

# DISEASE STATE MANAGEMENT™

*Managing Chronic Illness Across the Continuum*

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**APRIL  
1999**

**VOL. 5, NO. 4  
(pages 37-48)**

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A Medical Economics Company

## How to navigate the changing maze of medical management software

*There's a program for every need and almost every interest*

**M**edical software programs are a lot like spring daffodils: They seem to be popping up everywhere. Some of them have life spans about as long.

In a technological world that is changing at a blinding pace, health care professionals battling managed care expectations are struggling to sort out the vast array of options on the road to the paperless office.

Even savvy young doctors like **Eric Buehler, MD**, a family practitioner in Waynesville, NC, a mountain community of 10,000, are reluctant to bring their offices into the information age. The reasons most often cited: expense (in time and dollars), and the uncertainty about what will work best for them in the rapidly changing marketplace for medical records and disease management software.

Yet, Buehler concedes virtually every medical office will need to be computerized in the next five years or so because, in the end, "it will be far more efficient."

Medical practice and patient management software is the newest niche market, says **Ken Later**, product manager of Clinitex International Inc., Horsham, PA, which developed the NextGen electronic medical records system.

"We are at only about 4% of the potential market, so it's still very new

## KEY POINTS

- Physicians, clinics, hospitals, and health plans are confronted with a baffling array of new software to help them better manage their patients and practices.
- Experts say medical practices are moving toward a completely computerized office with few, if any, paper records.
- Most experts say the key to acquiring medical software is to decide what you need, then find the software to fit your needs.

and exciting,” Later says. “We expect 10% of the physicians, clinics, and hospitals will be looking for products like ours in the next couple of years.”

The market for electronic medical record keeping and disease management software has grown from virtually no sales five years ago to a \$750-million market in 1998. It'll only get bigger in the future, experts predict.

Software companies, battling for market niche, are offering an ingenious variety of means to run practices, access patient records, define risk factors and even forecast those who are likely to require costly procedures if they continue on their current health track.

Some provide access to formularies and disease management protocols of a wide variety of managed care companies, so they treat patients according to the managed care plans and prescribe medications approved under the plans.

### **Case management software is popular**

“In the past six months, we've had increasing requests from health care plans for case management software,” says **Bob Darin**, PAHM, manager of the business development division of Blue Cross-Blue Shield Association in Chicago.

Blue Cross is engaged in a study to determine what doctors, case managers, clinics and hospitals want and need to manage cases electronically.

“They want to facilitate the flow of case management, to break down the barriers,” says Darin. “They want to pull up data as needed, and easily and quickly determine what patient needs are and what are the right interventions.”

Buehler agrees with the concept, but still balks at the reality as it stands today. Even though he's only two years out of his residency and a self-professed computer nerd at home, Buehler has no plans in the near future to computerize his office other than the new computers he recently purchased for his lab and appointment scheduling.

The reasons? “First, it's a matter of getting all the data from all the charts into the system.

That's enormously expensive in terms of time and money,” Buehler says.

The second show-stopper, Buehler says, is the cost of the software itself and need for a computer in every examining room. And finally, he says, there is the major consideration of “what will work for me” amid the avalanche of available programs.

### **Custom designed software fill MDs' needs**

**Bob Keet**, MD, FACP, medical director of Axolotl in San Jose, CA, and an internal medicine specialist in Santa Cruz, CA, acknowledges the health care industry has been slow in embracing new technologies because of the high cost and fear the system might become obsolete in a short time.

That's why Keet and a group of physicians, hospitals, laboratories, and pharmacies in Santa Cruz formed their own network to meet precisely defined needs, designed their own software, and have now began to market it through a company they formed called Axolotl.

Keet says they went electronic a year ago with a messaging system linking the various components of the community's medical system and providing quick-return lab reports, referrals, and case histories transferred across the Internet through an elaborate e-mail system that provides a simple tool for the information to be sorted as health care professionals need it.

One of the more attractive features of the system, Keet says, is that communication is unhampered between health care providers rather than each facility having a data base that works only inside the individual organization.

He also reassures those concerned about privacy in transmitting data across the Internet. “There's no great basement somewhere, physical or virtual, in which a huge database is stored and which hackers might try to break into. What happens is that there are short bursts of information transmitted by e-mail — encrypted, of course —

## **COMING IN FUTURE MONTHS**

■ Helping monitor symptoms with adult day care

■ Using a formal program to assess asthma patients needs

■ The dos and don'ts of telemedicine and CHF

■ Five effective strategies for reducing readmissions

■ Knowing when patients are ready to change their lifestyles

A healthcare community can re-engineer work flow by taking the following gradual steps:

**1.** Implement electronic data delivery of clinical messages including laboratory, radiology, and transcribed results. Initially, the system can be set up to automatically print results, in any order directed by the user, for example, by date, specific test, or medication ordered. Physicians and staff can use the electronic system to look up required results.

**2.** Use the initial data to build a master patient index. This allows users to link patients to specific data such as pharmacy orders or lab tests results in anticipation of more advanced automation.

**3.** Train the physicians and their staff to electronically transfer clinical data to other physicians. They can also begin to use the system for intra- and inter-office e-mail.

**4.** Begin to automate the management of incoming data as physicians become comfortable using the system. They can forward data to staff or other physicians with specific instructions for action and necessary annotations. By doing this, they will move away from paper to electronic management of data.

**5.** Add out-going message capability including authorization requests, prescriptions, and orders (laboratory, radiology, and hospital). Physicians will begin to see the immediate rewards of an automated system. As they write prescriptions, the system can check for drug interactions, allergic interactions, and formulary compliance. Patient instructions can be printed automatically. Hospital orders can be generated, including specific care protocols and pathways, and laboratory orders can be checked against the diagnosis.

**6.** Implement appropriate care management reminders and alerts. Track to ensure that specific tests, such as Protimes and Glycohemoglobins, are performed at appropriate intervals for specific patients. Track mammograms, pap smears, and immunizations.

**7.** Add a full repository for all electronic data, thereby eliminating the need for the paper patient record.

Source: Bob Keet, Axolotl Corp., San Jose, CA.

and this is an extra protection against violation of privacy.”

However, there have been some unnerving breakdowns in Internet transmissions. Recently, several thousand records containing patient information and Social Security numbers at the University of Michigan Medical Center inadvertently lingered on public Internet sites for two months.

A University of Michigan spokesman says the appointment-making data was erroneously “parked” on a Web server thought to be secure. The database was moved immediately after two people accessed it. “It was a human error. We are now being hypervigilant and we’re building a system of firewalls to be sure it can’t happen again.”

The problem came to light when a student searching for information about a doctor on the medical center’s Web site was linked to file containing patient records that included names, addresses, phone numbers, Social Security numbers, employment status, treatments for specific medical conditions and other data.

### ***Where is the starting point?***

Defining a starting point is one of the major reasons practices have been slow in moving toward what many regard as an inevitable “paperless office” managed exclusively through computerized records.

Some programs merely choose a starting point and begin entering records from that point. Others “grab” records from a variety of databases and merge them into a megabase. Still others engage in a tedious and expensive process of key punching individual records.

“It all depends on what an individual plan or practice wants,” says Blue Cross’ Later.

Healtheon Practice, another recent offering on the market, is an Internet-based referral and authorization program for physicians and patients. The software, developed by Healtheon Co. of Santa Clara, CA, assures secure access to patient and provider information.

“The main difference in what we do is we use the Internet for real transactions,” says **Charles Saunders**, MD, the company’s medical director. Those “real transactions,” Saunders says, include interaction between physicians, payers, labs, and pharmacies.

“We can virtually guarantee privacy because there is an elaborate system of password IDs.”

To implement a clinical messaging system:

**1.** Appoint a steering committee of interested parties, including representatives from hospitals, clinical laboratories, radiology offices, and physician organizations.

In the early stage, this committee oversees the choice of vendor, sets up implementation schedules, creates necessary standards, and so on; later they may be called on to adjudicate conflicts.

**2.** Choose a specific technology and vendor.

Once a vendor is chosen, the vendor should assist in the process.

**3.** Choose a pilot data provider, such as a hospital or large clinical laboratory.

Since these organizations have much to gain from automation, they represent the best source of initial energy and capital to start such a project. Implement data delivery for this pilot data provider.

**4.** Recruit several physician leaders to become the physicians' champions.

**5.** Once a single data provider is on-line and data is flowing smoothly, approach others to join in electronic data delivery.

**6.** Train physicians and their staff to move away from paper to electronic data management.

**7.** Monitor the efficiency improvements achieved with automation.

**8.** Cultivate champions, mentors, and create a process of intra-community support for progressive automation.

Source: Robert Keet, Axolotl Corp., San Jose, CA.

ThinkMed Expert, a case and disease management software produced by ThinkMed Inc. of Milwaukee, looks to an unusual place for its information: claims data that is used for billing and already in the system, thereby eliminating a great deal of the data entry.

"Information that was once unusable for clinicians, case managers, disease managers, medical directors, and people who have a responsibility for patient populations is now usable and can be a good predictor for those at high risk," says **Warwick Charlton**, MDF, ThinkMed's vice president of clinical design.

He adds, "ThinkMed realized there were

patterns in the data where you could start making good guesses about the future health of individual patients."

Charlton says ThinkMed flags those at high risk of complications of chronic diseases and alerts health care professionals so measures can be taken to prevent those complications.

Most of the new software require nothing more than a PC or a network of PCs in which software can be installed and staff trained. Some of the higher-end programs require a mainframe to which terminals can be connected.

The cost for most is high — from a minimum of \$30,000 for a small practice to millions of dollars for a large health system — but experts argue the cost is justified by the savings in personnel and time.

### ***Cost effectiveness is individual issue***

Keet says he estimates a medium-sized practice of 12 doctors would save the equivalent of two full-time employees' salaries and save each doctor about 30 minutes a day.

Later's NextGen promises to return 130% to 180% of its monthly cost for medium-sized physician practices all the way up to the 50 Catholic hospitals, nursing homes, clinics, and medical practices in the 12 states that are part of the Daughters of Charity National Health System.

"It's very much an individual issue, so it's very important that all participants get together and decide what they need. That's the key," says Keet.

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## **Study: Aggressive approach to hypertension needed**

**D**octors aren't being nearly aggressive enough in treating hypertension, according to a recent study which tracked patients at Veterans Affairs (VA) clinics in Virginia.

The study found 40% of patients had unacceptably high blood pressure despite frequent office visits documented through clinical records. Physicians' orders, progress notes, and pharmacy

## KEY POINTS

- Study at Veterans Affairs clinics in Virginia shows 40% of patients being treated for hypertension are not achieving acceptable control.
- Physician visits, medications, and monitoring don't do the job.
- Authors say physicians are not treating hypertension aggressively enough.

records show patients were compliant in taking prescribed medications.

“Doctors have gotten sloppy in treating a serious disease that is not as sexy as some others,” says the study’s lead author, **Mark Moskowitz**, MD, professor of medicine and public health at Boston University School of Medicine. “It’s lost its sexiness. Now we focus on cholesterol or we talk about diabetes and other conditions that need to be treated aggressively. This paper is an awakening call.”

Hypertension affects 50 million Americans, and about one-third of the victims don’t know they have the disease. It is the direct cause of about 40,000 deaths a year and contributes to 190,000 more deaths, according to the American Heart Association (AHA).

What’s more, the AHA says 52% of those diagnosed with hypertension are not on any drug therapy, 27% are on inadequate therapy, and only 21% are being adequately treated.

**Nancy Houston-Miller**, RN, associate director of the Stanford Cardiac Rehabilitation Program in Palo Alto, CA, and a frequent spokeswoman for the National Heart, Lung and Blood Institute in Bethesda, MD, echoes the sentiment. “We have to do a better job. People have told me it’s the physicians I need to talk to. It’s an issue of physician compliance.”

### *Change medications*

The key? If the patient’s current medications do not keep blood pressure below 140/90 mm Hg, try different drugs, a combination of medications, or increased dosage.

It’s precisely because high blood pressure was hot news nearly half a century ago that physicians are becoming lax in its treatment, Moskowitz says.

Researchers initially thought the issue was patient compliance, but Moskowitz says they

were surprised to find that despite an average of six office visits a year and the anti-hypertensive drug therapy, 40% of the 800 elderly male patients studied had blood pressure that remained above 160/90 mm Hg.

In addition, they found those who made the most frequent clinic visits had the worst control, indicating that physicians did not take advantage of ample opportunities to improve control by changing medications.

Researchers said patient compliance is certainly an issue, but the VA study was particularly significant because patients had virtually unlimited access to medical care and to drug therapies.

“It’s a simple solution,” Moskowitz says. “If doctors change blood pressure medication when it’s high, their patients get much better control and better outcomes.”

### *Moving goalposts*

Moskowitz and his colleagues admit it’s hard to keep on top of the latest thinking about hypertension management.

One reason, Houston-Miller acknowledges, is the goal posts keep moving. “Ten years ago, a blood pressure of 160/90 was considered good. The bottom line is that there’s an increased risk of heart disease and stroke even at 140/90. Thirty percent of MIs develop at 140/90. Some nephrologists say 120/70 is ideal,” she explains.

In February, the World Health Organization/International Society of Hypertension lowered its target goals for hypertension in overweight, sedentary, hypercholesterolemic patients to 130/85 mm Hg.

Houston-Miller also says hypertension is a difficult disease to control and compliance may be more difficult to obtain on the part of both patients and physicians because of the side effects associated with many medications.

“There are more than 100 anti-hypertensive drugs that can be used very effectively, some in combination with others and with ACE inhibitors and diuretics,” Houston-Miller says.

She also said doctors frequently do not question patients thoroughly enough about their problems “because they don’t have the time in a visit that lasts only seven to 10 minutes and they have to deal with acute problems first,” even though blood pressure problems are the most common reason for all outpatient visits.

“We need to change the message to doctors and the public,” says Houston-Miller. “The No. 1

How to be more aggressive in treating hypertension:

- Check blood pressure at each visit.
- Fully evaluate the patient at each visit.
- Re-assess medications if blood pressure is over 140/90 mm Hg.
- Encourage home blood pressure monitoring.
- Counsel/educate about lifestyle changes when appropriate, including weight loss, diet changes, and salt restriction.

cause of death in the United States is heart failure, caused in a large part because of lack of control of blood pressure.”

The problem may be doctors don't prescribe enough antihypertensives because “they know a lot of patients won't take them,” says **Lee Green**, MD, MPh, a family practitioner in Ann Arbor, MI, and professor of family medicine and assistant chair for research programs at the University of Michigan, also in Ann Arbor.

Green says the kind of study conducted by Moskowitz is based on scientific evidence, but that's different from “face-to-face encounters with patients.”

“Let's say Joe comes into the office, and he's got hypertension, but he doesn't have any symptoms. He feels fine,” Green says. “Now, as the doctor, I tell Joe this is a life-threatening illness that he needs to take these medicines. He'll say, ‘Yeah, right, Doc,’ and I'll write him a prescription. I know and he knows that he'll never get it filled.”

Green says patients do not want to “adopt a sick role, take medicines, and change their concept of themselves as healthy.”

“We have to sell them on taking the drugs,” Green says. “Now it's easy to sell a patient with a broken ankle with the idea he needs a cast. But for a patient with hypertension who has no symptoms, who tells you everybody in his family lived to the age of 90, he's not likely to be very receptive to the idea he needs to take pills to avoid a heart attack, stroke, or congestive heart failure.”

Some practitioners argue with Moskowitz, contending compliance is more difficult to monitor than by simply accessing pharmacy records.

“If prescriptions are being filled and they aren't responding, I would wonder if they really are taking their medications,” says **Stephen**

**Spann**, MD, chairman of the Department of Family and Community Medicine at Baylor University Medical School in Houston.

Spann suggests that looking for markers in urine or taking actual pill counts are better ways to determine if patients are complying.

Then, he says, “Maybe we can look at whether they should be on additional medications or on higher doses.”

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## Home care lowers ED visits for asthma

### *Pediatric program boosts outcomes*

**A**dministrators at a New Jersey home care agency found their new asthma disease management program for children made winners out of everyone involved.

Young patients feel better; parents learn how to keep their children healthy; the hospital saves emergency department resources better spent elsewhere; and home care staff can see real, positive improvements. And because staff were convincing about the cost-savings potential, insurers agreed to pay for the services participants would receive at home in order to control their disease.

Valley Home Care in Paramus, NJ, developed its program because childhood asthma is a common problem in the hospital-affiliated agency's northern New Jersey service area.

“Asthma is one of the biggest reasons for missed

### **KEY POINTS**

- Making a pediatric home care program work means winning support from families, their physicians, payers, and, sometimes, other sponsors.
- Collecting patient data about asthma costs can help win payer support.
- Home care assessment provides a more complete picture of the patient's condition than if a physician relies on the family's reports.

school days and absenteeism,” says **Rose Marie Ranuro**, RNC, MSN, PNP, director of maternal and child health for Valley Home Care, which is affiliated with Valley Hospital in Ridgewood, NJ. The agency serves two counties in northern New Jersey.

“We’re in a large metropolitan area here with lots of cars and buildings, so asthma is a very hot topic,” Ranuro adds.

The agency tackled the problem by devising a program for a home care team to educate and support families of asthmatics. The program has worked so well that after its first year, the children involved have had 66% fewer admissions to the emergency room.

Family education was crucial to the program’s success. But it also had to be done within two or three visits to meet reimbursement requirements, says **Marianne E. Vafiadou**, RN, Valley Home Care pediatric asthma nurse.

Ranuro and Vafiadou offer this advice on how to start an asthma program:

### **1. Develop a plan and form a team.**

First, Valley Home Care formed an asthma team that includes Vafiadou, a social worker, and a nutritionist. Other nurses are trained in asthma care and are given an asthma nursing skills competency checklist at orientation, after three months, and annually.

The next step is to conduct surveys, collect data on asthma cases, and include this information in the plan, Ranuro says.

Home care agencies must prove to payers their intervention will result in decreased hospitalizations and visits to the emergency room and physician. So an agency should collect baseline data on asthma cases and continue to collect data as the home care team visits patients.

The plan also calls for finding alternative sources of funding. Valley Home Care applied for grants with the local United Way and the hospital’s foundation and is awaiting approval.

### **2. Market program to providers, community.**

Valley Hospital sometimes refers asthmatic children to home care when it looks as though they’re becoming sick frequently. But the agency needed to bring more patients into their program. Staff went into the community to let local physicians and patients know that their help was available.

“We do many talks in the community about asthma, its prevention, and teaching,” Ranuro says. “Sometimes we have family members say, ‘I’d love for you to come over, do one-on-one teaching, and evaluate my home environment.’”

The asthma team also established a monthly

support group for asthma. This educates families of asthmatic children and fosters greater community awareness of the disease. The support group has speakers, including specialists. Through these outreach programs, the team established good relationships with family practitioners, pulmonologists, and allergists.

If parents of an asthmatic child call the agency asking for services, the agency will contact the family’s physician. “We’ll say, ‘We met so and so, and the family is asking for case management, would you be willing for us to make a home care evaluation and get back to you with a report?’” Ranuro explains.

### **3. Convince payers it pays.**

As the program matures, it will collect more data that can be used to prove to insurance companies that home care visits will save them money in the long term, Ranuro says.

The program is controlling costs as well as disease. Before the program was available, 20 patients incurred \$50,408 in hospital bills related to asthma episodes. Another 12 patients later added \$21,119. The cost was only \$11,748 to control the first 20 patients through the program, and the costs of the newcomers are expected to drop as well.

But for now the agency has been contacting payers on a case-by-case basis: Once the agency has obtained a physician’s order to treat the asthmatic child, a nurse will contact the insurance company and explain the situation, Ranuro says. “We say, ‘Johnny Jones has been diagnosed with asthma; you may not be aware that we have an asthma program, and this is what we plan to do.’”

### ***Savings must be quantifiable***

The payer typically will approve one evaluation visit, even if they are unconvinced case management is necessary, Ranuro says.

One obstacle is that many larger payers have their own case managers who may or may not be skilled nurses. If a payer balks at paying for three visits and telephone case management for one year, then Valley Home Care will provide the service anyway, Ranuro says.

Besides the altruistic intentions, the program has to be uniform in how patients are treated in order for the agency to collect the most useful outcomes data, Ranuro explains.

“With the data, we can say we saved the system X amount of dollars and conducted X number of visits in one year,” she says.

Also, the asthma team might be able to convince

a payer to pick up some home care visits when it appears a child is becoming very sick, Ranuro says. "We might say to the insurance company, 'It looks like Johnny Jones is getting sick; would you like to authorize a visit because the doctor might hospitalize him if he doesn't seem to be getting better?'"

#### 4. Set up visit schedule.

Valley Home Care has created a care map that lists goals for three visits for pediatric asthma patients, including extensive education during each visit.

The asthma team uses three visits as a goal but will add more visits when necessary. "We should be able to get everything done in three visits and sometimes even two visits," Vafiadou says. "It depends on the severity of the child's asthma and the family's cognitive ability."

The first visit lasts two hours and includes a thorough evaluation of the patient, family, and home environment. The nurse also assesses which other disciplines may be needed.

The nurse assesses these types of conditions:

- Do the parents smoke?
- How many pets are in the house?
- Is the home cluttered or dusty?
- Are there problems with rodents or cockroaches?
- Are the closets messy?
- Do the parents have any emotional support?
- Can they afford medications and asthma equipment?
- What type of pillows does the child sleep on?
- Are the medications working?
- Is there unusual stress in the child's life?

These are the types of questions that a nurse can answer much more easily after visiting a family than if a physician relied on the family's self-reporting.

Vafiadou had been involved in one case, for example, in which a parent was not telling the family physician how many asthma episodes the child was having between visits. It took a home care visit to get to the bottom of the problem.

The nurse writes a report within 24 hours after the visit, gives the physician a copy of the evaluation, and gives a written and verbal report to the insurance company.

The second and third visits build on the first visit's instructions and may include a visit by the social worker or nutritionist.

The follow-up visits also give the nurse an opportunity to see if the nurse's suggestions have worked for the family and if there are any

improvements in the home environment. Nurses may even visit the child's other environments during follow-up visits. For instance, she might visit the homes of grandparents or baby sitters.

#### 5. Follow up with phone calls.

Vafiadou says phone calls are important in helping the family control the child's asthma. She might make as many as 30 telephone calls to the family over the course of a year. (Each call lasts about 15 minutes.)

Typically, the asthma nurse will call the family at least once every two weeks, Ranuro says. When nurses call, they follow a telephone visit protocol the team developed. (See **asthma telephone visit sheet, inserted in this issue.**)

The telephone contact helps to reinforce the team's message that the family should call the nurse or home care agency whenever they notice signs that could lead to an asthma episode, Ranuro says.

"We like to let them know that before you get to the point of an ER visit, you should be in touch with us," she says. "They are good about calling before it's an emergency." ■

## Low risk attached to second pneumococcal vaccination

*Study shows side effects are minor and temporary*

It might bring some discomfort, but the elderly and others at risk should get a second vaccination for pneumococcal infections five years after the first.

### KEY POINTS

- Seattle study shows side effects of second pneumococcal vaccination are minor.
- Rate of soreness and skin irritation is higher for second vaccinations.
- Experts say a sore arm is a low price to pay for a life-saving vaccination.
- CDC says all patients ages 65 or over or those at risk because of a variety of conditions should be vaccinated and revaccinated five years later.
- Pneumococcal vaccine is covered by Medicare.

Side effects from revaccinations are relatively mild and short-lived, with participants mainly reporting sore arms and redness at the injection site, according to a study from the Center for Health Studies/Group Health Cooperative of Puget Sound in Seattle.

While those side effects may cause some temporary discomfort, the Centers for Disease Control and Prevention in Atlanta says the lives saved by pneumococcal vaccine are well worth the nuisance, especially in view of the outbreak of drug-resistant pneumococcal disease in adults in Oklahoma three years ago.

Yet the numbers of primary and revaccinations remain low, about 45% of all people over 65 and those who display a variety of risks because they have a chronic disease or a compromised immune system.

“Probably physicians haven’t gotten the word,” says the study’s lead author, **Lisa Jackson**, MD, MPH, assistant investigator at the Group Health Cooperative. “There were a lot of anecdotal reports and there was a myth circulating way back when about side effects from revaccinations.”

### ***Antibody levels decline over time***

Jackson says her study published in the *Journal of the American Medical Association* should reassure health care providers the revaccination is safe and even essential because antibody levels decline over time.

“No serious or unexpected adverse events associated with vaccination were identified,” the study says, although 3% of those who received the pneumococcal polysaccharide vaccine for the first time reported a reaction and 11% of those revaccinated reported a reaction.

“Given the burden of the disease, revaccination is warranted,” says **Scott Dowell**, MD, a medical epidemiologist in the CDC’s respiratory disease branch.

However, Dowell says he is concerned about the size of the reactions as large as 10.2 cm or 4 inches in diameter in some patients. He urged doctors to warn their patients of the possibility of what he considers severe swelling.

“I think of a red spot that big on the arm of a thin elderly woman is significant,” he says.

Jackson’s study included 1,420 patients between the ages of 65 and 74 or between 50 and 64 with at least one chronic medical condition for which pneumococcal vaccination is recommended (see box, p. 46).

## **Pneumococcal Disease Fact Book**

- Pneumococcal disease causes 40,000 deaths per year in the United States.

It causes:

- 3,000 cases of meningitis;
- 50,000 cases of bacteremia;
- 500,000 cases of pneumonia.
- The mortality rate is 30% to 40% among elderly patients with bacteremia.
- *S. pneumoniae* is the leading cause of nursing home-acquired bacterial pneumonia.
- From 1980 to 1992, pneumonia was responsible for 85% of fatal respiratory infections among people age 65 or older.
- Fifty percent of all pneumococcal disease deaths could be prevented through the use of the vaccine.
- Only about 45% of people ages 65 and over have been vaccinated.

*Source:* Centers for Disease Control and Prevention, Atlanta.

Some participants have not been vaccinated and some were given a second vaccination at least five years after the first if they reported no adverse reaction from the first inoculation. Researchers compared postvaccination effects of those receiving a primary vaccination to those with a second dose.

Participants identified through the health center’s computerized vaccination database were injected with 23-valent pneumococcal vaccine intramuscularly in the left deltoid during an enrollment visit.

They were given a study diary and a supply of single-use thermometers with instructions to record their oral temperatures the evening of the vaccination and every morning and evening for the following six days. They were asked to report systemic symptoms and local reactions for 13 days after vaccination and were given a measuring tool for any redness or swelling that might occur.

Three participants sought medical care for side effects, one for swelling and redness at the injection site and two who developed minor rashes.

Jackson’s team reports 84 patients experienced a “sizeable” adverse reaction of swelling or redness at least 10.2 cm (4 inches).

Twelve percent reported severe limitation of arm movement and 18% experienced severe arm

Patients who should be vaccinated/revaccinated for pneumococcal infections:

- **All patients age 65 and over.**
- **Immunocompetent patients ages 2 to 64 with the following chronic conditions:**
  - diabetes;
  - cardiac disease;
  - pulmonary disease (but not asthma);
  - cirrhosis or chronic liver disease;
  - alcoholism;
  - cerebrospinal leaks.
- **Immunocompromised patients ages 2 to 64 with:**
  - asplenia;
  - leukemia;
  - lymphoma;
  - hodgkin's disease;
  - multiple myeloma;
  - generalized malignancy;
  - chronic renal failure;
  - nephrotic syndrome;
  - immunosuppressive chemotherapy;
  - organ or bone marrow transplant;
  - HIV.
- **Patients ages 2 to 64 with sickle cell disease or who have had a splenectomy.**
- **Patients ages 2 to 64 living in special environments in which there is a higher risk for severe pneumococcal disease:**
  - Residents of nursing homes and long-term care facilities.
  - Alaska natives.
  - Certain Native American populations.

soreness within two days of vaccination.

Jackson says she recognizes some patients might be "somewhat reluctant" to be revaccinated, but the risk is so small that health care practitioners should be reassured, even if a patient is accidentally revaccinated earlier than five years after the primary vaccination.

### ***Vaccine effectiveness will improve***

Recent studies show pneumococcal vaccine is about 56% effective, Dowell says, but that's an acceptable success rate — for now.

Dowell expects the effectiveness of the pneumococcal vaccine will be vastly improved in the next few years as scientists perfect the bonding of protein with the polysaccharide in the vaccine.

It is almost impossible to determine how effective pneumococcal vaccine is against pneumonia, says Jackson, because there are so many potential causes for pneumonia. However, bloodstream infections are relatively easy to identify and the good results achieved with the vaccine "can be extrapolated to the probable causes of pneumonia as well."

*Lisa Jackson can be reached at (206) 790-0734; Scott Dowell can be reached at (404) 639-4646. ■*

## **Watch out for diabetes in hospitalized patients**

*First-ever advice is offered to all comers*

**D**iabetic patients are hospitalized more often, for longer periods of time and at greater cost than patients without the disease. Sometimes the fact that they have the disease is overlooked in the process. This often leads to the detriment of patients and providers alike.

"It's a reality. When a diabetic patient enters the hospital for any reason, the focus on diabetes is frequently lost in the inpatient setting," says **Robert Stone**, MBA, executive vice-president of the Diabetes Treatment Centers of America (DTCA) in Nashville, TN.

Stone's organization has devised guidelines to help improve outcomes for the 3 million patients with diabetes who are admitted to hospitals each year.

DTCA says diabetic patients account for:

- **15% of all hospital admissions;**
- **20% of all hospital days;**
- **20% of all hospital costs.**

Diabetics spend two to three days longer in the hospital than nondiabetic patients with similar complaints, and they consume 30% to 40% more resources than patients without diabetes, Stone says.

"In 95% of the cases, the admission has nothing to do with glycemic control. People with diabetes go to the hospital for the same reason everybody else does."

DTCA, a provider of diabetes education and management services to 69 customer hospitals in 29 states and a contractor with HMOs covering 100,000 diabetic lives, provides something most hospitals don't have: a comprehensive plan for

inpatient diabetic management.

"It's a huge need," Stone says. "It's never been done, but we knew when we started this about a year ago that we could help hospital and medical staffs identify issues that contribute to the extra stays and adverse outcomes."

So DTCA assembled a panel of primary care physicians, specialists, and other health care professionals representing private practice, health plans, and institutions to develop a set of guidelines for inpatient care.

The initial recommendations were reviewed by DTCA's scientific advisory council and a panel of faculty specialists at Vanderbilt University in Nashville.

In November 1998, DTCA convened a consensus conference of nearly 100 physicians and other health care professionals in Key Largo, FL, to modify and endorse the plans aimed at improving diabetic inpatient outcomes.

"Continued inattention to the unique needs of the inpatient with diabetes is both costly and professionally unacceptable," the panel wrote in a report.

### ***Many factors go unrecognized***

The panel noted that metabolic control of diabetes requires detailed attention to the patient's diet, activity, and medications in the outpatient and inpatient settings, but "too often physician orders or even a hospital's standing orders fail to take into account many aspects of the patients' pre-admission status and self-management regimen."

Whatever the condition that caused the admission, Stone points out, "Diabetes is an underlying concern. Our goal is to reduce costs by improving the health status of the diabetic population."

Hospital staff should be able to discharge patients in better glycemic control, he explains, and avoid re-admission for infections or other complications.

The panel began with these five goal recommendations:

- **Identify all patients with diabetes.**
- **Identify and address any special needs of patients with diabetes.**
- **Improve outcomes by optimizing glycemic/metabolic control.**
- **Raise the level of awareness of the health care team with respect to the unique challenges of diabetes and current standards of care.**
- **Strive for a length of stay equal to that of a patient without diabetes.**

The guidelines include a detailed baseline assessment to be performed upon admission by the physician, nurse, or other health care provider. They detail protocol for identification, assessment, and laboratory procedures and list the health care professional who should be responsible for each step along the way and the frequency with which each step should be carried out.

The panel recommends screening consistent with the American Diabetes Association guidelines for all patients over the age of 18 to detect undiagnosed diabetes.

In the initial assessment for those with confirmed diagnoses of diabetes, the guidelines recommend a physician-performed detailed history, a documentation of symptoms of diabetes-related comorbidities, and a physical exam with emphasis on diabetes-associated findings.

**Disease State Management** (ISSN# 1087-030X) is published monthly by American Health Consultants<sup>®</sup>, 3525 Piedmont Road, Building Six, Piedmont Center, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid at Atlanta, GA 30304. POSTMASTER: Send address changes to **Disease State Management**, P.O. Box 740059, Atlanta, GA 30374.

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### **Editorial Questions**

For questions or comments, call **Valerie Loner** at (404) 262-5536.

These laboratory tests are also recommended:

- **serum creatinine;**
- **EKG;**
- **urinalysis;**
- **blood or serum glucose;**
- **HbA1c;**
- **lipid profile.**

Health care professionals are also cautioned to look for conditions that may require special considerations in diabetic patients, including the presence of an insulin pump, pregnancy, coronary and cerebral vascular disease, infectious disease, inpatient surgery, and diabetic ketoacidosis.

### ***Pre-admission nutritional assessment needed***

The physician and nutritionist are also advised to perform a nutritional assessment for each diabetic patient upon admission to devise a specific nutritional plan for the patient, to reassess the nutrition plan frequently, and to devise a discharge nutrition plan with the appropriate instructions and follow-up.

While the patient is in the hospital, the guidelines require optimal metabolic control, with four times daily glucose monitoring, daily review, and with a goal for fasting blood sugars at 80 to 120 mg/dl and bedtime sugars at 100-140. Blood sugars should not be allowed to exceed 200 without intervention, the panel recommended.

The guidelines also call for detailed education, discharge planning, and follow-up by the entire health care team including demonstrations of the use of blood glucose monitors, self-administration of insulin, if needed, as well as teaching patients how to check their feet.

"This population is undersupported from an educational point of view," Stone says. "Our perspective is that this is an adult learning issue that needs reinforcement, support, and encouragement."

DTCA has printed 15,000 copies of the guidelines and plans to distribute them to hospitals, physicians, state licensing boards, payer networks, and anyone else who requests them.

"They are a work in progress, and we anticipate we will issue updated versions as we get additional input and feedback," Stone says.

*Copies of the DTCA Inpatient Management Guidelines for People With Diabetes can be ordered from: Diabetes Treatment Centers of America 1 Burton Hills Blvd., Suite 300, Nashville, TN 37215; Attention: Teresa Mabry. Robert Stone can be reached at (615) 665-7760. ■*

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## **Vivra opens asthma, allergy clinics**

**V**ivra, a specialty physician network and disease management company, has launched its asthma and allergy physician practices into a new company, Vivra Asthma and Allergy.

The move was prompted by the burgeoning incidence of asthma in the United States, says **Joe Mello, MBA**, president of the new company based in Plantation, FL.

"Asthma has been so underidentified," says Mello, "and we have the potential to create great outcomes for our patients."

Vivra Asthma and Allergy, with a focus on chronic respiratory disease and an emphasis on respiratory clinical research, has 67 physicians in 23 practices in 13 states, most of them in the East and the Midwest. "We'll see that increase greatly in 1999," Mello says.

He says Vivra will recruit physicians and flagship practices. ■