

# MD DISEASE MANAGEMENT ADVISOR™

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*Management of high-needs patients is fertile ground for improvement*

## MVP targets chronically ill Medicaid recipients

Convinced that higher quality and greater cost-efficiency are possible among Medicaid beneficiaries with chronic medical problems, the Princeton, NJ-based Center for Health Care Strategies (CHCS) established a series of 10 pilot programs nationwide in 2005 to test new ways to care for this complex group of patients. The programs are well underway and at least some of the teams involved believe they have already learned valuable lessons about new ways to care for this population that can be duplicated elsewhere.

Launched with funding from Kaiser Permanente Community Benefit and additional support from the Robert Wood Johnson Foundation, the Medicaid Value Program (MVP) pilots are tackling a complex challenge.

More than half of the dollars spent on medical care in the United States go toward the treatment of chronic disease, but this burden is even greater among Medicaid recipients.

Nearly two-thirds of adults on Medicaid have a chronic or disabling condition, and the majority of these individuals have at least one additional chronic medical problem, making their care even more complex and expensive.

Data show that with each additional chronic condition, expenditures rise sharply.

For example, spending for adults with three or four chronic conditions is nearly three times higher than for adults with one condition (see **Figure 1** on p. 3).

Yet despite this impressive allocation of resources, there is ample evidence that Medicaid recipients with multiple chronic conditions fail to receive the care they need.<sup>1</sup>

### **CHCS identifies key considerations**

As part of the MVP, CHCS researched which strategies have been successfully employed within this high-needs population, and drafted a report consisting of key considerations and recommendations for the 10 teams selected for participation in the program.<sup>1</sup>

## Inside This Month...

- **It's time to shift the focus to adherence in MI patients on beta blockers.** Although healthcare organizations have made great strides in boosting prescribing rates for beta blockers in patients who have suffered a myocardial infarction, (MI) data show that patients are not reaping the full value from these life-saving drugs. The problem is poor medication compliance. Experts maintain that providers and healthcare organizations should now turn their attention to this pressing problem..... 125
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- **Risk-scoring system offers evidence-based guidance on bariatric surgery.** Two-thirds of American adults are obese, and conservative approaches to the problem are not working in many of these cases. However, it is not entirely clear when providers should recommend bariatric surgery. To help providers better guide their patients, investigators at Duke University in Durham, NC, have unveiled a simple risk-scoring system that stratifies patients into low-, medium-, and high-risk categories. The approach needs further validation, but investigators believe they have presented enough data to have a positive effect on informed consent ..... 130

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Among other things, CHCS concluded that any successful, sustainable approach to this population must include

- a mechanism for identifying the target population
- guidelines and measurements
- integration of information technology
- care management
- a role for the consumer
- financing and incentives

Within this framework, the 10 participating teams developed distinct approaches to managing this population, and some of these efforts have zeroed in on a particular subgroup. For example, Comprehensive NeuroScience, Inc., a clinical research company in White Plains, NY, is working with the Department of Mental Health and the Division of Medical Services in Missouri on a care solution for individuals with schizophrenia and comorbidities. That effort involves devising a way to communicate consolidated patient utilization data to case managers/providers to better arm them with information at the point of care.

Alternatively, Johns Hopkins Healthcare, LLC, a Baltimore-based health plan, has designed an integrated care management approach geared toward chronically ill recipients who also suffer from substance abuse or a mental health disorder.

Although there is considerable variation in the interventions under study, **Allison Hamblin, MSPH**, a program officer at CHCS, emphasizes that all of the teams have devised approaches that target improvements at either the patient or provider level, or they are attempting to improve care through system changes.

### ***Some teams target patients***

The patient-level strategies being tested focus on improving self-management skills and education, Hamblin says. For example, the District of Columbia Department of Health is working with several partners to develop a Medical House Call Program for elderly individuals—especially those with heart failure and comorbidities. The approach involves using a multidis-

ciplinary team to deliver all care, psychosocial services, and patient education in the home environment.

Another patient-level approach is being employed by McKesson Health Solutions, a DM vendor in Broomfield, CO. McKesson developed a group-based education intervention for high-risk diabetics and patients with congestive heart failure and comorbid diabetes.

McKesson believes that patients will gain valuable insight from each other, and that they will form supportive, long-term relationships. “We know that what happens in a group atmosphere is that people feed off one another, and they realize they are not alone in [having to manage] their particular disease,” says **Richard Owens, PMP**, director of strategic products at McKesson Health Solutions. “People make contact with each other within the group, and many times, even after the group sessions are completed, they still have these long-lasting contacts.”

The intervention, which debuted in select communities in Oregon and New Hampshire, consists of four 90-minute sessions that are facilitated by a local diabetes educator and a clinician-based registered nurse (RN), or what McKesson refers to as a CBRN. Both facilitators receive training in motivational interviewing and spend quite a bit of time during the four sessions focusing on building motivation to change, establishing goals for improvement, and identifying community resources that can help the participants transition to healthier lifestyles.

Although the facilitators emphasize behavioral change, they also focus on delivering standard education on self-management and attempt to clear up any misconceptions that the participants may have regarding how they can gain optimal control of their disease. Further, at the final session, the facilitators work with members to establish action plans for future change and maintenance of healthy practices. Part of the plan involves establishing a “buddy system” so that members have a ready source of support when they need it.

### ***Early data look promising***

Self-efficacy surveys conducted before and after the group sessions thus far suggest that the approach is

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highly successful at boosting self-efficacy among participants. "We have seen almost a 20% increase in their confidence and ability to now self-manage their disease," says Owens, explaining that these early figures are based on comparisons with a matched control group in surveys conducted three months after the final group session. McKesson plans to conduct additional surveys at six, 12, and 18 months into the program, and investigators will also look at utilization data in the intervention and control groups.

Although early results suggest the intervention itself appears effective, there is clearly room for improvement on the engagement end of the approach. Owens notes that although members who are identified for inclusion in the intervention are often willing and eager to participate, actually getting them to the sessions has proven challenging despite the fact that McKesson provides transportation, childcare, and financial incentives for each session that members attend.

Once participants come to the first session, they see what is available and they tend to come to the others as well, which is an encouraging sign, Owens says. Consequently, program developers are investigating what they can do on the recruitment end to get people to that first session. Further, McKesson is planning to roll out the approach in other states as well.

### ***Navigator bridges gaps in care***

Several of the pilot teams are investigating system-level changes that hold promise for boosting care for

this complex population and reducing unnecessary utilization. It's an area that experts at CHCS believe is fertile ground for improvement.

"We think it is important to test different models of care-team design based on the belief that this population will need an interdisciplinary care team to manage not only their medical needs, but also their social service needs," says Hamblin. She notes that it is difficult to get people to focus on managing their diseases if their electricity has been turned off or there is no food in the refrigerator.

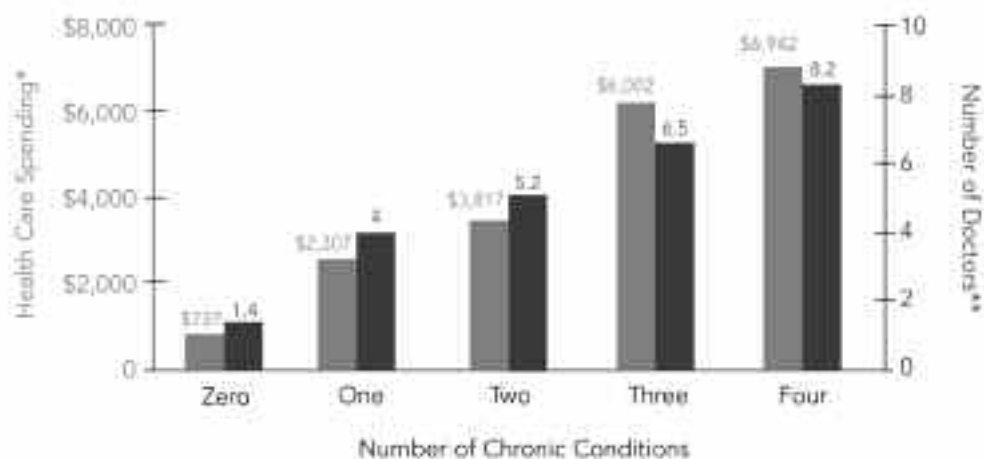
Memorial Health System in Miramar, FL, is tackling this issue by adding a social worker/health navigator to the healthcare team charged with managing chronically ill patients. "In addition to our RN-disease manager who does her regular program, the health navigator goes out and makes home visits and does an assessment from a psychosocial aspect as opposed to their disease needs," says Amy Pont, RN, BSN, director of health and clinical services at Memorial Integrated Healthcare. "She does a depression screen, an assessment of the home environment, and then she develops a plan of care to determine whether the recipient needs to be referred for social services."

### ***Behavioral health is critical***

The social worker has a behavioral health background as well as access to a range of community

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**Figure 1: Average annual per capita healthcare spending and number of doctors for chronic conditions in medicaid enrollees**



Sources: C. Williams, "Medicaid Disease Management: Promises and Pitfalls," Kaiser Family Foundation, 2004. Data Source: Medical Expenditure Panel Survey, 1998. Data for all Medicaid enrollees.

\*Mean cost per capita \*\*Average number of unique physicians

Source: Bella, M., Cobb, E., Rothstein, J. Environmental Scan: Health Supports for Consumers with Chronic Conditions. Center for Health Care Strategies, November 2005. Reprinted with permission.

## MVP

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resources so that she can refer patients for everything from job placement services or rent assistance to mental health services.

These are responsibilities that the RN managers felt ill-equipped to handle in addition to their clinical tasks. Pont says that although the pilot is still underway, the approach has been so well-received that she has already asked her supervisor to make the social worker/navigator a permanent position. "I have multiple success stories. People who were never compliant with their care before are now taking their medications and going back to work because they are feeling better," explains Pont. "She is really making a difference in their healthcare and their self-management."

Pont emphasizes that expertise in dealing with behavioral health matters is a critical skill set for the social worker. "I wanted someone who was used to working with people who have mental health needs, because it is difficult to make a home visit on someone who may be mentally ill or has other behavioral issues," she says. "Studies have shown if people are depressed, and you don't deal with that, they are not able to self-manage, so that is why we thought that was very important."

For the pilot, investigators are looking at improvements in quality of life, mental health, patient satisfaction, and utilization data. However, Pont is already looking ahead to possibly expanding the use of the health navigator to an uninsured DM population that her organization also manages.

### **Plan focuses on care coordination**

Under the Washington Medicaid Integration Partnership, the Washington State Department of Social and Health Services is working with Molina Healthcare of Washington on an intervention that attempts to integrate primary care, mental health, substance abuse, long-term care, and DM for 2,200 Supplemental Security Income recipients.

Developers of this system-level approach believe that improved access to mental health and chemical dependency treatment will lower medical costs and reduce the risk of death. Consequently, they are attempting to boost such access by enrolling participants in a managed care program that places a heavy focus on care coordination, says Alice Lind, RN, MPH, of the Office of Care Coordination, Health and Recovery Services Administration in Olympia, WA. "The very first interaction that the client has with a care coordinator is a comprehensive assessment that looks at many different kinds of needs includ-

ing behavioral health issues," she says.

The care coordinator, who is typically an RN, then takes steps to connect the client with the providers and services that he or she needs, and then follows up to make sure that the client made the appropriate connections.

### **Provider community offers support**

It is no surprise that clients appreciate the assistance of the care coordinators, but providers also support the approach. "Anecdotal feedback has been very positive," says Lind, explaining that some providers have indicated that the care coordinators have made their jobs much easier.

However, although the approach appears streamlined to the provider and client, it has been labor intensive on the administrative end. "Keeping all the balls in the air to have all these different [services] integrated is pretty complex, so we are waiting until a complete evaluation is done before we make any decisions on whether to expand to new counties or new conditions," adds Lind.

That evaluation will look particularly at whether ER and hospital admissions have been reduced by improvements in preventive care. If indications are positive, Lind is confident that a new information system, now in development, will make the program easier to implement on the administrative end.

### **Best practices to be disseminated**

In addition to the data collection that each team involved with the MVP does, CHCS has hired Princeton, NJ-based Mathematica Policy Research to conduct both a qualitative and quantitative analysis of the 10 interventions to determine which approaches truly represent successful strategies, explains Hamblin.

"Mathematica is working with us to help identify the most critical and value-added components of what these teams are doing," she says.

CHCS will report significant utilization changes and clinical outcomes, she says.

"Our primary goal is to identify successful strategies and to disseminate those as best practices to improve care of this complex population," adds Hamblin. ♦

### **Reference**

<sup>1</sup>Bella, M., Cobb, E., Rothstein, J. *Environmental Scan: Health Supports for Consumers with Chronic Conditions*. Center for Health Care Strategies, November 2005.

*Editor's note: For more information about the MVP, visit the Web site for the Center for Health Care Strategies at [www.chcs.org](http://www.chcs.org).*

## **Nonadherence to beta blockers is a big issue with patients post-MI**

There is no question about the value of beta blockers in patients who have suffered a myocardial infarction (MI). Numerous studies document their benefits in both prolonging life and reducing adverse events. However, although great strides have been made by healthcare and accrediting organizations toward making sure that physicians prescribe beta blockers to patients following an MI, new research shows that adherence to these regimens is far from optimal.

In a multicenter analysis consisting of more than 17,000 patients who had suffered an MI, investigators found that fewer than half of the patients whose doctors had prescribed beta blockers were still taking the drugs during the first year following their discharge from the hospital.<sup>1</sup> Further, because all patients had at least some prescription drug coverage, it appears that factors beyond cost affected adherence.

Such stunning results suggest that prescriber-focused interventions are not nearly enough to ensure that patients receive the intended benefits from potentially life-saving drugs such as beta blockers. Consequently, some healthcare policymakers are shifting their focus to the development of patient-focused interventions that can potentially enhance the rate at which patients take their most critical medications as directed.

### ***Surprising data***

Judith Kramer, MD, MS, and her colleagues at Duke University Medical Center in Durham, NC, were not particularly focused on beta-blocker adherence rates when they began looking at historical data on patients who had undergone cardiovascular procedures at Duke. The organization maintains a unique, regional database that has been established so investigators can delve into factors that have a bearing on cardiovascular outcomes over the long-term.

"We started looking at medication use because we were interested in what people were doing once they got back into the community," says Kramer. He notes that up until that time, most research efforts focused on whether physicians prescribed the drugs at all. But what the researchers found was disturbingly low adherence rates.

In 2002, when Kramer presented this data to the Council of Affordable Quality Health Care (CAQHC), an organization representing several large health plans, the members of the council were clearly surprised, she says. "The commercial health plans they represented had predominantly focused on the HEDIS measure

that looks at whether a beta blocker has been prescribed within seven days of discharge from the hospital, and those rates were very high," Kramer adds.

So, the council's first reaction was that the data must be wrong. Kramer then explained the analysis, pointing out that a written prescription does not ensure that a patient will have that prescription filled or that he or she will keep filling it as directed. Upon absorbing this information, CAQHC concluded that this would be an ideal area on which to focus for quality improvement and funded Kramer's multicenter study.

### ***A complex problem***

Eleven of CAQHC's member health plans participated in the research, providing data to investigators for analysis. For patients who survived for one year following their MI, the researchers looked at prescription claims to estimate patients' regular use of beta blockers at one, three, six, nine, and 12 months following discharge. The analysis included data on 17,035 patients.

Investigators assumed that a high percentage of these patients received a prescription for beta blockers upon discharge from the hospital, because HEDIS rates on this measure for the participating facilities were all high, ranging from 93%–95%. However, the analysis suggests that more than 30% of the patients did not fill a prescription for beta blockers during the first 30 days following discharge (see **Figure 1** on p. 126).

"We know that is a problem, and then we documented for sure that if you compare the period of zero to 30 days to the period of 30–90 days, there was an absolute 15% drop in adherence," says Kramer, noting that this observation is consistent with the findings of other studies on adherence.

Essentially, people stop taking their medications when they either fail to fill their first prescription, which is the greatest risk—or within the first 30–90 days, explains Kramer. "It appears that this is something we need to jump on right away if we are going to try and change it, and I don't think there is going to be one solution that fits all patients. I think it is multifactorial when you start getting into the reasons behind this."

Another interesting finding from the analysis was data showing that younger women, aged 35–64, were particularly nonadherent. In fact, they were less likely than both men of the same age and older women to take their beta blockers as directed.

This is cause for concern, because some studies show that younger women who survive a heart attack are at increased risk of death compared to men, says Kramer. Researchers are not sure why this is the case,

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## Beta blockers

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but it underscores the importance of adherence to beta blockers in this group.

"There [are] a lot of anecdotal data or survey data to suggest that women have an unrealistic lack of concern for heart disease in comparison with other health risks," says Kramer. "These data are at least consistent with that, and I think [one] more reason to increase our focus and educational efforts with younger women who have heart attacks."

### **Communication is key**

What is also clearly needed is improved communication across healthcare providers, adds Kramer. This is because problems with adherence frequently occur during transitions from the hospital—where patients are often cared for by a hospitalist—to the home, where they typically rely on a cardiologist or primary care physician (PCP) for care. Kramer calls for the development of methods of communication that will ensure that community physicians fully understand what prescriptions patients have upon discharge, and why they are needed.

At this point, it is up to the community physician to work with the patient on adherence issues, but Kramer emphasizes that the U.S. healthcare system gives physicians few skills and little time to explore and understand the patients' problems and concerns regarding medication use.

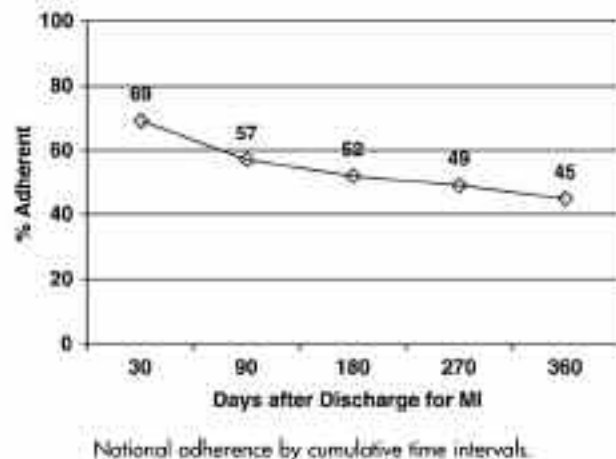
"Now that evidence-based guidelines include such a long list of critical medications, and even the copay costs of these drugs have gone up and up, we need to do better at identifying where the barriers are," she says. "Interventions need to be tailored to address individual patients or individual problems."

For example, although some patients may be nonadherent because their drug copays are too steep, other patients may not understand the value of beta blockers in prolonging life. There can also be side effects interfering with adherence or behavioral health problems (e.g., depression).

"One of the things that we have heard anecdotally is [that] some patients don't understand that it is not just this bottle that they are given when they leave the hospital that they have to take," says Kramer. "They think when they take the first 30 days worth of pills that they have done their job."

In the diminishing time that physicians have available for patient encounters, it can be difficult to fully grasp what the specific barriers are to adherence in a given situation. However Kramer suggests that allied

**Figure 1**



National adherence by cumulative time intervals.

Source: Kramer, J., Hammill, B., Anstrom K, et al. "National evaluation of adherence to B-blocker therapy for 1 year after acute myocardial infarction in patients with commercial health insurance." *American Heart Journal* 2006; 152: 454.e1-454.e8. Reprinted with permission.

personnel may be able to assist in gathering the information, or tools could be developed to gather this information from patients, possibly even while they are in the waiting room, prior to a physician encounter. "There are different ways to try and start hearing what the patients' different issues are, because if the patients are the ones who have to do this, you need to understand where they are coming from," she says.

### **Patients have to prioritize**

Although Kramer's study dealt specifically with beta blockers, she emphasizes that the problem clearly applies to other critical medications as well. For example, in the regional database at Duke, long-term adherence is poor, in general, for other medications as well as for beta blockers.

"This becomes really important because it is not just beta blockers that people need to take after a heart attack. Increasingly, it is a lipid-lowering agent, clearly aspirin, and frequently it is an [angiotensin converting enzyme] inhibitor," she says.

Many of these patients have more than just coronary disease, and they go home with a long list of medications they are expected to take. "Part of the education needs to involve helping the patient to prioritize their medications, so that they know the difference between one drug that may save their lives and one that is just elective because it might improve some of their symptoms."

Kramer acknowledges that physicians are not in the habit of providing this kind of education, but it can be critical for patients with long and complicated drug regimens.

## ***Consider the role of pharmacists***

Confident that the problem of nonadherence to life-saving drugs has been thoroughly documented, Kramer and her colleagues have now shifted their attention to finding a solution. For example, they have just initiated a randomized trial of an intervention that attempts to employ the skills and knowledge of community pharmacists to address the problem.

"With the patients' permission, we are letting their community pharmacist know what the intended regimen is, and if the patient starts to not fill a prescription, the pharmacist has a way of noticing that in the record," says Kramer, noting that the pharmacist can then speak with the patient to find out what the problem or barrier seems to be. Another component of the intervention involves calling patients after discharge to make sure they have filled their first prescriptions.

Other aspects of the intervention involve making medication boxes available to patients and taking steps to improve communication to PCPs when their patients have been discharged. However, Kramer notes that the main thrust of the approach is to see whether community pharmacists can take a more proactive role in patient care—and get paid for it.

Although the trial involving community pharmacists has just commenced, health plans also have reason to search for new and better methods of boosting adherence to beta blockers. In 2005, the National Committee for Quality Assurance adopted a new HEDIS measure that focuses on persistence of beta-blocker usage in the first six months following an MI. Further, some drug companies are developing tools that can be used to boost adherence overall, not just to the drugs they market.

Addressing the problem from several angles is exactly what is needed, according to Kramer. "When you put incentives in the right place, it helps. Health plans respond to public scrutiny of whether they are doing a good job," she says. "And the drug companies know if patients take the medications they are supposed to, that should help everyone overall." ♦

## ***Reference***

<sup>1</sup>Kramer, J., Hammill, B., Anstrom, K., et al. "National evaluation of adherence to B-blocker therapy for 1 year after acute myocardial infarction in patients with commercial health insurance." *American Heart Journal* 2006; 152: 454.e1-454.e8.

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## ***Developers believe innovative system can help them deliver better preventive care***

### **North Carolina initiative targets CVD and diabetes with telehealth intervention**

Data show that although poor and minority populations are adversely affected by chronic disease, they also face huge obstacles in accessing needed care. In an effort to resolve this dilemma, the North Carolina Health and Wellness Trust Fund Commission is financing an innovative program that developers hope will provide new answers to an entrenched problem that has been bedeviling healthcare policy-makers and clinicians for years.

The \$360,000 initiative attempts to leverage the power of a telehealth application to make risk assessment/monitoring capabilities available to as many as 40,000 residents served by the Roanoke Chowan Community Health Center (RCCHC) in Ahoskie, NC. It's one of the most disadvantaged areas of the state, with 20% of residents living well below the poverty level, and 18.5% of deaths attributed to cardiovascular disease.

The three-year project, dubbed the Patient Provider Community Telehealth Network, began in September with the dissemination of remote monitoring devices to select residents identified as being most in need of

high-intensity care. However, the center of activity has now shifted to community centers, where developers hope to reach thousands of residents who might not otherwise receive appropriate primary care. Early next year the approach will move to a middle school, where program advocates will attempt to intervene before the twin epidemics of obesity and diabetes take hold.

## ***Remote device delivers individualized care plans***

Central to the initiative is the RemoteNurse, developed by Conyers, GA-based WebVMC, a computer-based system that is equipped with an eight-inch, color touch screen and a mechanism for identifying individual patients. The chief appeal of the system is that users such as RCCHC can program it to deliver unique interactions or care plans to each patient, based on individual needs and diagnoses.

For example, with the use of peripheral attachments, the device can walk a diabetic patient through a series of tasks that can include taking a blood pressure reading, blood glucose reading, and weight. Additionally, the device can be programmed to ask simple questions about symptoms, and it can deliver individualized medication reminders or educational content.

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# Telehealth

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When the user completes the session, the device sends the information to a Web site on which a telehealth nurse, physician, or whomever the customer has designated can monitor the findings on a daily basis. During instances in which a blood pressure reading or other vital sign is outside of the range programmed as acceptable for that patient, the system will alert the appropriate clinician by whatever means that clinician has indicated he or she prefers.

## Noncompliance is a challenge

The RemoteNurse is meant to accomplish the following three things, says **Scott Sheppard**, president and CEO of WebVMC:

1. Monitor patients' condition through vital signs
2. Assess patients' condition qualitatively, including factors such as sores on their feet or back pain
3. Increase patients' understanding of their disease state, which is where the disease management comes in

In most instances, Sheppard says the key areas that need to be addressed when dealing with chronically ill patients are compliance and education. For a variety of reasons, patients tend to be noncompliant with their care plan, so the RemoteNurse attempts to reinforce that care plan by extending the reach of the healthcare professional into patients' homes or community centers.

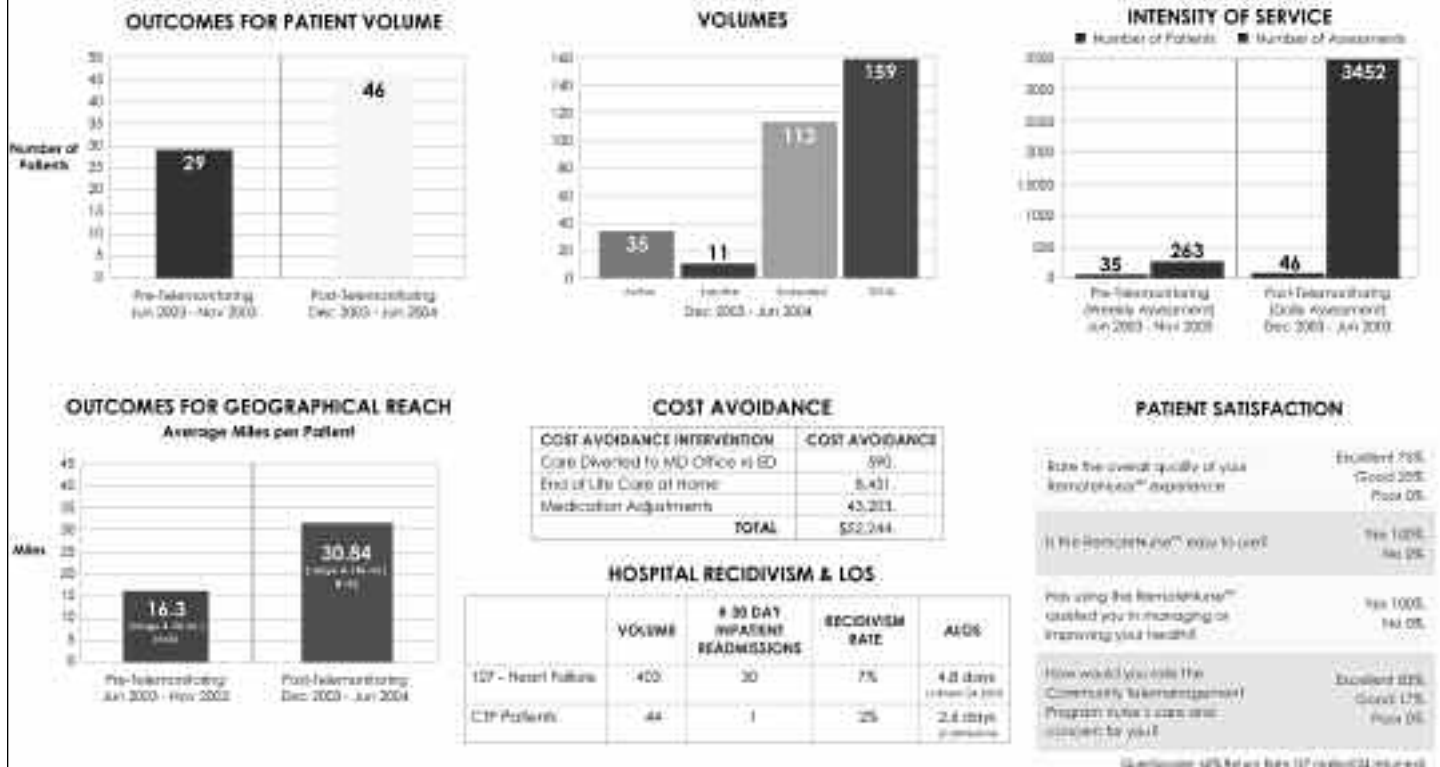
In addition to RCCHC, WebVMC has 60 customers in 17 states that already use the RemoteNurse to monitor approximately 2,500 patients per day. Further, Sheppard

Figure 1

### COMMUNITY TELEMAGEMENT PROGRAM SIX MONTH OUTCOMES FROM 1/1/2004 - 6/30/2004

Program Goals: To provide quality care to Piedmont Hospital's high risk, chronically-ill patients

1. To increase geographical reach of service
2. To increase patient volume
3. To increase intensity of services



Information shown has been compiled from Piedmont Hospital's Community Telemagement Program Presentation (2004) and may not be reproduced in whole or in part. Detailed information does not reflect or imply either healthcare agency approval through the implementation of telehealth programs. All results are estimates and do not compare with conventional healthcare practices. If the contents of the study are to be discussed at www.webvmc.com. © Copyright 2004 WebVMC, Inc. All Rights Reserved.

Source: WebVMC, Conyers, GA. Reprinted with permission.

notes that client studies have shown that even without any kind of direct reimbursement for telehealth services or appliances, the approach is cost-effective (see **Figure 1** on p. 128).

The versatility of the RemoteNurse system appealed to administrators at RCCHC when they were trying to decide which telehealth appliance or system to use in this initiative.

"For most of the technology that is out there, you are purchasing the hardware, and yes, there is software internally, but you cannot manipulate that software easily," says **Bonnie Britton, RN**, chief operating officer and director of nursing at RCCHC. "With this device, we are stretching it to its limit . . . so the potential of what you can do just opens up opportunities."

As it stands now, there are three components to the initiative. The first phase of the program began in early September with the placement of the RemoteNurse device in the homes of higher-risk patients with CVD and diabetes who were selected for inclusion in the program by RCCHC physicians. Data from these individuals can now be monitored on a daily basis through RemoteNurse interactions that patients complete at home.

### ***Risk-screening identifies patients for monitoring***

The second phase of the initiative, which is now underway, involves the installation of a RemoteNurse at three centers of aging in the RCCHC service area. In these applications, the RemoteNurse is set up similar to a kiosk so that it can be used by hundreds of patients who are identified by the device through the use of magnetic swipe cards.

For this phase, RCCHC programmed the RemoteNurse with a risk-screening tool that includes standard vital-sign checks and a series of health questions. With this information, the population can be risk-stratified so that members who need follow-up monitoring can be identified and encouraged to come back for additional sessions with the RemoteNurse when they visit the community center.

"In two weeks, we screened 157 people, and we probably reached 60% of the total population at these centers," says Britton, noting that there is a telehealth volunteer at each center to assist the patients when needed. "The oldest patient we screened was 98, but most were over the age of 70 and they found [the device] very easy to use."

Project developers are also planning to install a RemoteNurse at a Latino ministry in the area. A primary goal of the initiative is to reduce disparities, and the device can be programmed in different languages to

facilitate effective monitoring of individuals who may not be comfortable with English.

### ***Program targets youngsters for prevention***

In the third phase of the initiative, set to begin early next year, RCCHC plans to take the RemoteNurse into a middle school to provide health screening and monitoring to 600 children. The main objective of this phase is to identify children who are at risk for CVD and diabetes so that they and their families can take preventive steps at an early stage.

In fact, RCCHC will be WebVMC's first customer to take advantage of a program that it has developed specifically for the pediatric population. "We even have an interface for pedometers [in the program] so that we can remind children or their parents that they are supposed to exercise a certain amount, and we can track that," says Sheppard.

Other capabilities of the program include calorie counters, glucose monitoring, and protocols for asthma. The data collected from this population will be monitored by both the school nurse and RCCHC's telehealth nurse.

### ***Developers hope to widen reach***

As the initiative progresses, investigators will follow a range of clinical indicators, hospital and ER utilization, and patient/provider satisfaction. Additionally, RCCHC physicians will eventually be given pass codes so they can directly access the data that are collected on their patients by the RemoteNurse devices.

Overall analyses of the approach will take time, but Britton says the approach has already delivered obvious dividends for some patients.

For example, the first patient equipped with a RemoteNurse at home had a history of frequent hospital and ER utilization related to his stage IV heart failure, but since he has been on the monitor, Britton says his condition has stabilized and there have been no hospital admissions.

Further, RCCHC is already applying for a second grant that would fund an expanded use of the RemoteNurse at more schools and community centers. "I want to have at least one kiosk in every small community in our four counties," says Britton. "So if a person can't drive, instead of having to pay someone \$30 to take them to the doctor, he [or she] will be able to go to his [or her] local church or community center to have his [or her] health monitored." ❖

*Editor's note: For more information about the RemoteNurse system, visit WebVMC's Web site at [www.webvmc.com](http://www.webvmc.com).*

*ata may serve as framework for future study, discussion*

## New scoring system helps providers assess risk in bariatric surgery candidates

Just about everyone agrees that the best way to deal with excess pounds is through changes in diet and exercise. However, with two-thirds of American adults either overweight or obese, it is clear that this conservative approach is not getting the job done in most cases. Consequently, a rapidly increasing number of patients and providers are considering surgical treatment options, especially the gastric bypass procedure.

The American Society for Bariatric Surgery reports that 170,000 Americans underwent the procedure in 2005, and data show that the procedure is highly effective at helping obese individuals achieve a healthy weight. A caveat to this course of action is that the procedure is associated with a certain amount of risk. In fact, some studies suggest that the risk of death from the procedure is as high as 2%.

Experts argue that such percentages are misleading, because some patients are at much higher risk of complications or death from the procedure than others, but there has not been any systematic way to assess this risk in individual patients. However, this could soon change. Surgeons at Duke University in Durham, NC, have unveiled a simple scoring system to help providers better assess whether their obese patients are good candidates for the surgery, or even whether there might be ways to reduce their risk of complications prior to surgery. Further validation of the scoring system is still needed, but the approach is already offering clinicians evidence-based guidance that they can use to help their obese patients make sound treatment decisions.

## A method for risk-stratification

The idea that some bariatric patients are at higher risk than others is not new. All surgeries come with risks, and there is a growing body of literature to suggest that there are factors that contribute to the level of risk.

But, to date, all of these analyses have been qualitative, which does not offer much practical insight to the practitioner who would like to be able to tell individual patients how much risk they face in undergoing the surgery, says **Eric DeMaria, MD**, director of bariatric surgery at Duke and a member of the team that developed the new scoring system. "It only makes sense that there is some way to stratify risk, and that is why we became interested in the idea that we could actually stratify patients into higher versus lower versus intermediate risk categories."

To develop such a method, DeMaria and his colleagues retrospectively analyzed the outcomes of all 2,075 patients who underwent gastric bypass surgery from 1995 to 2004 at Virginia Commonwealth University in Richmond, where DeMaria was a bariatric surgeon before joining Duke in 2005. By scouring through data on the 31 patients in the cohort who died within 90 days of undergoing the surgical procedure, the investigators concluded that the following four factors were independently predictive of increased risk:

- Body mass index (BMI) greater than 50
- Male gender
- Diagnosis of hypertension
- Pulmonary embolus risk

In addition, the researchers added a fifth factor that they deemed predictive of higher risk, based on the results of past studies—age over 45.

Under the scoring system devised by the Duke

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team, each identified risk factor receives a score of 1. The system categorizes patients with a score of 0 or 1 as low-risk candidates for surgery. Patients with a score of 2 or 3 are at medium-risk, and patients with a score of 4 or 5 are considered to be at high-risk.

When applied to the cohort of 2,075 patients, the scoring system reveals that none of the 356 patients with low risk died from the bariatric procedure. The medium risk group had a mortality rate of 1.91%, and the high-risk group had a mortality rate of 7.56%, representing nine deaths out of 119 patients.

### ***The strongest factor***

DeMaria says the most interesting of the five factors used in the scoring system is the first—a BMI greater than 50. “When you look at the odds-ratio of mortality, it is the highest for the high-BMI patients, and therefore the association between risk and BMI is stronger than for the other four variables,” he says. “Also, of all the factors, it is the only one that we think we can modify preoperatively.”

This means that for patients with high BMIs, physicians can recommend risk-reduction strategies to make them better candidates for surgery. One obvious alternative is weight-reduction, although that is not always possible for these patients. “It is important to remember that this is a disease, and it is a disease that doesn’t always respond to more conservative treatments like diet programs,” says DeMaria.

However, he adds that another option is to consider surgical procedures that have lower risk than the gastric bypass operation. For example, patients might be good candidates for a gastric band, a device that requires a surgical procedure for placement, but without cutting or stapling the gastrointestinal tract, so it is a lower-risk operation.

Physicians and patients may decide together to choose alternatives (e.g., the gastric band), instead of the gastric bypass or as a short-term method for getting patients to a healthier weight before undergoing the gastric bypass procedure.

### ***Intriguing findings***

It is not clear why men are at greater risk than women, but DeMaria points out that numerous studies have documented this to be the case. He suspects it has something to do with the fact that men tend to carry excess weight in their abdomens rather than their trunks or lower extremities. “This can make things both more technically difficult with the operation [and] seems to have a greater impact on the health status of the individual,” he says.

It is also not entirely clear why hypertension is an

important risk factor, but DeMaria points out that the most logical reason is that hypertension may be a marker for cardiovascular problems. “Sometimes, in this population of patients, there are limitations as to how much evaluation we can do of heart function and [related areas],” he says, adding that these patients may not fit into the equipment used to carry out some diagnostic procedures.

Another possible explanation involves the theory that hypertension may, in fact, be an inflammatory condition of the blood vessels. If this is the case, then patients with hypertension may be at risk for a significant inflammatory response to stress, surgery, or injury of any kind.

Another common comorbidity with obesity—diabetes—is not one of the factors included on the scoring system. Investigators looked into whether diabetes—by itself or in combination with hypertension—was associated with higher risk, but they found no such correlation. “It is interesting that diabetes—which is the usual marker for metabolic syndrome and other health problems related to obesity—really didn’t pan out to be a high risk factor,” says DeMaria. He emphasizes that this was not too surprising because the same result has turned up in several other studies as well.

Of all the factors included on the scoring system, the most qualitative was age. When investigators looked at a univariate analysis, they found that age over 45 contributed significantly to risk. However, when they completed a multivariate analysis, it did not appear to be significant, says DeMaria. He adds that the reason for this discrepancy can be traced to a phenomenon in the cohort of patients that was analyzed.

“We had a very nice correlation between age and risk up until we got to elderly patients,” he says, noting that the cohort included a large number of elderly patients with no mortality.

However, as the oldest group should have been at the highest risk, investigators included age in the scoring system because it makes clinical sense. “The univariate analysis showed that age was most contributory [to risk] at 45, so that is younger than a lot of people would think, but in general you are not going to get a lot of disagreement among bariatric surgeons over the idea that age is related to risk. It is just a matter of where you draw the line,” he says.

The association between age and risk is one factor that raises questions about the generally accepted idea that bariatric surgery should only be done as a last resort. It’s a flawed concept, says DeMaria. “Younger,

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## Risk

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healthier people who have not suffered from obesity for as many years . . . actually have a much lower risk than those patients who are dying of significant comorbid disease," he says. "So looking at it from a public health policy development standpoint, if you wanted to reduce risk from bariatric surgery, you would choose to operate on younger, healthier people."

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**"When you look at the odds-ratio of mortality, it is the highest for the high-BMI patients, and therefore the association between risk and BMI is stronger than for the other four variables."**

*—Eric DeMaria, MD*

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DeMaria also points out that it is important to remember that even though the risk associated with surgery is high in those patients with scores of 4 or 5 on the scoring system, researchers don't know what their risk is without surgery. "I would hypothesize that this high-risk group is even higher risk, potentially, if they don't get surgical treatment."

As it stands now, the scoring system is based on a single-center study, but DeMaria is working to validate these early results by using the scoring system on another group of patients to see whether the approach is valid in that group as well.

Further, he hopes that the scoring system is the beginning of a framework that programs can use to compare their outcomes on an apples-to-apples basis, and that the various risk factors highlighted quickly make their way into the informed-consent discussion for patients.

"These are factors that have been found in other studies," he says. "In some ways, this is just a method of organizing the information so that it is out there in the form of a scoring system." ❖

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