements.
- The efficiency and speed of data input has made it possible for me to spend more quality time with each patient.
- The ability to secure higher reimbursement has lessened the need to increase the volume of my practice.
- Using touchscreen computers in each exam room adds to patient interest and satisfaction.
- Showing on the chart a digital picture of each child gives parents a secure feeling.
- The ability to integrate the EHR with the PMS enhances reimbursement and decreases reimbursement time lag.
- Having access to online patient information both in office and at home makes for faster call backs and more accurate responses.
- In my state having an EHR in a medical office encourages malpractice premium discounts.

## **VI. Summary Comments**

The practice of medicine has changed drastically. Twenty–five years ago one could open a practice, provide good service, and make a substantial income with a mixed payer group (self-pay, commercial insurance). We are now in the era of “Franchise Medicine” where authorization is granted to an entity to sell services and a business or group of businesses operate under such authorization. Managed care organizations have converted solo and group practices into franchises. Physician Health Organizations (PHOs) credential physicians and authorize physicians to see patients that are enrolled in their panels. PHOs charge the physicians a fee to be members of their patient referral base. In fact, physicians cannot survive unless they are members of one or two PHOs. No longer does the patient decide what doctor to see; their insurer assigns them to a site or primary care provider (PCP), and they must go to that site or pay out of pocket.

The physician needs both an EHR and a PMS to run a viable practice. Pediatrics and other primary care specialties are no longer volume businesses. We must work smarter, code better,

and chart in compliance with the PHO dictates. Audits of charts have become a quarterly reality and most PHOs require a score of 75% compliance to remain viable in their organizations. With the EHR this is easily attained. Many PHO groups will actually retain a percentage of the reimbursement as an incentive paid out to the PCP once a year dependent upon compliance rates.

Commercial insurers screen for proper coding and completion of the HCFA forms. Up-coding increases reimbursement, but the ability to document 6 months after a visit that is up-coded may lead to accusations of insurance fraud if the physician lacks that documentation. The EHR prevents that from occurring.

I have used the EHR system for 4 years and even though my yearly visits have been fairly constant and my charges have not increased by double digits, the coding has greatly improved allowing me to greatly increase my collection rate. (53% to 88%).

I have been able to provide better and faster service to each family and have seen a 100% increase in the number of patients in my panel due to compliance with the PHO regulations. The EHR has made it possible for this practice to take on a “Concierge” approach to solo practice rather than a volume approach. Practicing medicine has certainly become easier and more fun, and as one mother said to her child while in the exam room, “I know it looks like he is having fun, but he is really working on that computer.”

**Biography:** Dr. Armand Gonzalzes is a board certified Pediatrician. His undergraduate degree is from Chicago State University in Biology and Education, and has taught biology at the high school and college levels. Dr. Gonzalzes has held both clinical and administrative post including Vice chairman and Chairman of Pediatrics at St. Joseph hospital Chicago, Director of Newborn nursery services at Illinois Masonic Hospital. Dr. Gonzalzes has been in Private practice since 1978 and is a husband and father of five children.