

Barriers to Guideline Adherence

Based on a presentation by Michael Cabana, MD

Presentation Summary

Successful implementation of the Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-VI) should improve quality of care by decreasing inappropriate variation and by disseminating new advances to everyday practice. A key component of this process is physician adherence to JNC-VI guidelines. However several reports in the literature show a discrepancy between hypertension guidelines and actual practice.

The factors that influence physician behavior change and optimal use of practice guidelines

are poorly understood. A combined model that uses the Awareness-to-Adherence Model and Social Cognitive Theory identifies five sequential steps that lead to adherence to a guideline—awareness, agreement, self-efficacy, outcome expectancy, and presence of a cueing mechanism. Barriers to implementation may occur at any of these steps and can be identified with this model. Programs can then be designed to overcome specific barriers. By conceptualizing the underlying issues in physician adherence, the combined model should be useful to guideline developers, practice directors, and health services researchers.

The Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-VI) is a clinical practice guideline intended to assist practitioner and patient decisions about appropriate management of hypertension.¹ Successful implementation of JNC-VI guidelines should improve the quality of care by decreasing inappropriate variation and expediting the application of new advances to everyday practice, and lead to increased cost savings

as well. However, “translating recommendations into improved patient outcomes depends on actual physician adherence to the guidelines, and that can’t always be guaranteed,” said Michael Cabana, MD, Robert Wood Johnson Clinical Scholars Program, School of Medicine, Johns Hopkins University, Baltimore, Maryland.

Understanding Physician Behavior Change

Physician adherence is one of the elements required for guideline imple-

mentation, the other two being patient adherence and organizational changes, according to Dr. Cabana. The factors that influence physician behavior change are poorly understood. Numerous reports and editorials in the literature attest to the divergence of physician practice from guideline recommendations.^{2,4}

To examine the determinants of physician behavior changes, Dr. Cabana applied two models: (1) The Awareness-to-Adherence Model described by Pathman et al,⁵ which suggests that physicians proceed in a series of steps toward guideline implementation: *awareness* of a guideline, *agreement* with its recommendations, *adoption* and correct application of the guideline, and *adherence* by applying it consistently to at least 90% of eligible patients. (2) The Social Cognitive Theory proposed by Bandura⁶ further strengthens the adoption step in the previous model by emphasizing *self-efficacy* and *outcome expectancy* as the main determinants of behavior change. Self-efficacy is the belief that one can actually perform the behavior, and outcome expectancy is the belief that the behavior will lead to the outcome. Thus, for example, applying the Social Cognitive Theory to quitting smoking, the person must believe that he or she can go through the process of quitting smoking, but the person must also have the outcome expectancy that quitting smoking will make a difference in his or her life. Similarly, physicians must believe that they can apply the guidelines (self-efficacy), and also have an outcome expectancy of improved health for their patients.

Using these theories, Dr. Cabana identified five different types of barriers—lack of awareness, lack of agreement, lack of self-efficacy, lack of outcome expectancy, and lack of a cueing mechanism (to explain lack of adherence)—that can contribute to poor implementation of guidelines (Table).

Lack of Awareness (“*I didn’t even hear about the guideline.*”)

With 4000 medical journals in circulation and 2500 clinical practice guidelines, and with an average of only 3 to 4 hours each week to read, the average physician faces a challenge in keeping abreast of guidelines. (Shell ER. The hipocratic wars. *New York Times Magazine*. June 28, 1998;34-38.) A 1984 survey of physicians 1 year after the dissemination of JNC-III revealed that only 62% of physicians were aware of the report.⁷

The readability of guidelines also affects awareness. Presentation and formatting of the guidelines are important considerations, and guideline developers have to tread the fine line between being too cumbersome and complex and being too simplistic.

Lack of Agreement (“*I heard about the guideline, but I don’t think it’s correct.*”)

Even if a physician is aware of a guideline, disagreement arising from interpretation of the evidence, lack of credibility of the guideline developer, lack of physician involvement in guideline development, or incompatibility with local practice can lead to nonadherence. With respect to JNC-VI guidelines, physician disagreement centers around choice of first-line medication,⁸ definition of treatable hypertension,⁹ and interpretation of the results of new studies such as the HOT study.^{10,11} Guidelines developed through consensus, even of a panel of experts, may put together the biases, oversimplifications, and errors into one document. Also, even though JNC guidelines are updated every 4 to 5 years, new studies and findings can make them obsolete.

Whether the participation of physicians in creating guidelines enhances adherence, as is suggested by management theory, is open to question. Anecdotal evidence with hypertension supports this idea, but a controlled trial showed no improvement in outcomes when physicians established the guidelines for hypertension management in the office.¹² Physicians’ deci-

sions on guideline adherence also appear to be dictated more by local opinion leaders and endorsement by respected colleagues than by recommendations of national experts.¹³ Also, guidelines developed by the physicians' own specialty organizations tend to be more easily accepted than those by government agencies or managed care organizations.¹⁴

Lack of Self-Efficacy (*"I think it is important but I don't have the time or skills needed to do it properly."*)

JNC-VI recommends lifestyle modifications for all patients with hypertension. However, three major barriers prevent their optimal implementation—lack of reimbursement, lack of time, and lack of skills. Thus, physicians are not reimbursed by third-party payers for time spent counseling patients on lifestyle modifications.¹⁵ An added disincentive is that even implementing a guideline could increase a practice's administrative costs. The time constraints of a brief office visit preclude any detailed counseling on lifestyle modifications, which do not necessarily address the patient's immediate complaint. A survey of family physicians suggested that longer patient encounters would improve adherence to preventive care guidelines.¹⁶ In addition, physicians may be able to provide general counseling but lack the expertise to provide detailed specific advice on lifestyle changes.¹⁷

Lack of Outcome Expectancy (*"I'm sure it works in the ideal world, but in my practice it probably won't make a difference."*)

Factors beyond a physician's control may influence the decision to adopt guidelines. Thus, certain medications may not be prescribed because of the patient's financial situation. Lack of patient interest and belief that a patient will be noncompliant may be a deterrent to advocating lifestyle changes. Also physicians may be viewing guidelines narrowly, as to their

impact on just their practices, and not seeing the overall effects of guideline adoption. Thus, for example, lifestyle counseling may be effective in only 5% of patients, which may be a frustratingly small number in a single physician's practice, but on a public health basis, the benefits would be enormous.

Lack of a Cueing Mechanism (*"I know I'm supposed to do it; I just forgot."*)

A physician has to attend to several competing issues during a patient encounter and may need a constant reminder such as a checklist, which may improve adherence to guidelines. In one randomized controlled trial, to test an intervention for changing physicians' prescribing patterns, providing a one-page guideline reminder along with a list of patients receiving calcium channel blockers led to a prescription change in 11% of patients.¹⁸

Applying the Model

The Awareness-to-Adherence Model can help diagnose those barriers that

Table. Barriers to Physician Implementation of Guidelines

<p>Lack of Awareness</p> <ul style="list-style-type: none"> • Volume of information • Time needed to stay informed • Presentation and formatting of guidelines <p>Lack of Agreement</p> <ul style="list-style-type: none"> • Controversy over interpretation of evidence or methodology • Timeliness of guidelines • Lack of physician participation in guideline development • Culture, custom, and habit <p>Lack of Self-Efficacy</p> <ul style="list-style-type: none"> • Lack of reimbursement • Lack of time • Lack of skills to implement guidelines <p>Lack of Outcome Expectancy</p> <ul style="list-style-type: none"> • Poor patient compliance • Financial situation of patient • Inability to realize impact on overall population health and healthcare costs <p>Lack of Cueing Mechanism</p> <ul style="list-style-type: none"> • Competing issues in patient encounter

are relevant and also help select appropriate interventions. Dr. Cabana recommended use of a survey instrument or a focus group for this purpose. Thus, one could ask the question, "Why don't physicians in my practice use diuretics or β -blockers for initial therapy of hypertension?" to address the recent finding that despite the JNC-V recommendation of diuretics and β -blockers as initial therapy, the use of calcium channel blockers and ACE inhibitors had increased.³

If the barrier is just lack of awareness, simple dissemination of guidelines through Grand Rounds, printed copies, or memos may be appropriate. If the problem is further downstream, maybe a lack of agreement, then more intensive intervention in terms of academic detailing, detailed feedback, or use of opinion leaders may be appropriate. There may be a lack of self-efficacy if physicians lack the time in a clinic to determine whether medication changes are appropriate. In such cases, an intervention may include quick access to a pharmacist or hypertension specialist or quick interactive tutorials to improve physician skills. In situations where the outcome expectancy is low, physicians may not realize the ramifications of their medication choice for individual patients on the overall costs to society. Thus, information on the overall impact of a medication may make a difference. Regarding a cueing mechanism, chart reminders that identify patients with hypertension on a medication other than diuretics or a β -blocker may be all that is needed to change physician behavior.

A multipronged approach may be needed with multiple barriers, Dr. Cabana said. For example, in a controlled trial performed at a Veterans Administration (VA) center to improve adherence to hypertension guidelines, interventions that included an opinion leader, education programs, access to a pharmacist, and feedback on prescribing patterns were successful in aligning

medication use with the guideline recommendation, in contrast to access to written guidelines alone.¹⁹

"In summary, you can't assume that physician adherence to JNC-VI will automatically follow," concluded Dr. Cabana. Physician adherence is affected by a variety of barriers. The modified Awareness-to-Adherence Model offers a framework to classify these barriers, to conceptualize underlying issues, and to suggest appropriate physician-oriented interventions to improve adherence to practice guidelines.

... DISCUSSION HIGHLIGHTS ...

The Awareness-to-Adherence Model as Applied to Hypertension

Dr. Brunton: I think your model is great. I have a little difficulty with hypertension as a paradigm, more in terms of the self-efficacy issue. I think the others really do apply. I believe it's more of a lack of agreement. You may acknowledge that the guidelines are built upon a body of knowledge; but just because you've got studies on diuretic benefit doesn't necessarily mean it's a better therapy. So that may be part of the reason.

I think there's no question though that in primary care physicians are treating hypertension. They recognize that a pressure above 140/90 mm Hg is a concern. And so I think that aspect of the model may not be as appropriate.

Dr. Cabana: The initial Awareness-to-Adherence Model was developed for immunization guidelines in pediatrics by Pathman and colleagues at the University of North Carolina. So I think when you're prescribing a medicine or giving an immunization, it's a single simple procedure. I think the lack of awareness, agreement, and a cueing mechanism, they are probably more applicable. But when the locus of control is outside the physician, when it deals more with the patient's compliance in terms of diet modification,

smoking cessation, weight reduction, I think that's where the issues of self-efficacy and outcome expectancy play a bigger role. By thinking of the model, you create a more complete differential diagnosis, that might be helpful when one considers other interventions to improve physician adherence.

Dr. Jacobs: The external guidelines get put on the shelf never to be opened again. And that's a major concern. I think it's very different; it was embedded in what you said, when a group of physicians agrees to develop guidelines, because they don't normally simply decide to adopt JNC-V or JNC-VI. They'll end up modifying the guideline for their own use and will usually develop some mechanism for implementation, and that's when I've seen them successful.

I find very few independent physician practices that really work off of guidelines, other than some relatively simple preventive routines where there's simply a checklist or if somebody else is checking to make certain they did it, with or without punitive action. So there are other pieces, and maybe that's embedded in the cueing mechanism—the concept of oversight.

Dr. Cabana: Yes. This is at the physician level, but at the organizational level changes have to occur, as a second step. A lot of it also has to do with culture, custom, and habit. Not only do the interventions have to be tailored, but the guidelines have to be tailored to the practicing organization as well. So I think that fits in with the model. This is one prong in a three-pronged approach that includes 1) the patient 2) the physician, and 3) the organization.

Dr. Brunton: I think Bandura's Social Cognitive Theory is especially appropriate for nonpharmacologic management, because I think there's a kind of therapeutic nihilism among most physi-

cians. Not only are we asking people to stop smoking, we're asking them to lose weight, moderate their alcohol intake, cut down on salt, and start an exercise program. Now, any student of human behavior knows that to change behavior it's got to be in small steps, yet we'll lay

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out a list of things for people to do for nonpharmacologic management for 6 months. We may just go straight to drugs because it's an easier, more controlled medical therapeutic model. I think this may be a terrific application of your social cognitive theory—even though we're aware of the guidelines, we don't believe we can make a difference and, therefore, we may go straight to drug therapy or, in the worst case, not even treat it.

Dr. Jacobs: Is there another way to look at that? Is it therapeutic nihilism or is it part of our training that has jumped over lifestyle modification as a reasonable treatment modality? And is that a reason for us to think that perhaps physicians shouldn't try to manage diseases like hypertension all by themselves? Should there be mid-level practitioners who do this very effectively?

Dr. Brunton: Part of it is expectations. With hypertension, people have expectations of a high success rate, whereas in reality, the success rate in terms of initial blood pressure control is about 50% without the addition of a second or third drug. So our expectations are high. However, because the success rate is so low with smoking

cessation and weight loss, the practitioner is not sure that lifestyle modification counseling is really worth the investment in time, so it's easier to prescribe a pill. So although the guidelines all promote lifestyle changes, physicians may feel the need to go straight to medications.

Dr. Wagner: It's not just the physicians. Patients have the same expectation. We've got societal support for this less-than-optimal situation because people want fast results and want a pill to fix the problem rather than go through the bother to lose weight, not eat salt, and do all those things that are good for them.

Dr. Cabana: I think physicians have a higher standard for preventive medicine in terms of expecting results. It just doesn't happen. In terms of helping physicians adhere to lifestyle modification recommendations, there are different ways to do it—provide more time, improve physician skills, or provide extra resources such as a nurse educator or handouts or a video that supplements what the physician is saying. We have many different options for customizing intervention.

Guidelines and Vested Interests

Dr. Wagner: For many physicians, much of their information comes from people with vested interests in various products. It's a shortcut to information, and, of course, a salesperson is going to present the best possible side of their product. We're culturally biased to new and better technology, and I think that plays a very important role in the cultural aspects of why physicians do some of the things they do. They may be very well intentioned, but they're relying on possibly tainted information.

Dr. Cabana: The way we distribute guidelines is a problem. When guide-

lines are distributed by pharmaceutical companies, a credibility problem arises. There are probably more appropriate ways to disseminate that information.

Dr. Brunton: However, if it wasn't for the pharmaceutical companies that provide the support, we wouldn't have dissemination of these guidelines to the same extent, nor would we have the level of education we experience, because of the cost. Nothing is for free, and unfortunately that can be both good and bad. I don't think the guidelines are biased because of the pharmaceutical support for its dissemination, but it may create a suspicion that may be an issue for some physicians.

Oversight as a Driver

Dr. Shepard: Your comment about the VA study suggests that for a physician, there's another part of outcome efficacy. In a system such as the VA, where the physicians are salaried, I would think that part of the outcome would be the physician's feeling that in order to do a good job and advance in the VA system, he or she should go along with this program. In that case, there would be parallels to many other managed care systems such as those represented here at this meeting. If a managed care organization were to link a physician's career with that organization to performance, that would be a factor that would weigh heavily.

Dr. Cabana: When you look at the studies done at academic medical centers concerning changing physician behavior, they usually mention the firm system or a resident clinic. The interventions are probably affecting a lot of different areas because you're dealing with awareness, agreement, the culture and customs of the institution; extra resources are probably being provided; and an opinion leader is built in because, if one of the investigators happens to be

the clinic preceptor, the resident is more likely to follow the guideline. I don't think these studies are necessarily generalizable to other practices.

When we were planning a study to investigate and test this model, we went outside to the community to find an appropriate setting because we didn't think the findings would necessarily be generalizable.

Dr. Jacobs: I think the concept is excellent. We can certainly get compliance when there is oversight and follow-up data. In general, physicians are marvelously responsive to data. So that's very helpful. But the problem we have is that physicians have to follow multiple guidelines. So we can't have a set of standards that are different from those of the other 11 plans operating in the area. So the current healthcare model is creating a bit of a problem for the practicing physician, because the plans do not have uniform guidelines although there's a nationally embraced set of guidelines. We may apply them a bit differently.

Dr. Shepard: Can an umbrella organization persuade member plans to adopt similar guidelines?

Dr. Jacobs: The New York State HMO Conference represents most of the plans in New York State. There's been very little ability to cooperate or collaborate in areas such as this for a number of different reasons, but it does provide a platform for creating some sense out of the multiple different guidelines and approaches to guidelines that we currently have.

Dr. Gerstenblith: Can you elaborate on the cueing mechanisms that might be used when a physician has several patients to see in the clinic a day?

Dr. Cabana: An example would be to identify smokers versus nonsmokers, just with a sticker on the chart. This might be helpful to remind a physician

to pursue a 3-minute intervention on smoking cessation. In pediatrics, a standardized encounter form geared to the patient's age has been helpful to cue physicians to complete an appropriate developmental assessment. Both these interventions have been shown to be effective. A computer-generated reminder might be helpful for records that are done on computer.

Dr. Hodgkin: How does a plan monitor adherence short of actually having someone be in the room physically? An example is the way certain questions are asked. Even if physicians check off on the form that they asked about drugs, it may not be the way that the protocol intended the question to be asked. It's easier with hypertension because there are actual blood pressures taken.

Dr. Cabana: Measuring adherence is a challenge. You can get some qualitative information such as a yes or a no or something was or wasn't done, but in terms of trying to quantify how well it was actually done, I'm not sure how to do that.

Dr. Jacobs: We invest a lot of time and effort in continuing medical education [CME], and you had mentioned Grand Rounds as one way of disseminating information. Do you have any data on how effective passive CME is in changing behavior?

Dr. Cabana: A recent review looked at a total of 99 studies of 160 different interventions.²⁰ One of the conclusions was that multipronged approaches are more effective than single-pronged approaches, and the authors listed the different interventions that have been tried and their success. Traditional CME is always at the bottom of the list. The traditional lecture-style CME addresses just the awareness portion of the model, which is further upstream; it's the first step, but if it doesn't address factors downstream like lack

of skills or lack of agreement by having an opinion leader or a local influential colleague, it's not going to be successful. So the lack of success of CME suggests a sequential nature of the model. Awareness is essential, but it's not sufficient.

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