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*June 2006*

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## Disasters Foster Innovations in Health Records

As another hurricane season begins, concern about protecting medical records rises yet again. Last year, during hurricanes Katrina and Rita, one million Americans lost their records of immunizations, medications, allergies, diseases, or insurance. These records are critical in emergencies or when one needs a vital prescription or life-saving dialysis.

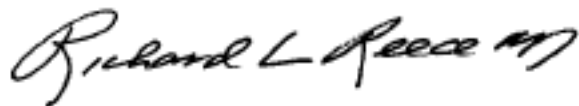
A number of companies have been seeking solutions to this problem. Meanwhile, the best solution is still being developed: a nationwide system of electronic health records and a corresponding network of regional health information organizations (RHIOs). A number of markets are working to develop RHIOs, but having an interconnected network of RHIOs to store all patient records in a secure but accessible fashion is still a number of years away. Planners envision a day when medical information will not be stored in paper charts subject to the whims of nature or disasters.

One such effort (called the Continuity of Care Record) is being developed by the Massachusetts Medical Society, the Healthcare Information and Management Systems Society, and others.

One promising solution is offered by Medcryption, a company in Raleigh, N.C., that is selling a waterproof electronic personal record carried on a key chain. Called VitalChart, this record contains the patient's entire medical history and is useful for frequent travelers, patients with chronic medical conditions, and those who are in high-risk occupations or high-risk sports. It is a Web-based system that allows users to store current patient information on a waterproof portable drive easily accessible by patients or physicians.

A personal health record should contain all of the information that a physician or health care professional would need to care for a patient in any setting. Such records should contain facts about the patient's health status, including allergies, medications, vital signs, diagnoses, recent procedures, plans of care, and reasons for admission, transfer, or discharge, if applicable. They should allow for the exchange of clinical information among doctors, nurses, institutions, and other care entities, thereby avoiding duplication and confusion. They also should enhance quality, safety, convenience, and continuity of care.

One of the most difficult issues with such records is security. Developers are wrestling with the apparently conflicting ideas of making such information accessible at the point of care while also ensuring the patient's medical, insurance, and other personal information is protected against those who could use such information for personal gain.



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This newsletter is published by Premier Healthcare Resource, Inc., Morristown, N.J.

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# Treating GERD: Optimizing Compliance in Children

:By Sharon L. Cross, PhD

**P**hysicians have often rued one implacable truth: Medicine can't help the patient if he or she doesn't take it. Medication compliance is an issue for all conditions and all patients. However, health care professionals who treat children face unusual challenges. They must address the needs not only of the patients involved, who range from infants to adolescents, but also of their parents or caregivers.

In addition, issues involving administration, such as the taste or texture of the medicine, can be key factors among children, particularly those who are too young to understand why treatment is necessary.

Regardless of the age of the patient being treated, compliance is critical to treatment success. And it involves more than simply taking the prescribed medication. Full compliance also requires the patient to adhere to the dosing schedule and to take the medication for the required length of time. These aspects of compliance are particularly important for therapies that need to be administered at a specific time with respect to food or ones that are prescribed in multi-week courses.

The study of compliance is a diverse field, as a wide range of factors influences whether a patient takes his or her medicine. To date, no published study has specifically examined compliance with the two most common pediatric therapies for gastroe-

sophageal reflux disease (GERD): histamine-2 receptor antagonists (H2RAs) and proton pump inhibitors (PPIs). Studies of other medications, however, can provide some insight into issues involved in compliance with pediatric GERD treatments.

## Assessing Noncompliance

A recent meta-analysis of studies that assessed patient compliance with medical recommendations found an overall compliance rate of 70.6% in pediatric patients, significantly lower than it was in adults (76.8%) (DiMatteo, *Med Care* 2004;42:200). This result demonstrates that almost one-third of the children did not take their medicine regularly. Adolescents are generally less compliant than younger children are, and compliance tends to decrease over time, dropping to around 50% in children with chronic diseases.

Lack of compliance can result in significant consequences. Overall, noncompliant patients have a poorer prognosis than patients who follow the prescribed medication regimen. The condition being treated is likely to become more severe and may become more difficult to treat, increasing the risk of future health problems. Higher costs and increased use of health care resources, including more frequent doctor visits and hospitalizations, are also associated with noncompliance.

The act of taking a medication is a

complex human behavior that a variety of internal and external factors affect. Various studies, however, have identified several barriers that may affect compliance. Addressing these barriers may help promote patient adherence to therapy.

## Barriers to Compliance

Clinical studies have established several major predictors of poor compliance. It is important to note, however, that most studies are conducted in a distinct patient population with a specific condition. It may not always be reasonable to extrapolate the results from one study to other patient populations or conditions. For instance, factors that influence compliance with long-term medication for depression in adults are undoubtedly different from those that influence a one-week course of antibiotics in infants.

Nevertheless, a large body of research suggests there are several recurring themes associated with non-compliance. Some of these involve psychosocial issues, such as the patient's feelings about the treatment, while others are specific to the medication regimen (side effects, cost, complexity of treatment). The number of predictors of poor adherence that may be relevant to pediatric GERD treatment fall into two categories: psychosocial factors and medication-specific factors (see sidebar on next page).

"The vast majority of children who  
(Continued on page 4)

**"Compliance is worse when the child is given responsibility for taking medication," comments Steven Schwarz, MD, of Long Island College Hospital in Brooklyn, New York.**

(Continued from page 3)

seek care for GERD are infants under one year of age," says Stephen M. Schwarz, MD, chairman of the Department of Pediatrics at Long Island College Hospital in Brooklyn, N.Y. In general, compliance in infants is fairly high. Parents who seek care for their children are typically motivated. In addition, although GERD medications control the acid that can result in esophagitis, they do not completely stop the spitting up behavior that has led the child to the doctor. These episodes serve as a reminder to the parents to continue medication.

### Palatability Issues

One compliance issue that arises in infants involves the palatability of the medicine. Studies of pediatric formulations of antibiotics suggest that a pleasing taste can improve compliance. "One of the major preparations of H2RAs has a peppermint flavor," Schwarz observes. "And some children reject this." Other options are available for H2RAs, including a bubblegum-flavored formulation, which may be more palatable. If the child refuses one medication, parents should be encouraged to call and discuss the possibility of switching to a different agent.

Although there are several liquid formulations of H2RAs, PPIs break down and become inactive if they are kept in liquid form. "The PPIs are a little more work," remarks Schwarz, noting that none of the PPIs are approved by the U.S. Food and Drug Administration for infants less than one year of age, and these drugs should therefore be administered to children in this age group only under the supervision of a pediatric gastroenterologist.

PPIs can be given to children by sprinkling the capsule contents over

## Predictors of Poor Compliance with Medication Regimens

The predictors of poor adherence that may be relevant to pediatric GERD treatment fall into two categories: psychosocial factors and medication-specific factors.

### Psychosocial Factors

- Patient's lack of belief in benefit of treatment
- Patient's lack of understanding of the illness
- Poor provider-patient relationship
- Inadequate follow-up

### Medication-specific factors

- Side effects of medication
- Complexity of treatment
- Cost of medication

Source: Adapted from Osterberg and Blaschke, *N Engl J Med* 2005;353:487.

applesauce. This method can be done only with certain foods, and the sprinkled contents of the capsule should not be chewed or crushed, as doing so can result in a bitter taste and can interfere with the drug's activity. Some PPIs are available as packets that can be used to make an oral solution, or as orally disintegrating tablets that can be dissolved in water and given to the child by spoon or oral syringe. Schwarz cautions that parents should avoid using a pharmacy-formulated suspension. "These are likely to become inactive fairly quickly," he warns.

### Adolescent Angst

Adolescence is a time when power struggles are frequent, as children begin to assume control of their own lives. Many older children are surprisingly busy, juggling school and extracurricular activities. It is perhaps not surprising that compliance among adolescents is lower than it is among younger children or adults. "Compliance is worse when the child is given

responsibility for taking medication," Schwarz comments. "Adolescents are a particular problem."

On the other hand, however, most adolescents are capable of taking capsules and other forms of solid medication. Adolescents also can evaluate their own symptoms. "Reflux is an intermittently bothersome condition," Schwarz points out. "If patients stop taking their medications because they are asymptomatic, that may not be a problem."

Most studies show that communication between health care professionals and the parent or patient is key to improving compliance with pediatric treatment regimens. "We need to get back to one-on-one interactions and follow-up with the patient," affirms Sheldon Winnick, MD, a pediatrician in a solo private practice in Lafayette, Calif., who has written about this issue (Winnick et al., *Pediatrics* 2005;115:718). "There's a trust factor that can be developed only by spending time with the patient." Winnick acknowledges

**To date, no published study has specifically examined compliance with the two most common pediatric therapies for GERD: histamine-2 receptor antagonists (H2RAs) and proton pump inhibitors (PPIs).**

that the pressures of modern practices make many clinicians feel pressed for time. He seeks to save time by spending additional minutes with each patient focusing on the art of clinical observation, saying doing so reduces future office visits and phone calls.

### **Patient Communication**

Improved communication can take many forms. First and foremost, parents and older children need to understand the importance of therapy, the goals of treatment, and the proper dosing schedule for the medication prescribed. Written instructions may be useful because they provide the patient with something to refer to later. Health care professionals should anticipate problems that may arise and address them before the patient and parent leaves the office. For instance, parents of infants might be told about possible palatability issues, while adolescents may need some help in developing cues or reminders to take their medicine.

Such discussions should not be one-way lectures. Instead, health care professionals should be sure to involve the parent and patient in the treatment program. A collaborative approach will help ensure that the prescribed treatment is something that will fit the family's needs and lifestyle, and will increase the involvement and commitment level of the parent and patient. Physicians should ask parents about difficulties in administering medications to the child and whether there are lifestyle or scheduling factors that should be considered when prescribing medication. Preferences for dosing schedules, type of formulation, and taste should help guide the choice of therapy. In particular, most families with school-age children prefer to avoid regimens that involve dosing during the school day, as these can be

## Medication-Related Issues in Pediatric Compliance

Issues specific to the prescribed medication that may affect compliance include frequency of dosing, dosing schedule, cost, palatability, type of formulation, and side effects.

In general, the more frequent the dosing, the easier it is to miss a dose. Dosing schedule (for instance, with or without food) is often a matter of patient preference. The importance of cost also varies among patients.

In a study of pediatric antibiotics, cost was not found to affect compliance until the expense of treatment was over \$50 (Steele et al, *Pediatr Infect Dis J* 2001;20:1). However, cost is likely to be a major factor for patients who are not insured or do not have prescription plans.

Palatability can be very important, particularly for infants and young children. The flavor of the preparation and even its scent or texture can affect the ease with which the medicine can be administered. In turn, flavor, scent, or texture can influence the willingness of the parent or caregiver to administer it. The availability of oral solutions is another feature that may influence compliance in pediatric patients, as these formulations are typically less time-consuming to administer than those that require sprinkling on food or preparation immediately prior to administration. Finally, side effects are known to have a significant effect on compliance. Providing the parent and patient with information on how to manage or minimize likely side effects may help the patient to stay on therapy. If not, switching the patient to a different drug or class of drugs may improve tolerability. —SC

difficult to arrange and can be embarrassing for some children.

Once the patient leaves the office, phone contact can be used to assess whether the treatment is working and to remind the patient to take the medication. "I have adolescents call in each week and tell me how the therapy is working," Winnick explains. "But you have to stay on top of it. If they don't call me, I call them."

### **Improving Compliance**

There is no single answer to increasing compliance with pediatric GERD medications. Approaches that have proved successful for other conditions include providing written instructions in easy-to-read language for patients and parents and encouraging phone contact should any questions or prob-

lems arise. If necessary, children can be encouraged to take their medicine by using small treats. For older children and adolescents, contracts or reward systems may improve compliance.

Perhaps more than any other step, however, establishing a collaborative rapport with the parent and patient is vital to treatment success. Health care professionals should encourage and address questions, and discuss medication compliance in a nonjudgmental, supportive fashion. By involving parents and patients in a child's treatment, physicians are more likely to achieve the common goal: making the child better.

—Reported and written by Sharon L. Cross, PhD, in Mission Viejo, Calif. More information on physician practice strategies is available on our Web site (see page 8).

**"We need to get back to one-on-one interactions and follow-up with the patient," says pediatrician Sheldon Winnick, MD, in Lafayette, Calif.**

# New Systems Help Growing Practice

**P**hysicians are often reluctant to adopt new electronic medical record (EMR) systems, fearing that using computers will interfere with the physician-patient relationship. But Nassim & Associates, a fast-growing pediatrics practice, found a way to introduce practice management and EMR systems without disrupting interactions between physicians and patients.

"Our new systems offer the best of both worlds," says Chris Mescia, MD, one of four physicians in Nassim & Associates, PSC, in New Albany, Ind. "All of the programs we looked at involved viewing a computer screen while entering data when you were with a patient. If you're entering data, that eliminates some of the good eye contact that you want with a patient."

## A Visit Template

Rather than have physicians enter patient-visit data on computers, the practice developed an office visit template on a sheet of paper that allows physicians to write the history, physical assessment, and plan of care on one page. "We just bring that piece of paper to the exam room along with our tablet PCs and write our visit notes on the paper," Mescia says. "Then, that sheet is scanned, and the scanned image becomes part of the archive," he adds. "We can call it up later during a subsequent patient visit to review it or click through a number of images to see notes from several visits at once.

"I can write on the sheet while still looking at the patient," he adds. "You

still get the good eye contact and the quality doctor-patient interaction because you're hand writing that part of the visit. So, you don't have to focus on what you're keying in to the tablet all the time. Someday the tablets and software may become advanced enough so that you could enter the information that way, but at this point, we wanted to handwrite the office visit notes. Everything else we do involves clicking and pointing. It's just the patient visit part that we write by hand.

"We didn't want to be hunched over a computer while taking the patient exam information," he says. "We think the keying in part of using a computer in front of a patient is impersonal. We never liked any part of that. With our hybrid system, we can just click right through the pages. You get the speed and the access that you want but you also get the good patient interaction."

The practice, in the metropolitan area of Louisville, Ky., sees about 2,500 patients per month and has been adding about 10 to 20 new patients per week, says Office Manager Betty Stickels. In the past year, the practice added a physician and a nurse practitioner. It now has a full-time staff of 20, including the four physicians, a nurse practitioner, and a physician assistant. It has eight to 10 part-time staff as well.

## New Office, New Software

Last year, the practice built a new building and moved into 12,000 square feet of space last fall, Stickels

said. Before moving, the staff decided to eliminate paper charts and use all electronic records in the new facility.

Its uses MicroMD, a practice management system from Microsys Computing, Inc., in Boardman, Ohio, and TouchChart, an electronic medical records system from Allscripts in Chicago.

"Both the MicroMD and the TouchChart systems are working well," Mescia comments. "MicroMD is used for our billing, scheduling, and practice management work that does not involve medical records. The TouchChart is a paperless chart program that we use as a hybrid. We still have some paper that we scan, and then it becomes part of the paperless (or electronic) medical record. In that way, TouchChart is our hybrid medical records program.

"We have the MicroMD Xpres Suite, and the providers use the TabletXpres version of the software on tablet PCs," he adds. "That's what doctors carry in and out of the patient rooms. The tablet PCs have been stellar for us, and we are finding new ways to use them all the time."

## Improved Efficiency

Many physicians are reluctant to adopt new software because they expect to see fewer patients while adapting to new workflow methods. Nassim & Associates saw little slow down and, in fact, has increased productivity.

"We have dramatically improved workflow and efficiency in the office," Mescia says. "MicroMD has

**"With our hybrid system, we can just click right through the pages. You get the speed and the access that you want but you also get the good patient interaction."**

**—Chris Mescia, MD, Nassim & Associates**

helped us tremendously with scheduling. With our previous system, we could see only one physician and only half a day on the screen at one time. Now, we can see multiple providers all on one page, providing more scheduling flexibility. And it's all point and click.

"One feature that we like is the ability to track how long a patient is in the office," Mescia adds. "When the patient arrives, MicroMD starts a time clock. When the patient goes to an exam room, it records the time, and when the patient leaves the building, it records the time again. So we can keep a log of how long the patient was in the waiting room, how long in the exam room, and the total time the patient spent in our office that day. Since different physicians work at different paces, this has helped us to customize a schedule for each doctor.

"Unlike some practices, the physicians didn't have too much of a slow down," Mescia continues. "Mainly, we had to do some clean up stuff when we finished with patients at the end of the day. That was necessary only because we were on the learning curve side of the software. Now that we have learned it and customized it, we've eliminated the extra time at the end of the day.

### **Customized Encounter Forms**

"It helped that we were able to customize a lot of the forms with MicroMD," he says. "We built a form that contains all of our most common ICD-9 codes and all our most common CPT codes. Plus, it has a blank box so if a code is not on the list, you can search for it throughout all of the CPT and ICD-9 lists. You use the stylus to click on the codes

and then send the bill right up front. In this way, you're not writing or typing. For all the coding and billing parts of the system, you're just picking from lists."

One aspect of introducing the new systems that helped prevent slow-

we ask the patient which pharmacy to use, and the prescription gets faxed right there."

Among the advantages of the new systems are improved billing production and fewer errors, says Stickels. "Patient billing is better and we're

**The practice sees about 2,500 patients per month and has been adding about 10 to 20 new patients per week. It has a full-time staff of 20, including four physicians, a nurse practitioner, and a physician assistant.**

downs was installing one system at a time. "We've been using TouchChart for a little over a year now," Mescia says. "We did that first and then introduced MicroMD. We did it in a staggered fashion because we didn't want to have too steep of a learning curve.

### **Prescription Writing**

"The third phase will involve using Allscripts prescription writing software, and that will be coming in the next few weeks," Mescia adds. "As soon as we get some faxing issues straightened out, we will write all of our prescriptions electronically. They will be written on tablet PCs and then be faxed directly to any local pharmacy. The Allscripts program is in the tablets now and working fine. It's just that some of the faxes are going through and some are not. Once we get the fax connection problems resolved, it'll be fine.

"The program has a database of all our local pharmacies," Mescia explains. "All we do is pick the medication and the dosing regimen is done with pull down menus. Then

making fewer mistakes," she adds. "And, we don't lose any charts. That's been a remarkable improvement over paper records."

The practice spent more than \$125,000 for both the TouchChart and MicroMD systems, Stickels says. It also contracted with a local company to scan all paper records to disk so they could be added as scanned images to the EMR.

"When we were designing our new building, we wanted everything to be state of the art when we moved in," she explains. "We could have had a new chart room with modern shelving, but instead we decided to go with electronic records. So we had the charts scanned and now they are off site in storage. At some point when we no longer need them, they will be destroyed."

In the meantime, the practice is using the new systems to see more patients every week without a slow down in productivity or any interference in the patient-physician relationship.

—More information on practice strategies is available on our Web site (see page 8).

**"Patient billing is better and we're making fewer mistakes," says Office Manager Betty Stickels. "And, we don't lose any charts. That's been a remarkable improvement over paper records."**

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