AMERICAN HEALTH CONSULTANTS®

DRUG UTILIZATION REVIEW™

Pharmaceutical Care Across the Continuum

INSIDE

JANUARY 1999

VOL. 15, NO. 1 (pages 1-16)

American Health Consultants® is A Medical Economics Company

New co-infection TB guidelines blast short-course, twice-weekly regimen

Gold standard for isoniazid prophylaxis is nine months, not six

New guidelines for treatment and prevention of TB in HIV-positive patients hold a stern reminder: What's convenient for programs isn't always what's best for the patient. The recent official pronouncement on preventive therapy for HIV-positive patients comes as a disappointment to some program administrators, who had hoped for the go-ahead to provide the new short-course, two-month preventive regimen of pyrazinamide and rifampin (PZA/RIF) on a twice-weekly basis.

No way, the guidelines plainly state. Another unpleasant surprise to some is the reminder that when it comes to high-risk patients (including those infected with HIV), the duration of isoniazid prophylaxis isn't six months; it's nine months.

The recommendations reflect a conscious decision to drag people back from the brink of wishful thinking and to clarify what the data do and don't support, explains **Larry Geiter,** MPH, PhD, a consultant with Sequela Research Foundation in Rockville, MD. "We wanted to make the point that recommendations for clinical decision making shouldn't be made on a cost-effectiveness basis," says Geiter, an expert whose testimony is said to have swayed the roomful of other national experts gathered to mull over the new guidelines.

> **"We wanted to make the point that recommendations for clinical decision making shouldn't be made on a cost-effectiveness basis."**

"I can understand people's disappointment," says **Rick O'Brien**, MD, chief of the research and evaluation branch at the division of tuberculosis elimination at the Centers for Disease Control and Prevention (CDC). Purely from a programmatic perspective, he says, the less onerous recommendations "would have been great." The problem is that the data don't support such recommendations, he explains.

Reaction runs across the board. To some program administrators already hit with a new round of funding cuts, the guidelines offer

powerful evidence that more study on short-course therapy is needed urgently.

"I think [rifampin and pyrazinamide] on a daily basis severely limit the advantages of short-course preventive therapy," says **David Ashkin**, MD, medical director for Florida's TB control program. "We've had enormous amounts of difficulty getting people through preventive therapy."

Preventive therapy only works if it's in the patient's stomach, Ashkin argues; thus, what an intermittent course of PZA/RIF might lose in efficacy, it more than makes up for in adherence. "Even if RIF/PZA isn't as effective by, say 3%, you more than offset that difference if you improve adherence by 30% to 40%," he explains. Besides, "in the study that was already done, the data on twice-weekly looks as if it performed as well as daily," he adds.

Partly in the hope of gathering more evidence in support of twice-weekly PZA/RIF, Ashkin is considering a trial protocol of the twice-weekly regimen.

One investigator associated with the intermittent trial of PZA/RIF also expresses disappointment with the CDC guidelines, and with the decision to discount the results of that trial, which was conducted in Haiti. "It's unfortunate," says **Jacqueline Coberly**, PhD, assistant scientist at the department of international health at the school of hygiene and public health at Johns Hopkins University in Baltimore.

The reasons the CDC discounted the results of the Haitian trial are complicated, says Geiter. Most importantly, the Haitian trial used as its standard for comparison a six-month course of self-administered isoniazid. However, nine to 12 months of INH, not six months, is the gold standard for HIV-infected patients and should have been the standard for comparison in the trial, he notes.

True enough, says Coberly. "There's no question that nine months of INH is more efficacious than six," she says. "But when it comes to the probability of someone actually taking the nine months, we found only 55% of people actually finish; whereas 74% of people taking the [intermittent] PZA/RIF finish."

The trouble comes when the two kinds of regimens — the daily PZA/RIF and the intermittent — are stacked against one another, says Geiter.

Two separate trials — the Haitian study and another in Zambia, the results of which haven't yet been published — compared two months of intermittent PZA/RIF to six months of INH, Geiter says. The Haitian trial put the level of protection for intermittent PZA/RIF at 60% and at 65% for six months of INH. Thus, that trial suggested intermittent PZA/RIF might perform as well as six months of INH, but it also might not. Point estimates in the Zambian trial suggested the same slightly ambiguous conclusions.

Third study more certain

On the other hand, a third study comparing 12 months of daily INH to two months of daily PZA/RIF left no such room for doubt, says Geiter. That trial found an 80% reduction from 12 months' INH and an 84% reduction from two months of daily PZA/RIF. That suggests two months' daily PZA/RIF might offer even better protection than 12 months of INH, he says.

"So we're saying that PZA/RIF on an intermittent basis is probably just as good as six months of INH — but may actually be worse," says Geiter. "Plus, we already know six months of INH isn't as good as 12." That, and the way both the Haitian and Zambian trials seemed to tilt against the intermittent regimen of PZA/RIF, left intermittent PZA/RIF saddled with too many doubts, he says.

As the dust settles, other experts are taking a more philosophical stance, declaring they intend to cut their losses by replacing nine months of INH with two months of daily PZA/RIF, for both HIV-negative and HIV-positive patients. That regimen "has been shown to be state of the art, and I say people have no business using nine months of anything if they can use RIF/PZA," says **Lee Reichmann**, MD, MPH, director of the

COMING IN FUTURE MONTHS

- A day in the life of a clinical pharmacist
- Should FDA fast track be derailed?
- Pharmacy and the Human Genome Project
- National automation white paper
- Collaborative practice update

National Tuberculosis Center at New Jersey Medical School in Newark. "It's there; it works; I'll use it."

To keep the debate interesting, at least one expert is blasting the CDC recommendation of daily PZA/RIF as misguidedly liberal rather than overly conservative. "PZA plus rifampin? You tell my buddies at the CDC that I love them all, but that I said this is going to be the biggest disaster they've ever given us," says **John Sbarbaro**, MD, professor of medicine at the University of Colorado Health Sciences Center in Denver.

"It goes totally contrary to everything we know about PZA in the continuation phase," which, he adds, is for all practical purposes the same as latency. "So why on earth add it? It merely adds hepatotoxicity. You're going to see a ton of hepatitis with this new regimen," he says. "This whole thing will set us back for 20 years."

Minor side effects cause concern

One of Sbarbaro's colleagues and neighbors is more sanguine on the subject. "I don't think PZA is exactly dangerous," says **William J. Burman**, MD, infectious disease expert with the Denver TB control program. "But I do think there are some concerns about its tolerability. People may not want to put up with the side effects, which are fairly common, though seldom serious: the upset stomach, the itching after doses, the myalgia."

Back to that other line in the sand — nine months of INH as opposed to six months — Sbarbaro as well as experts on the more pragmatic side were more understanding.

"Nine months of INH? That's just being conservative, but it makes sense," Sbarbaro notes. "What's better? Eighty percent of the drugs for a few months, or 30% of the drugs for a year? It's counter-intuitive, but the right answer is the second. That's because in preventive therapy, you're going after bugs that are dormant, and the longer you continue the therapy, the better the chance that the drugs will be there when the bugs wake up."

The nine-month rule also is important to emphasize because it helps explain why risk-benefit equations break down in the face of the higher risks for reactivation posed by HIV-positive patients, Geiter says.

"Back in 1985, people began talking about a six-month regimen of IPT being more cost-effective," he says. "What kind of got lost over time is the fact that the individual patient would still benefit from taking another six months of treatment. And with HIV-positive patients, the overall risk for progressing to TB is so high that even on a cost-benefit basis, going from six to 12 months is still worthwhile."

From the standpoint of what's doable, Geiter adds that he doesn't dispute appeals to practical arguments; he simply believes it's important not to mix the nitty-gritty of real-life decision making with the practices dictated by the data.

Plus, there are ways programs can make regimens easier without sacrificing efficacy

Guidelines for co-infected patients

New guidelines for treating and preventing tuberculosis among HIV-infected people held few surprises. The guidelines, issued by the Centers for Disease Control and Prevention in an Oct. 30, 1998, "Recommendation and Report" of the *Morbidity and Mortality Weekly Report* (Vol. 47) made the following points:

- All HIV-infected people should be screened for TB; if infected, they should be treated to prevent the development of active disease.
- Either preventive or curative regimens must be carefully evaluated to prevent drug interactions with new therapies for HIV. In particular, rifampin should not be given in combination with protease inhibitors or non-nucleoside reverse transcriptase inhibitors because it can seriously impair the effectiveness of these therapies.
- In such instances, the anti-TB drug rifabutin can be substituted safely for rifampin, allowing therapies for both TB and HIV to continue.
- Directly observed therapy should be provided.
- A new short-course regimen for preventing TB, consisting of daily therapy for two months with pyrazinamide and rifampin, now can be provided as an alternative to a yearlong course of isoniazid, the regimen previously prescribed for those co-infected with HIV and TB. ■

altogether, he adds. "If a public health program wanted to say, 'OK, we're going to give people PZA/RIF, but we'll only supervise them five times a week, or three times a week, and let them self-administer on the weekend' — and then maybe give them nine weeks of the drugs instead of eight weeks — in practice that makes sense, even though it's not supported by clinical trial data," Geiter says. "Or you could DOT [directly observed therapy] them five times a week, and give them a drug holiday on the weekend. There are all kinds of things you can do within reason to be creative."

In the same way, it's acceptable to aim for getting six months' worth of INH into "your garden-variety, HIV-negative patient," Geiter says. "But what we've tended to lose sight of is that the data don't support that. What they actually show is that maximum benefit is achieved right about at nine months, and I think over the years we've lost sight of that fact."

With an HIV-negative patient, the risk for reactivation after six months is small to start with — about 10%. Six months of INH cuts it by 65%, so adding another three months only buys an additional 3.5%, which is not cost-effective in most cases, he says.

Practical considerations

There's a practical reason to keep the bar high, he explains. If a program formally adopts a six-month course of INH as the ideal, it's hard to go back to state legislatures after the fact and beg for more money for preventive care. On a smaller scale, a primary care physician who thinks mistakenly that six months is the ideal will probably be happy with five months' worth of treatment, and that would surely be a mistake, says Geiter.

In sum: "If you're going to make these decisions on a cost-effective basis, you need to be clear that's what you're doing," he says. "I understand the pressure people are under. I'm just saying, don't mix clinical guidelines with cost considerations." ■

Pharmacy organizations merge on credentialing

Disease-specific, national standards are pursued

It appears as though a cease-fire has been called by pharmacy organizations jockeying to lead the industry into pharmacist credentialing for government reimbursement, based on a set of credentialing initiatives involving 10 national organizations that as recently as last fall were divided into separate camps.

The rush to credentialing began last summer when the Baltimore-based Health Care Financing Administration (HCFA) approved a plan by Mississippi's Medicaid program and state pharmacy board to begin paying pharmacists for clinical disease management of asthma, diabetes, anticoagulation, and dyslipidemia, provided a credentialing process was in place.

To get that done, the Mississippi board turned to the National Association of Boards of Pharmacy (NABP), the National Association of Chain Drug Stores (NACD) and the National Community Pharmacists Association (NCPA). The three groups merged as the National Institute for Standards in Pharmacist Credentialing (NISPC) and established the first set of plans to institute just such a set of standards.

A verbal war soon followed, as organizations like the American Pharmaceutical Association (APhA) and American Society of Health-System Pharmacists (ASHP), for example, balked at the idea that just three organizations could or should set the standards.

Consensus plan reached

But now, based on the outcome of a summit meeting hosted by seven national pharmacy organizations not part of the NISPC, a consensus plan has been reached within the groups that also extends an olive branch to the NISPC. "The organizations plan to seek the assistance of the NISPC . . . and believe the oversight and certification activities in this announcement are largely complementary to those announced by NISPC," reads a consensus statement that came out of the summit. That summit, held in Washington, DC, in late September 1998, was hosted by APhA, ASHP, the American Association of Colleges of Pharmacy, American College of Apothecaries, American College of Clinical Pharmacy, American Society of

(Continued on page 13)

(Continued from page 4)

Consultant Pharmacists, and the National Council of State Pharmacy Association Executives.

Along with reaching consensus on issues and establishing a set of goals at the meeting, members also heard a consultant's report on the subject funded by state pharmacy boards in Iowa, Michigan, Minnesota, Missouri, South Carolina, Texas, and Washington.

In addition to attempting to make peace with NISPC, the summit's hosting organizations have announced plans to establish a joint Council on Credentialing in Pharmacy and a certification body to administer skills testing. More importantly, it also will attempt to bring all pharmacy groups into the fold. And along with bringing in NISPC, the seven organizations will extend invitations to the Board of Pharmaceutical Specialties, the Pharmacy Technician Certification Board, and the Commission for Certification in Geriatric Pharmacy to tap into organizations already involved in certification.

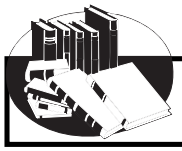
Calls for national standards

The seven summit organizations say that national, voluntary standards should be established. Such standards would avoid turning off payers, and reduce confusion among different states. The organizations also say that certification should be disease-specific, something the NISPC has already pursued.

Beyond that, the groups plan to examine certification done in other medical fields to plumb for ideas, and examine issues of post-licensing recertification.

"There is a significant amount of activity in pharmacy related to training and credentialing," says ASHP executive vice president **Henri Manasse**. "This is an important step in addressing the public's need for help in managing drug therapy, but it is causing confusion in the marketplace and among other health professionals. We believe a coordinated approach is needed to guide pharmacy through the development of certification and determine the relationship among the profession's various credentialing activities," he says.

(Editor's note: For more background on pharmacist credentialing efforts, see the October 1998 issue of Drug Utilization Review.) ■



JOURNAL REVIEW

Universal issues lead to pharmacist burnout

Practicing at an HMO earns high marks

Gupchup, et al. **Burnout in sample of HMO pharmacists using the Maslach Burnout Inventory**. *J Managed Care Pharm* 1998; 4:495-503.

Workload and staff levels, relationships with supervisors, years in the same job, family and money. For HMO pharmacists, these universal issues largely determine levels of job-related burnout, though some unique variables such as career aspirations and the amount of clinical work being done also figure into the equation.

And burnout does exist, according to a detailed survey of 83 HMO pharmacists from practices in 38 states, conducted by pharmacists at the University of New Mexico College of Pharmacy in Albuquerque.

To cross-reference and construct profiles of staff burnout levels and indicators, the study's authors used the established Maslach Burnout Inventory System, which measures burnout in terms of "emotional exhaustion," "depersonalization," and "reduced personal accomplishment," matched then with demographics, job-specific variables, and career aspirations. It's a survey the authors say is unique; only one other self-reported burnout survey was unearthed, one that asked just four questions of HMO pharmacists in one regional Kaiser facility.

Here pharmacists were asked to weigh answers to 22 questions in three categories, and to provide detailed personal demographics.

Overall, 89.9% of respondents worked in an outpatient setting, 92.8% held supervisor roles, 64.6% worked from 41 to 50 hours a week, and 59.8% spent up to a quarter of their time processing prescriptions.

In terms of overall burnout findings, higher levels of burnout responses were found in the categories of emotional exhaustion and depersonalization, while lower burnout levels were found in personal accomplishment scores, leading the authors to believe the pharmacists are proud of

the job they are doing. Another general finding was that if you want to be a happy pharmacist, get married, have kids, and make more than $60,000 a year.

Specifically, within the three survey categories, beginning with emotional exhaustion, results found that marital status and annual salary played large roles in pharmacist happiness, with those not married and making $49,999 or less scoring higher levels of emotional exhaustion then their married, better compensated counterparts. Also within this category, supervisory pharmacists suffered less than staff pharmacists, while the greater number of years spent on the job increased burnout across the board.

The same held true in the depersonalization category in terms of marital status and income. In the category of personal accomplishment, the noteworthy result was that pharmacists working longer hours actually scored better on personal accomplishment questions than those working less. Specifically the scores were better for those working 35 to 40 hours a week vs. those working 34 hours or fewer.

Pharmacists desire more clinical duties

Predictably, the pharmacists said that overtime pay, increased patient counseling, and direct clinical duties such as drug utilization management, formulary development, and patient care would make them happier in their jobs. Likewise, the authors posit that more control over the practice, constructive supervisory feedback and better-run policies and procedures are equally important.

On the positive side, the majority of respondents did note that "working in the HMO setting is more satisfying than working in other practice settings."

So what can be done about, or with, all this information? The authors advocate specific, tailor-made stress management programs based on the specific demographics that affected burnout. "This would avoid the common pitfall of many stress management programs that attempt to treat everybody identically," notes Gupchup.

[Editor's note: For more information or reprints, contact Gireesh V. Gupchup, PhD, Assistant Professor of Pharmacy, University of New Mexico College of Pharmacy, Albuquerque, NM 87131. Telephone: (505) 277-6306.] ■

New use for ipratropium: Pediatric emergencies

Drug long used to treat adult COPD

An old drug is getting new attention for the treatment of acute asthmatic episodes in children.

The addition of ipratropium to standard drug treatments reduced the overall incidence of hospital admissions in children treated in the emergency room by nearly 9% and the hospitalization of children having severe attacks by 15.1%, according to findings by researchers at the Children's Hospital of the King's Daughters at Eastern Virginia Medical School in Norfolk, VA.

In the randomized double-blind placebo-controlled study of 434 children ages 2 to 18, researchers found those who received 2.5 ml of ipratropium bromide added to the second and third does of a nebulized solution of albuterol (2.5 or 5 mg per dose, depending on body weight) were less likely to be hospitalized than those in the control group who received 2.5 ml of normal saline instead of the ipratropium.

All patients also received a corticosteroid (2 mg of prednisone or prednisolone per kilogram of body weight) given orally with the second dose of albuterol.

Doctors found overall, in the ipratropium group, 27.4% of the children were hospitalized, compared with 36.5% in the control group.

For those with moderate asthma (defined as peak expiratory rate of 50% to 70% of the predicted value or a score of 8 to 11 on a 15-point scale), hospitalization rates were similar between the ipratropium group and the control group, at 10.1% and 10.7%, respectively.

However, the results were dramatic in the group of children with severe asthma (defined as peak expiratory flow rate of less than 50% or an asthma score of 12 to 15 on a 15-point scale). Only 37.5% of the ipratropium group required hospitalization compared to 52.6% in the control group.

The use of ipratropium is "not a panacea," says **Arno Zaritsky**, MD, chairman of the department of pediatrics at the Children's Hospital of the King's Daughters and co-author of the study published in *The New England Journal of Medicine* in October. "It's just one more thing that we now know to be useful in kids with severe asthma to help get them turned around."

Zaritsky says ipratropium may be particularly helpful because patients on home albuterol sometimes find the drug may in time lose its effectiveness, "So it's giving you another way of treating that constriction the airways when you've lost some of the responsiveness to the albuterol because you've been using it frequently at home."

It is also cost-efficient, at approximately $3 a dose. It is sold under the brand name Atrovent but is available in generic form.

Ipratropium has long been available in a metered dose inhaler for adults with chronic obstructive pulmonary disease, but the King's Daughters study is the first in children. Zaritsky speculates the drug may be even more effective in severe attacks in adults.

Zaritsky says the drug helps relax the airways by working on the parasympathetic nervous system. Unlike atropine, which has been used in similar situations for decades, he says, "Ipratropium was developed because it acts only on the airways. It is not absorbed. We looked very carefully for side effects and for all intents and purposes, side effects are minor at best."

Some patients reported the drug caused dry mouth, so if it is used on a long-term basis, ipratropium could cause drying of the mucous membranes, Zaritsky says.

"It is not really clear that it is going to be helpful to use on a long-term basis," he adds. "The data is just not out there." ■

Add tight lipid control to diabetes playbook

New studies show reduced coronary risks

Aggression has become the watchword in addressing complications of diabetes. Study after study shows that diabetic patients respond favorably to intensive management of the disease. But until very recently there have been few or no data available on the effects of lowering cholesterol in diabetics because patients with diabetes generally have been excluded from clinical trials.

Now a researcher at the University of Miami is preparing to publish his analysis of data from two major lipid studies — the 4S (Scandinavian Simverstatin Survival Study) and the more recent CARE (Cholesterol and Recurrent Events trial) — showing that aggressive therapy significantly reduces future coronary events and mortality among diabetics.

Ronald Goldberg, MD, chief of the division of diabetes and metabolism and professor of medicine at the University of Miami, presented results of his research at the American Diabetes Association conference in June 1998 and is preparing to publish his findings in the journal *Circulation.* The five-year double-blind CARE study included 4,000-plus subjects, 518 of them Type 2 diabetics, all of whom had average cholesterol levels of under 240 mg/dL. All were treated with pravastatin (Pravachol, Bristol-Myers Squibb, Princeton, NJ). The results showed:

- A 25% reduction in cholesterol in the diabetic subgroup as well as in the entire cohort.
- A 28% reduction in cardiovascular events in the diabetic group and a 27% reduction in the cohort as a whole.
- Even in patients with average cholesterol levels, cholesterol-lowering therapies substantially reduced coronary events.

In the 4S study diabetic subjects reaped even greater benefits than non-diabetics. The study included 4,000-plus members, 200 of them diabetics (mostly Type 2). All members had previous

Drug Utilization Review (ISSN# 0884-8998), including **Drug Criteria & Outcomes** , is published monthly by American Health Consultants®, 3525 Piedmont Road, Building Six, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid at Atlanta, GA 30304. POSTMASTER: Send address changes to **Drug Utilization Review** , P.O. Box 740059, Atlanta, GA 30374.

Subscriber Information

Customer Service: (800) 688-2421 or fax (800) 284-3291, (custserv@ahcpub.com)
Hours of operation: 8:30 a.m.-6 p.m. Monday-Thursday; 8:30 a.m.-4:30 p.m. Friday.

Subscription rates: One year (12 issues), $399. Outside U.S., add $30 per year, total prepaid in U.S. funds.One to nine additional copies, $200 per year; 10 or more additional copies, $120 per year. Call for more details. Missing issues will be fulfilled by customer service free of charge when contacted within 1 month of the missing issue date. **Back issues**, when available, are $35 each. (GST registration number R128870672.)

Editor: **Greg Fulton**, (404) 262-9609, (gfulton@mindspring.com).
Drug Criteria & Outcomes Editor: **Barry A. Browne**, PharmD.
Publisher: **Brenda Mooney**, (404) 262-5403, (brenda.mooney@medec.com).
Executive Editor: **Susan Hasty**, (404) 262-5456, (susan.hasty@medec.com).
Production Editor: **Terri McIntosh**.

Editorial Questions

For questions or comments, call **Susan Hasty** at (404) 262-5456.

coronary events ranging from angina to myocardial infarctions, as well as cholesterol levels ranging from 200 to 300 mg / dL. The entire group was treated with simvastatin (Zocor, Merck, West Point, PA) and given dietary counseling. The results:

• The entire group under simvastatin treatment showed a mean reduction in total cholesterol of 25% and lowered LDLs by 35%. The diabetic group showed a similar reduction.

• Diabetic patients had a 45% reduction in coronary events.

• The treatment group experienced a 34% reduction in major coronary events and a 42% reduction in mortality.

"This was considered very significant and therefore at least as good, if not better than what was seen in the population as a whole," Goldberg says.

In addition, Goldberg points out, taking into account the two- to fourfold increase in the coronary heart disease risk factor for diabetics, the results weigh even more heavily in favor of aggressive cholesterol lowering treatment.

Taking a new look at cholesterol

James R. Gavin, MD, PhD, senior scientific officer at the Howard Hughes Medical Institute in Chevy Chase, MD, and until recently chairman of the ADA's expert committee on classification and diagnosis, calls Goldberg's results "impressive."

"What that confirms is that it is extremely important be very aggressive in achieving the therapeutic goals of cholesterol lowering in people with diabetes, even those who have already had coronary events."

The result is a re-thinking of guidelines for cholesterol levels in all diabetics, regardless of their coronary health status.

The ADA and the American Heart Association have set a goal of 130 mg / dL for all diabetics without heart disease. "But for those who have just one risk factor, which so many diabetics have — high blood pressure or smoking or kidney problems or high triglycerides or low HDL, the good cholesterol — we should presume they have heart disease and aim for an LDL of 100," Goldberg says. Although this is more aggressive than for a non-diabetic without heart disease, Goldberg insists his study supports the measures in terms of palpable declines across the entire spectrum of coronary events.

Gavin wholeheartedly agrees. Aggressive treatment "is not unreasonable because people with diabetes are at such high risk, particularly women," he says. "The good news is that in spite of that risk, you can, in fact, mitigate it. You can, in fact, achieve significant lowering of event rates in people with diabetes who are already at high risk by being aggressive with cholesterol-lowering therapy."

How long it will take such thinking to filter down into common medical practice is anybody's guess, Gavin says.

By the demonstration of the benefits of aggressive treatment, he says, "It is hoped . . . you would in some ways change their attitude . . . and change practice. That hasn't always happened, but at least it's Step 1.

"We know that people benefit from cholesterol lowering therapy. For those who have had their levels determined and are known to be at risk, only about 20% are receiving treatment."

Gavin says he also hopes managed care "will understand the benefit of these kinds of interventions and exert some influence." ■