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A 41-year-old African-American man with poorly controlled hypertension

Lisa A. Cooper, MD, MPH

Dr. Cooper is Professor of Medicine, Johns Hopkins University School of Medicine and Professor Health Policy & Management, Bloomberg School of Public Health, Johns Hopkins University.

Abstract

Mr R is an African-American man with a long history of poorly controlled hypertension and difficulties with adherence to recommended treatments. Despite serious complications such as hypertensive emergency requiring hospitalization and awareness of the seriousness of his illness, Mr R says at times he has ignored his high blood pressure and his physicians' recommendations. African Americans are disproportionately affected by hypertension and its complications. Although most pharmacologic and dietary therapies for hypertension are similarly efficacious for African Americans and whites, disparities in hypertension treatment persist. Like many patients, Mr R faces several barriers to effective blood pressure control: societal, health system, individual, and interactions with health professionals. Moreover, evidence indicates that patients' cognitive, affective, and attitudinal factors and the patient-physician relationship play critical roles in improving outcomes and reducing racial disparities in hypertension control.

DR DELBANCO: Mr R is a 41-year-old African-American man with a long history of hypertension, first discovered in the early 1990s. Over the years, Mr R has had difficulty adhering to suggested medication regimens, and his blood pressure has been poorly controlled, despite the efforts of multiple doctors at a number of different institutions.

With blood pressures as high as 240/180 in the past, Mr R's medical history is remarkable for episodes of epistaxis, headache, and occasional palpitations. Hospitalized for accelerating hypertension in 1994, he has been troubled over the years by side effects from a number of medications. Hydrochlorothiazide interfered with his sexual function, and beta blockers made him feel "sluggish mentally." He tried acupuncture, but found it unhelpful.

A self-employed business man, Mr R has commercial health insurance that partially covers the costs of his medications. He works long and irregular hours. He is a single father with two children, one of whom lives with him. He has never smoked and uses little alcohol. The CAGE questionnaire,¹ a screening test for alcohol abuse, was performed and was negative. He is physically fit and exercises intermittently. His mother has hypertension, but his siblings do not.

On recent physical examination, Mr R looked well. His blood pressure was 146/74 in the right arm and 144/72 in the left arm. His pulse was 64 and regular, respirations 10. He weighed 210 lbs, and his height was 72 inches. His eye grounds were unremarkable, lungs clear, veins flat.

Address for Correspondence: Dr. Lisa A. Cooper, MD, MPH. Johns Hopkins University School of Medicine. Welch Center for Prevention, Epidemiology, & Clinical Research, 2024 East Monument Street, Suite 2-500. Phone: 410-614-3659. Fax: 410-614-0588. lisa.cooper@jhmi.edu.

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Carotid arteries demonstrated normal pulsations and no bruits were heard. Cardiac exam revealed a grade 2/6 holosystolic murmur at the base, accentuated with a Valsalva maneuver. There was no heave, rub, or gallop. Abdominal exam revealed no organomegaly, bruits, or hepatojugular reflux. He exhibited no peripheral edema or neurologic abnormalities.

The CBC, electrolytes, creatinine, BUN, and a random glucose were normal. Urinalysis and PSA were normal. A fasting, calculated LDL was 104 mg/dl. An electrocardiogram revealed voltage criteria and ST-T changes compatible with left ventricular hypertrophy. A chest film revealed mild cardiomegaly, with left ventricular predominance, as well as a tortuous or dilated ascending aorta, for which further evaluation was scheduled.

Mr R was prescribed lisinopril, 10 mg, once daily, and nifedipine, 90 mg, extended-release, once daily by his physician. His level of adherence to these medications is unknown.

MR R: My boss noticed blood dripping on the paperwork, and he said, “Go to the hospital.” So I went to the emergency room. This was the early ‘90s, and I don’t think there was a lot known about blood pressure at that time. The doctor gave me some medication and sent me back to work. I pretty much ignored the problem from there.

I know that high blood pressure is a silent killer. You really don’t feel the effects—I didn’t. I think my body has adjusted to it. There are times when I have come into the hospital and I’ve felt very good, but my blood pressure was off the scale. To a certain degree, it scares me that I can feel good walking around. I feel pretty strong, but I’m like a walking time bomb. So I guess, in a sense, I’ve developed a proclivity for self delusion when it comes to high blood pressure. I don’t look at it as a disease. When I think about a disease, I think about cancer or HIV, those types of things that you can readily see and feel. High blood pressure: you don’t see it; you don’t feel it.

The problems that I had early on with the treatments were that they seemed to be inconsistent. I believe, back in ‘98–’99, within a one-year period, I must have been given at least 30 different types of medications.

I was referred to an acupuncturist, who told me that sooner or later, all the medications that I have been taking are going to have an adverse effect on my health. So that put me in a stymie: “Do I believe this doctor, or that doctor? Are they giving me medication? Is it just to throw them at me, hoping for a cure?”

You ask yourself, “Why are you taking the medication?” So you kind of slack off. You don’t feel well. You go back to the doctor and say, “I’m not feeling well.” He gives you another bunch of medication. You take that. So it’s an ongoing problem. You’re always constantly searching for answers, but you don’t know where to find them, necessarily.

I don’t eat right. I don’t cook. I don’t know how to cook. I don’t plan on learning how to cook. I like McDonalds, Burger King, Wendy’s, you name it. So I know I have to eat better. And I’ve been trying. I know I have to exercise, and I don’t have a problem with that.

I have not checked my own blood pressure. I bought the kit, and I find it difficult to monitor it. I don’t think I read it correctly. And I don’t think the electronic models they sell in stores work properly. I used to go into the little blood pressure capsules in CVS, and I always got an error back. That made me nervous, because a person went right after me, and the blood pressure machine worked just fine for them. So I don’t do that any more.

As far as a racial guideline, in regards to how a doctor looks at a patient of another race, I’ve never been treated unfairly or differently. I guess the confusing part is that I see people as being

the same. So, when you say one disease is more prevalent in an African-American than in a Caucasian-American, I get confused. I'm always saying to myself, "Why? We are all supposed to be the same inside and outside."

DR W: I've tried to get an idea of how my patient looks at his blood pressure, and it's somewhat difficult to say. He's a very smart man. He certainly has good insight into a lot of parts of his life. And he knows he needs to take medication on a regular basis. But when he comes into the office, frequently he'll have gone through a long period of time when he has not taken his blood pressure or has not been seen by a physician. And he can do this for many months. He often has side effects, and that is a primary concern, but I often do wonder if there's something else that either he hasn't told me or that I'm not understanding.

There was a period when my patient went a year without seeing me. I really would love to see a system where the pharmacy let me know that he was not filling his medications. I would love to have a nurse or someone else who could call him to tell him it has been more than 3 months since his last visit.

I think it is more difficult to manage someone from a different culture. They may have different values. They certainly have different ways of interpreting medications. Being Jewish—and there's a long line of Jewish doctors in my family—we tend to listen to a doctor and take what they say more word for word. We're more likely to go to a doctor, more likely to take what medications we're given. So in a lot of ways, it is much more difficult.

AT THE CROSSROADS: QUESTIONS FOR DR COOPER

1. What is the epidemiology and impact of hypertension in African-Americans?
2. Are there clear racial differences in efficacy and in adverse effects of hypertension treatment?
3. How do patient, health care system and professional barriers contribute to poor control of hypertension?
4. What is the role of the patient-physician relationship in improving outcomes and overcoming racial disparities in hypertension control?
5. What do you recommend for Mr R and his doctor?

DR COOPER: Mr R is an African-American man with a long history of poorly controlled hypertension and inconsistent adherence to recommended treatments. Despite serious complications such as hypertensive emergency requiring hospitalization and his awareness of the seriousness of his illness, Mr R says at times he has ignored his high blood pressure and his physicians' recommendations. He doubts whether safe and effective treatments for hypertension exist. Because he has tried so many different medications that either did not work well or produced unacceptable side effects, he does not know whether he can trust physicians to help him identify the best management plan for his illness. He is perplexed about why hypertension disproportionately affects African Americans, but he does not believe he has ever received different or unfair treatment in health care settings because of his race. Moreover, he does not think it matters whether he and his doctor share the same ethnic background. He is willing to exercise and knows he should eat a more healthy diet in order to lower his blood pressure, but he is not confident about cooking his own meals or using a home blood pressure monitor. While Mr R has continued to seek care intermittently for his hypertension, like many patients, and many African Americans in particular, he faces several barriers to effective blood pressure control at the individual level, the health system and societal level, and at the level of his interactions with health professionals.

What is the epidemiology and impact of hypertension in African Americans?

“A lot of African Americans, for whatever reasons, are privy to this disease...But I just don’t think there is enough information on what causes it and on how to prevent it...”—Mr R

Mr. R’s experience is not uncommon for an African-American man. Data from NHANES in 1999–2000 show African Americans are more likely than whites to have hypertension (34% vs. 29%), equally likely to be aware of it (74% vs. 70%) and to be treated for it (63% vs. 60%), but less likely to achieve blood pressure control while receiving treatment (45% vs. 56%).² Hypertension is more severe in African Americans, causing a greater burden of complications including a 1.9-fold higher risk of end-stage renal disease⁴ and a 4.6 fold higher risk of death from cardiovascular disease.⁵ Although mortality from cardiovascular disease is on the decline overall, rates continue to be 30–50% higher among African Americans than whites.^{3, 6} Cardiovascular disease accounts for 35% of the excess overall mortality in African Americans, in large part because of hypertension.⁷

Are there clear racial differences in efficacy and in adverse effects of hypertension treatment?

“I am saying to myself, “Why? We are all supposed to be the same inside and outside...I just can’t figure it out.” — Mr R

Randomized trials demonstrate that antihypertensive medications can control hypertension and prevent complications in African Americans and whites.^{8, 9} However, African Americans demonstrate reduced blood pressure responses to monotherapy with beta blockers, angiotension converting enzyme inhibitors, or angiotensin receptor blockers, compared to diuretics or calcium channel blockers.¹⁰ For example, a meta-analysis of 15 studies showed that the white-black difference in reduction of systolic blood pressure with angiotensin converting enzyme inhibitors and beta-blockers was 4.6 mm Hg and 6.0 mm hg, respectively, whereas this difference was –3.5 mm Hg and –2.4 mm Hg with diuretics and calcium channel blockers, reflecting somewhat greater improvement in whites than blacks for the former two classes and the reverse for the latter two classes of drugs.¹⁰ These differences are usually eliminated by adding adequate doses of a diuretic.⁸ A recent meta-analysis suggests diuretics are particularly beneficial for reducing risk of stroke among African Americans – with chlorthalidone, blacks experienced a 40% greater reduction in risk of stroke than nonblacks.¹¹

Mr R’s complaints focus on side effects from antihypertensive medication; therefore, it is especially important to consider the potential benefits of non-pharmacologic therapy. He says that although he knows he should adjust his diet, he does not cook and does not plan to learn how. However, many dietary therapies and strategies, such as weight loss, reduced salt (sodium chloride) intake, increased potassium intake, DASH diets (an eating plan rich in fruits and vegetables, low-fat or non-fat dairy products, low in saturated fat, total fat, and cholesterol, and including whole grains, poultry, fish, and nuts and reduced amounts of fats, red meats, sweets, and sugared beverages), vegetarian diets, moderation of alcohol intake, and partial replacement of carbohydrate with plant protein or monounsaturated fat are effective at lowering blood pressure.¹² Excellent evidence demonstrates that sodium reduction in persons who eat a typical American diet leads to significant reductions in blood pressure in most patients, but an even greater decrease in both systolic and diastolic blood pressure among African Americans (–8.0 mm Hg and –4.5 mm Hg, respectively) compared to non-African Americans (–5.1 mm Hg and –2.2 mm Hg, respectively).¹³ Additionally, the DASH diet leads to a reduction in systolic and diastolic blood pressure for most patients, but a significantly greater reduction in systolic blood pressure among African Americans and other minorities (–6.8 mm Hg) compared to non-minorities (–3.0 mm Hg).¹⁴

Mr R complains of mental sluggishness, urinary frequency, and sexual dysfunction; he believes these are side effects related to his antihypertensive medications. What are the adverse effects of treatment? Among 902 adults with mild hypertension, treatment with diuretics, beta-blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors, or alpha blockers did not impair quality of life when compared to placebo.^{15, 16} Additionally, the long-term incidence of erection problems in treated hypertensive men was relatively low, but higher with diuretic (chlorthalidone) treatment (17–18%) than with other medications (6–14%); this study did not specifically examine racial differences in erectile function.¹⁵ One study found urinary frequency to be more common (odds ratio 1.63) among African Americans on diuretics.¹⁷

How do patient and health care system and professional barriers contribute to poor control of hypertension?

“I often do wonder if there’s something else that either [the patient] hasn’t told me, or that I’m not understanding.” —Dr W

In a 2003 report, the World Health Organization describes 5 interacting dimensions that affect adherence to long-term therapies.¹⁸ These dimensions, which include social and economic factors, condition and therapy-related factors, health care system and clinician factors, patient-related factors, and patient-physician relationship factors, may also be used to help classify barriers to hypertension control.

Social and Economic Factors—Social and economic factors, such as low socioeconomic status, financial difficulties, high costs of medication, low health literacy, and unemployment may contribute to poor control of hypertension through their influence on patients’ access to healthcare and their ability to adhere to treatment recommendations.^{19, 20} Many of these social and economic factors affect African Americans disproportionately.

Mr R is well educated and earns a reasonable income. However, his self-employment suggests he might be affected by the high costs of medication, depending on his insurance and prescription drug coverage. Note how the cost ranges for a 30-day supply of anti-hypertensive medication: about \$11 or \$12 for a beta-blocker or diuretic, \$20 for an angiotensin-converting enzyme inhibitor alone or in combination with a diuretic, or \$60 or \$65 for some calcium-channel blockers and angiotensin-receptor blockers.²¹

Condition and Therapy-related Factors—Condition-related factors include the long-term nature of the treatment—patients are expected to require daily therapy for months or years—and the asymptomatic nature of the condition. In fact, Mr. R said, “I know that hypertension is a silent killer. You don’t feel the effects... I feel pretty strong.” Therapy-related factors that may affect patient adherence and subsequent blood pressure control include drug tolerability, regimen complexity, frequency of dosing, the number of concurrent medications, and changes in medication.¹⁸ For example, Mr R said, “The treatments seem to be inconsistent... the medication kept changing.” As discussed above, Mr. R. complained of several side effects from the anti-hypertensive medications he took in the past.

Health Care System Factors—Health care system and clinician factors that may contribute to poor blood pressure control include health care financing (e.g., health insurance, prescription drug coverage), health care delivery (e.g., access to primary care, availability and length of appointments, availability of self-management support), health care professional factors such as knowledge of treatment guidelines, attitudes (e.g., cultural sensitivity, patient-centered orientation), and technical and interpersonal skills. In a previous Clinical Crossroads, Bodenheimer addressed health care system factors related to poor adherence to treatment for

cardiovascular risk factors.²² In contrast, this paper focuses more on the role of patient factors and the patient-physician relationship.

Patient-related Factors—Patient demographic factors (e.g., age, gender, race, educational background) and physical health have not been consistently related to poor adherence.²³ In contrast, mental health status, including stress, depression, anxiety, and substance abuse, has been related to poor patient adherence in several studies.^{24–26} In addition, several studies show that patient knowledge, health beliefs and attitudes, skills in managing their illness, and participation in care affect adherence to recommended treatments.^{26–29}

Mr R mentioned that he thinks he is more symptomatic when stressed—“I don’t know if it’s stress... When I do feel bad, I would have to say it is on occasions when I am at a high stress level.” Although he does not complain of depressed mood or loss of pleasure or interest, he has not been formally assessed for depression, and his apparent lack of motivation to follow through on treatment recommendations could reflect depression or anxiety. A meta-analysis reveals that depressed patients have 3 times the likelihood of being non-adherent to medical treatment recommendations.²⁴ Moreover, depression has been associated with less adherence to antihypertensive medication (odds ratio 0.48) and poor blood pressure control (increase in diastolic blood pressure of 2.4 mm Hg) among African Americans with high blood pressure.³⁰

Several health beliefs and attitudes may influence patients’ adherence to treatment, and thus to the control of their blood pressure. These include low perceived risk, low perceived need, perceived ineffectiveness of treatment, perceived harm from treatment, lack of self-efficacy, negative or avoidant coping, and different degrees of readiness to change behavior.^{26, 32, 33} For example, Mr R said, “I don’t look at [hypertension] as a disease,” and “I have developed a proclivity for self delusion, when it comes to high blood pressure.” He also felt he did not necessarily need treatment—“I think my body has adjusted to it.” He felt antihypertensive medications were ineffective—“You get to a point where you don’t necessarily take the medication because you don’t know if it’s actually helping the problem...” and indeed harmful—“The side effects are crazy after that...when you’re taking so many different medications to curtail the problem.” He appeared to be in denial, or in a “pre-contemplation stage” of readiness to change behavior and admitted to avoidant coping behaviors³² —“I pretty much ignored the problem, from there.” Finally, he lacked self-efficacy with regard to cooking healthy meals and using a home blood pressure monitor.

Several studies have explored lay health beliefs with regard to hypertension. For example, while physicians view hypertension as a chronic, asymptomatic condition needing pharmacologic therapy, many patients believe hypertension is an intermittent, but acutely symptomatic condition that can be treated with non-pharmacologic therapies (e.g., home remedies).^{34–36} Some black patients believe hypertension and high blood pressure are 2 separate diseases; the former described as a curable stress response with physiologic consequences, and the latter described as an incurable physiological problem caused by certain foods.^{37, 38} Mr R seemed to subscribe to a “stress” model of hypertension. While some beliefs and attitudes may be more prevalent among patients of a particular ethnic background, a patient-centered approach to exploring these minimizes the likelihood that the physician will make false assumptions and engage in stereotyping.³⁹

What is the role of the patient-physician relationship in improving outcomes and overcoming racial disparities in hypertension control?

“The doctor I have now is great. He’s nice and calm. And he asks a lot of questions.” -- Mr R

The patient-physician relationship is the interpersonal milieu in which patients are diagnosed, offered recommendations for treatment, and referred for tests, procedures, or care by consultants. In a review of race relationships in health care, we described several dimensions of relationships with a potential link to health care disparities: communication—the behavioral actions through which other relational features are observed; partnership—a union that recognizes and values the unique perspective, knowledge, and opinion of each participant; power—an inescapable aspect of all interpersonal relationships that determines whether or not a partnership can be formed; trust—a fundamental component of all relationships; confidence or faith in a person; knowing—to be familiar with a person and his/her life story; and concordance—shared identities/agreement between patients and physicians across visible and invisible dimensions.⁴⁰

Communication—Effective communication includes many behaviors, such as using open-ended questions to probe the patients' perspective, providing information in short and clear statements followed by opportunities for patients to ask questions, helping patients understand what they should expect from treatments, listening more and talking less, and responding with empathy to patients' concerns. A systematic review of 35 randomized controlled trials of interventions to improve patient-physician interactions revealed that interventions improve the communication process in 22 of 30 studies; the intervention group had better healthcare processes, such as patient knowledge, adherence, and satisfaction in 74%, but statistical significance was reached in only 40% of studies (14 studies). Positive effects on health outcomes (typically measured subjectively, including resolution of depression, anxiety, and pain, and improvement in functional status) achieved statistical significance in 44% of trials (11 of 25).⁴¹ Only one of the three trials that examined glycemic control among patients with diabetes demonstrated a significant improvement in hemoglobin A1C (3.0% over 3 months, ⁴² and only one of the three trials that examined blood pressure levels among patients with hypertension showed improvement in diastolic blood pressure at follow up (83 mm Hg in intervention vs. 91 mm Hg in control patients).⁴³ ⁴⁴ In an earlier systematic review that also included analytic studies of patient-physician communication,⁴⁵ the only study that examined blood pressure as an outcome found the frequency of patient statements in the medical history segment and the frequency of physician explanatory statements was associated with a higher level of blood pressure control (69% vs. 46% respectively for patients with a high vs. low frequency of statements and similar findings for high vs. low frequency of physician explanatory statements).⁴⁶ Table 1 shows the results of five studies that examine the relationship of patient-physician communication behaviors with blood pressure control.

Several studies demonstrate that physicians communicate differently with white and African-American patients. Physicians demonstrate less empathy, concern, courtesy, information-giving, and nonverbal attention when caring for African-American patients.⁴⁷ African Americans also experience visits in which physicians use a more narrowly biomedical communication style,⁴⁸ are more verbally dominant, and have less positive emotional tone.⁴⁹

Patients need information about their condition and its treatments (e.g., risk, effectiveness, prognosis) in order to participate in decisions about their care. Thus, communicating about clinical evidence is an important part of building a collaborative patient-physician relationship. However, there is a dearth of evidence to guide physicians about how they can most effectively do this. A systematic review of original research studies dealing with communication between physicians and patients and directly assessing methods of presenting clinical evidence to patients identified only 8 potentially relevant articles and concluded the following: 1) relative risk reductions may be misleading and absolute risk is preferred; 2) order of information presented and time-frame of outcomes can bias patient understanding; 3) limited evidence supports use of human stick figure graphics or faces for single probabilities and vertical bar graphs for comparative information; 4) less-educated and older patients preferred proportions

to percentages and did not appreciate confidence intervals, 5) studies of decision aids rarely addressed patient-physician communication directly, and 6) no studies addressed clinical outcomes of discussions of clinical evidence.⁵³

Partnership—Partnership, or a participatory communication style, may be characterized as providing clear instructions and information about the treatment and its purpose; relating to patients in an approachable, friendly, or supportive manner; soliciting and listening to the patient's views; using a “participatory” or non-authoritarian manner of problem-solving and conflict resolution; and offering the patient choices, control, and responsibility.^{54, 55} A participatory decision-making style is associated with higher patient satisfaction and continuity of care,⁵⁵ improved self-care behaviors in diabetes,⁵¹ greater adherence to antidepressant medicine,⁵⁶ resolution of depression,⁵² continuation of therapy with statins.⁵⁷ It is also linked to having a home blood pressure monitor, but not to frequency of monitoring or blood pressure control.⁵⁸ One study of patients with HIV showed that compared to patients who prefer to share decisions with their doctor, those who want to make all decisions themselves did not initiate prescribed medications. Additionally, patients who want doctors to decide for them did not adhere to the medications that they were already taking. These outcomes suggest that the shared decision-making relationship is best for patient outcomes.^{59, 60} Unfortunately, African Americans rate their visits with physicians as less participatory.⁶¹ Mr R interestingly stated that his belief was that, “You basically leave treatment up to the doctors.”

Power—Whether or not a partnership is formed is determined in large part by the power dynamics in the patient-physician relationship. Power originates from 3 sources: social authority, material resources, and information/knowledge.⁶² It is neither inherently good nor evil, but can be used or misused. How power is used and exchanged is influenced by personal qualities of the doctor and patient and the nature of the relationship (e.g., trust, ethics, and communication). Physicians need power to 1) share information, respond to patients’ cues, and obtain a full understanding of patients’ wants (accountability); 2) help patients tell their stories, express preferences, and make informed decisions (autonomy); 3) act in a trustworthy manner on behalf of patients (fidelity); and 4) interact with patients with sensitivity and compassion (humanity). Patients need power to 1) have their health needs met, and 2) meet their own responsibilities (e.g. to decide what are health problems to them and what to tell their doctors).⁶² Elements of power in therapeutic relationships are expressed through the individual who sets the agenda and goals, the role of the patient’s values, and the functional role of the physician. Researchers and ethicists have described 4 models of the patient-physician relationship—mutuality, where physician and patient power are high; consumerism, where the patient has high power; paternalism, where the physician has high power; and a default condition in which power is low for both the patient and the physician.⁶³ The mutuality model is one in which the goals and agenda are negotiated, the patient’s values are jointly examined, and the physician’s role is an advisor. The consumerism model is one in which the patient sets the agenda, values are not examined, and the physician’s role is a consultant. The paternalism model is one in which the physician sets the goals and agenda, the patient’s values are assumed, and the physician’s role is a guardian. Finally, the default model is one in which the goals and agenda, patient’s values, and physician’s role are all unclear. Mr. R seemed to feel powerless —“I have no clue what causes it...I really don’t have answers to it.” He also seemed to feel that doctors might be powerless to help him control his blood pressure—“I think doctors are human...I think they make the same mistakes that other people make.” The model that is most beneficial for both patient and physician, even when the patient does not explicitly prefer an active role, is the one in which each has high levels of power,⁶⁴ Some patients may have cultural beliefs that suggest deference to authority figures, and as such, may consider it inappropriate to have an egalitarian relationship with their physician where power is shared. The influence of such beliefs on the patient-physician relationship deserves further study.

Trust—Trust is the degree to which people see one another as competent, responsible, caring, tactful, and ethical.⁶⁵ It is a fundamental component of all relationships and is linked to quality of care and patient outcomes, including patient adherence,^{57, 66} satisfaction,⁶⁷ continuity of care,⁶⁸ self-rated health,⁶⁷ and use of preventive services.⁶⁹ Focus groups^{70, 71} and cross-sectional survey studies^{72, 73} show that patients have greater levels of trust in physicians who show interest, empathy, and respect, take time to listen, engage in more partnership-building and collaboration, are honest, informative, thorough and accurate in their evaluations, and provide appropriate and effective treatment. In one study, for each one point increase in the physicians' patient-centered communication rating on a 12-point scale by third party observers, patient's reports of trust increased by 0.22 points on a 10 point scale.⁷² A systematic review of interventions designed to improved patients' trust in doctors revealed only 3 studies, only one of which showed that educational introductory visits for new patients to a health plan, done in group format, improved trust from 7.1 to 8.8 points on a 10 point scale.⁷⁴ Many studies show minorities have less trust in physicians than do whites.^{75, 76} Trust may be playing a role in Mr R's apparent non-adherence to his treatment regimen. After seeing several doctors over the years for his hypertension, he said he wondered, "Do I believe this doctor or that doctor?"

Knowing—Although Mr R has been seeing his doctor on and off for several years, it is unclear how well they really know one another. Knowing is to be familiar with a person and his or her life story. Providers' knowledge of the unique attributes of individual patients is associated with continuity of care and patient adherence.^{67, 77} Persons of color are less likely than whites to feel doctors know them or understand their background and values.^{78, 79} Stereotyping occurs when group characteristics are ascribed to individuals; it is a cognitive shortcut that one takes when one doesn't know another person as an individual. In a cross-sectional survey study of 193 physicians who were middle aged (mean age 45 years), predominantly White or Asian, male, and cardiology specialists, physicians reported negative opinions about African Americans' intelligence, compliance, and other health behaviors. Such opinions were not corroborated by patients' self-reports of these same factors.⁸⁰ Physicians in the same study reported less affiliation (possibility of being friends) with African American patients. Two recent survey studies, one that included 287 internal medicine and emergency medicine residents who were 29 years old on average, 60% male, 65% Caucasian, and 23% Asian or Pacific Islander and another that included academic pediatricians, 59% of whom were residents, 65% female, 93% American born, and 82% non-Hispanic white showed that physicians, like others in society, show an implicit preference for European Americans relative to African Americans on a validated test called the Implicit Association Test.^{81, 82} Such biases, while sometimes unconscious were linked in clinical vignettes to lower cardiovascular procedure referral rates for black patients.⁸¹

Concordance—Concordance has been defined as shared identities between patients and physicians across visible (race/ethnicity, age, gender, education, language) and less visible (beliefs, values, preferences) dimensions.^{40, 83} Race concordance, defined as shared racial or ethnic identities between clinicians and patients, is related to patient reports of satisfaction, participatory decision-making, timeliness of treatment, and trust in the health system.^{59, 84–87} Concordance with regard to beliefs about care is also an important determinant of satisfaction and trust.^{88, 89} When asked whether he thought an African-American doctor would understand him better, Mr R said no. Yet, his doctor felt it difficult to care for a patient who belongs to another culture. Culture is defined as a shared system of values, beliefs, and learned patterns of behaviors,⁹⁰ and it may be shaped by many factors, including age, gender, race, ethnicity, and educational attainment. The cultural difference to which this doctor referred may have occurred across one or more dimensions. Although race concordance is not necessarily an indicator of overall socio-cultural concordance, it is one dimension that has received a lot of attention in the literature that seeks to understand racial disparities in

healthcare. Studies have shown that race-concordant visits are significantly longer (by 2.5 minutes on average) and have more positive patient affect. These findings are true both for African American and white patients.^{49, 85, 90} Patients in race-concordant relationships also rate their physicians as more participatory (+8.42 points on a 100-point scale) and satisfactory (73% strongly agree in race-concordant vs. 57% in race-discordant encounters) regardless of the communication that takes place in the visit, suggesting that other factors, such as patient and physician attitudes and expectations, may play a role in these dynamics.⁸⁵ New research shows that cumulative social discordance between physicians and patients (e.g., across race, gender, age, and educational level) is associated with lower ratings of patient satisfaction (odds ratio, 0.64 for 0–1 shared characteristics vs. 3 or more shared characteristics).⁴⁹

What do you recommend for the patient and his doctor?

For Dr W, clinical strategies such as those described by Kleinman that apply concepts from cultural anthropology—that is, questions that elicit the patient's explanatory model of illness, agenda, and illness behaviors—to help identify and resolve relational issues in clinical care, are recommended.⁹¹ Exploring the patient's explanatory model includes the use of following types of questions: What do you think has caused your problem? What do you call it? Why do you think it started when it did? How does it affect your life? How severe is it? What worries you the most? What kind of treatment do you think would work?⁹¹ The physician might also learn how to use motivational interviewing principles.⁹² He should keep his calm demeanor; the patient seems to like his style of interacting with him. This contrasts with other doctors the patient encountered when in an emergency room; they tried to motivate him by providing negative statistics about risks associated with uncontrolled blood pressure. Providing the patient, in a calm manner, with information about his risk for myocardial infarction and stroke given that he has electrocardiographic evidence of left ventricular hypertrophy (LVH) might motivate him to change his behavior. For example, the patient might find it relevant that 57% of stroke patients had LVH compared to 33% of controls – translating to a 2 fold higher risk of ischemic stroke for patients with LVH.⁹³ Second, the physician should try a participatory approach. This would include open-ended questions, reflective listening, and avoiding arguments in which he tries to change the patient's views. For example, he might ask Mr R: "What works best for you?" He might also say, "Do you think medical science still hasn't found a solution to the problem of hypertension?" Then allow the patient to develop awareness of apparent conflicts among his knowledge, values, and behaviors. He also might say something along these lines: "Let me see if I have this right. You are basically a healthy person, and you'd like to stay that way." Another part of the motivational interviewing approach is recognizing that change takes time and can only happen if the patient himself decides that it will. Encouraging his autonomy is important. The physician should express confidence in the patient's ability to make good decisions for himself. At the same time, offer support through open-ended statements, such as "How can I be more helpful to you?" Third, the physician should get to know the patient better as a person. What is important in his life other than his kids? Probe him further about psychosocial issues. How does he handle stress? Who gives him support—emotional and tangible? Would he be open to having someone he's close to come to an appointment with him? Fourth, the physician should consider screening the patient for depression. Physicians engage in less discussion about depression and less rapport-building with depressed African-Americans than whites,^{94, 95} and depression may contribute to adherence problems. The physician might ask the patient to bring his home blood pressure monitor into the office to have it checked for accuracy and ask one of the nurses to work with the patient to help him learn how to use it. Home blood pressure monitoring has been shown to improve patient adherence.⁹⁵ Finally, the physician should recognize the limits of his influence, and encourage Mr R to take responsibility for the changes he wants. For example, with regard to his medication, the physician might give him information regarding low rates of side effects with diuretics at lower doses. Then allow the patient to decide if he is willing

to give it another try at a lower dose. If he still won't make the changes discussed, the physician should not take it personally, and try not to let it frustrate him.

For Mr R, first, he might consider stress management training such as meditation, to reduce his stress level.⁹⁶ Second, he should put a priority on exercise, since it has documented benefits for patients with hypertension and is something he enjoys. Third, he might enlist the support of friends and family, and consider bringing someone he trusts to his next appointment. Fourth, with regard to dietary issues, he might ask his doctor to refer him to a nutritionist who is able to provide culturally-tailored advice; diet programs tailored to the needs of African Americans can lead to significant improvement in clinical parameters such as weight (−14.8 pounds), total cholesterol (−13.8 mg/dL) and blood pressure (−4.3 mm HG SBP and −2.4 mm Hg DBP) over a short period (8 weeks).⁹⁷ In the meantime, he could try low-salt versions of processed foods and fast foods by reading food labels, and look up the DASH diet online; it suggests that eating more fruits and vegetables will help reduce his blood pressure, particularly as an African American. Fifth, with regard to medication, if his doctor suggests it, he should re-consider taking a diuretic at a lower dose than in the past. At low doses, diuretics do not usually cause sexual problems or urinary frequency. And finally, because they seem to be working well, he should keep taking the medications he is currently taking and should not stop them without discussing it with Dr W first, because his blood pressure could get dangerously high. He might not notice complications in the short term, but as he noted himself, over time, this could lead to devastating consequences for him—either death or disability. This would prevent him from enjoying the things that are most important in his life, such as his family and his work.

QUESTIONS AND DISCUSSION

QUESTION: You gave us reason to conceptualize this patient as an African-American man with hypertension. That is frequently the way we hear someone like this presented on rounds or when talked about at a conference—race is often the most prominent feature we use to label. How do we avoid stereotyping, while still addressing the issues you so beautifully took us through?

DR. LISA COOPER: I think including the patient's race in a case presentation is important because of the epidemiology of disease. We need to be aware of differences in risk and treatment that may occur as a result of that demographic assignment.⁹⁸ Another reason why a patient's racial or ethnic background might be relevant is that health beliefs differ across racial and ethnic groups. However, while the prevalence of disease and certain perceptions of illness and treatment may be true for a particular group, a physician must always confirm what is true or relevant for an individual patient. Experts suggest that a categorical approach that lumps patients of particular cultural backgrounds into groups and outlines their characteristic values, customs, and beliefs, risks stereotypic oversimplification, and that instead, an understanding of broad cultural concepts and skills that emphasize a patient-centered approach are preferred. This approach takes into account the individual patient's explanatory model, illness agenda and behaviors, social context, and beliefs and skills with regard to negotiating management options.³⁹ One of the reasons I focused on this patient's individual life circumstances and health beliefs was to demonstrate how a patient-centered approach may be used to avoid stereotyping behavior. Some of what we know to be true for African Americans as a group was true for this patient, and some was not. To guide the clinical interview and inform clinical decisions, we should draw on our knowledge of epidemiology and the evidence for treatment effectiveness. Then, go to the individual patient to probe for individual beliefs and preferences.

QUESTION: What do you make of the patient's use of acupuncture, and what does this say about his belief systems?

DR COOPER: I found his use of acupuncture interesting. He said he was constantly searching for answers, so it might have been at a point in his life where he felt he had tried enough medications and needed to try something else. Some studies suggest that acupuncture is effective at reducing blood pressure, but the effects may not be sustained.^{99, 100} We might wonder if this patient turned to acupuncture as an alternative strategy because he had lost faith in physicians and conventional therapies. However, most complementary and alternative medicine (CAM) users use these therapies in conjunction with, rather than as a replacement for, conventional treatments.¹⁰¹ Interestingly, several studies show that use of CAM is lower for African Americans and Hispanics than for whites.^{102, 103} Among African Americans, the most common type of CAM is prayer, followed by herbal therapies and relaxation.¹⁰⁴ Transcendental meditation has been found effective in reducing blood pressure among African Americans, but the reduction is greater in women than in men.⁹⁶

QUESTION: What about augmentation of dosage of medication? When a patient is reluctant to take medication for some reason, such sentiment often feeds back to doctors. They, in turn, may be reluctant to increase the dose of the medication. This is especially true if they are not sure the patient is actually taking the medicine in the first place!

DR COOPER: Hicks showed that African Americans and whites were more likely than Hispanics to have JNC-VI appropriate therapy (e.g., angiotensin-converting enzyme inhibitors or angiotensin receptor blockers for patients with diabetes, renal insufficiency or congestive heart failure, beta-blockers for patients with coronary artery disease or history of myocardial infarction, and diuretics or calcium channel blockers for patients who are aged 60 and older or African-American) and to have the dosages of their medications augmented.¹⁰⁵ Augmentation or intensification of medication dosages was associated with blood pressure control in all ethnic groups. Patients' reluctance or preferences for less aggressive treatment may indeed influence a clinician's recommendations, but most racial disparities in treatment are not explained by patient preferences.^{106, 107} It is important to remember that even if a patient is reluctant to accept treatment, it is up to the physician to probe for the patient's concerns, fears, and expectations. In many cases, when a patient's concerns are addressed, he may be willing to undergo a particular test or try a particular treatment. In this case, Mr R liked the idea of starting his medication at a low dose and gradually increasing it, in order to minimize the side effects.

DR W: Thanks for the talk and for a lot of the tips. There are definitely a few things I'm going to try to address with him the next time I see him. But part of his problem centers on education. He doesn't necessarily understand everything I tell him, and he may have received a lot of conflicting reports. There is a lot I would like to say, but 20 minutes is very limiting! Are there resources you would recommend that he can read or look up?

DR COOPER: Twenty minutes is not a lot of time to accomplish all that is needed in a visit for a patient with a chronic medical illness, particularly when there are complicated cultural or psychosocial issues to address. There is a lot of information he could read from reliable sources on the Internet, but he seems busy and overwhelmed. Even though he knows resources are out there, he may not take advantage of them. He would likely benefit from working with a motivational coach or a care manager—somebody who can look up information for him and help him figure out ways to eat healthier, get his medications from a convenient and cost-effective place, keep his appointments, and communicate more effectively with you about his concerns. Results from a Cochrane review of interventions to improve patient adherence to high blood pressure treatment suggests simplifying dosing regimens are most effective; using motivational strategies such as home monitoring, small group training, counseling by a nurse or other professional, and reminder calls for patients are somewhat effective; and patient education alone is not effective.¹⁰⁸ Two other systematic reviews of quality improvement strategies for hypertension management show team change interventions that include

assignment of some responsibilities to a health professional other than the patient's physician (such as a nurse or pharmacist) are associated with the largest reductions in blood pressure.^{109, 110} I did a quick update of this review for the period 2004–2009 and found 16 randomized controlled trials; 6 of these targeted clinicians only, 3 targeted both clinicians and patients, and 7 targeted patients only. Studies that targeted clinicians only included continuing medical education, academic detailing, quality review and feedback, and computer decision support/reminders to change prescribing behaviors; none showed improvements in patient adherence or blood pressure control.^{111–116} Table 2 shows the 10 studies that included patient interventions.^{117–126} These interventions included patient educational materials; home blood pressure monitoring; in-person, telephone, or web-based motivational strategies delivered by a nurse and/or a pharmacist; and collaborative management of the patient by primary care-pharmacist teams. Eight studies showed some improvement in blood pressure control compared to the control group. Of these, one used patient education only and the other 7 included either nurse or pharmacist-directed programs or collaborative care of the patient with a pharmacist, providing additional evidence for the effectiveness of these approaches. Six of the studies reported the racial distribution of their patient sample; of these, 4 included a sample that was at least 30% African American. We are currently conducting a randomized controlled trial of physician and patient interventions aimed at improving communication and partnership as a strategy to improve patient adherence and blood pressure control in practices that serve a predominantly African American and low income population; the patient intervention uses community health workers to activate patients to become more involved in their care.¹²⁷ Our health care system does not generally provide or reimburse such support for people with high blood pressure. Collecting good evidence for effectiveness in diverse settings for diverse patients would help us advocate for payment policies that could make these changes happen.

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Table 1**Studies Linking Patient-Physician Communication to Blood Pressure Control**

Author, year	Methods Study Design Duration Follow-up	Participants Specialty Clinical setting Types of patients	Intervention content and method of delivery/ Study measures	Blood pressure (BP) outcomes; BP measured in mm Hg
Orth, 1987 ⁴⁶	Cohort study 2 week followup	217 adults with hypertension community health centers, USA	patients' expressing themselves in their own words (exposition) and providers' giving explanations (explanations)	Comparing high vs. low exposition/ explanations; % of patients with decreased BP 68.9% vs. 46.1%, $p<0.05$
Kaplan, 1989 ⁴³	RCT 8–12 week followup	105 adults with hypertension, USA Mean age 54 years 68% women 62% Spanish speaking	Patients provided with individualized information about their medical care, coached to increase participation in care	Mean DBP based on 3 readings each from 44 patients at followup: 83 mm Hg intervention vs. 91 mm Hg control patients, $p<0.05$
Meland, 1997 ¹²⁸	RCT 12 month followup	22 GPs General practices in Norway 110 Adult males with CHD risk	Patient educational session to encourage and sustain the patient's current health promotion efforts Providers told to serve advisory function only, respect patient choice, and make written contracts with patients	No difference in mean SBP and DBP between I and C groups
Kinmonth, 1998 ¹²⁹	RCT ½ day training (GPs) 2 ½ days (nurses) 12 month followup	23 GPs and 55 practice nurses 250 adults with DM General practices, UK	Practices given British Diabetic Assoc guidelines and patient resources Reviewed evidence for patient-centered approach; Encouraged to consider both provider and patient's agendas Given booklets for patients to prepare for visits	Mean values based on two readings: SBP: 144.3 I vs. 142.8 C DBP: 89.0 vs. 87.2 C Differences between groups not statistically significant
Pill, 1998 ¹³⁰	RCT 2 training sessions, 1.5 hours each 12 month followup	29 GPs and nurses Primary care practices, UK 172 Adults with Type 2 DM	Used principles of motivational interviewing Encouraged provider to negotiate individual health plans based on the patient's perceptions about their disease and readiness to change their lifestyle	Mean difference from baseline to followup: SBP: -1.47 I vs. 3.12 C DBP: -0.343 I vs. 0.650 C Differences in change not statistically significant

RCT=randomized controlled trial; GP=general practitioners; CHD=coronary heart disease; DM=diabetes mellitus; I= intervention, C=control, SBP=systolic blood pressure, DBP=diastolic blood pressure.

Table 2

Randomized controlled trials of interventions targeting patients to improve adherence and hypertension outcomes (2004–2009)

Studies that included provider and patient interventions					
Author, year	Methods Study Design Duration Follow-up	Participants Specialty Clinical setting Types of patients	Intervention Content Method of delivery	Blood Pressure Outcomes	Notes Other Outcomes
Hennessy, 2006 ¹¹⁹	Cluster RCT 6 month followup	Academic health system using an ambulatory EMR. 10,696 patients cared for by 93 primary care providers. Intervention group was 38% African American and control group was 45% African American	Academic detailing, provision of provider-specific data about hypertension control, provision of educational materials to the provider, and provision of educational and motivational materials to patients by mail.	Adjusted OR for the association between the intervention and the achievement of controlled blood pressure: 1.13 (95% CI 0.87–1.47). Adjusted OR 1.03 (95% CI 0.78–1.36) in patients whose blood pressure was controlled at baseline and 1.25 (95% CI 0.94–1.65) in those whose blood pressure was not.	
Hunt, 2008 ¹¹⁸	RCT 12 month followup	463 patients in community-based primary care clinics in Oregon Ethnicity not reported	collaborative management of hypertension by primary care-pharmacist teams vs. usual care -- (provider and patient intervention)	Subjects receiving the intervention achieved significantly lower SBP and DBP vs. control (137/75 mmHg vs. 143/78 mmHg); 62% of intervention subjects achieved target blood pressure vs. 44% of control subjects.	Intervention subjects were prescribed more medications (2.7 vs. 2.4, $p = 0.02$), but did not take more pills per day. Little difference between groups in knowledge, medication adherence, quality of life, or satisfaction.
Roumie, 2006 ¹¹⁷	Cluster RCT 6 month followup	10 clinics in the Veterans Affairs Tennessee Valley Healthcare System. 1341 veterans cared for by 182 providers, 97% male, ethnicity not reported	Provider education alone web link to JNC7 guidelines; Provider education and a patient-specific hypertension (HTN) computerized alert; or provider education, HTN alert, and patient education (motivational letter)	Patient education group had better blood pressure control (138/75 mm Hg) than those in the provider education and alert or provider education alone groups (146/76 mm Hg and 145/78 mm Hg, respectively).	
Studies that included patient intervention only					
Author, year	Methods Study Design Duration Follow-up	Participants Specialty Clinical setting Types of patients	Intervention Content Method of delivery	Outcomes Visit/process Measures Patient satisfaction Healthcare behaviors/adherence Health status/well-being	Notes Other outcomes
Bogner, 2008 ¹²⁰	RCT Outcomes were assessed at baseline, 2, 4, and 6 weeks	64 participants aged 50 to 80 years; comorbid depression and hypertension a large primary care practice in West Philadelphia,	Usual care (UC) vs. integrated (IC) care for patients with depression and hypertension delivered in 3 30 minute in-person visits and 2 15 minute telephone contacts by care manager	Participants in the IC intervention had lower SBP (127.3 mm Hg vs 141.3 mm Hg; $P < .01$), and lower DBP (75.8 mm Hg vs. 85.0 mm Hg; $P < .01$) compared with UC participants at 6 weeks. 80% or greater adherence to	

Studies that included provider and patient interventions					
Author, year	Methods Study Design Duration Follow-up	Participants Specialty Clinical setting Types of patients	Intervention Content Method of delivery	Blood Pressure Outcomes	Notes Other Outcomes
		81% African American		antihypertensive medication (IC 78.1% vs. UC 31.3%; P <.001) at 6 weeks	
Bosworth, 2008 ¹²¹	RCT 24 month intervention 6 and 12 mo Follow-up	636 adults mean age 60.5 years, 47% AA	Usual care vs. tailored nurse delivered behavioral intervention bimonthly over 2 years via telephone for patients	Medication adherence increased by 9% in behavioral (62% to 72%) vs. 1% in usual care (67% to 68%) at 6 months	
Green, 2008 ¹²²	3 group RCT 30 month intervention 12 month follow-up	778 adults, 25–75 yrs 83% W, 8% AA 50% college grad Integrated group practice that also provides coverage	Usual care VS. home BP monitoring & secure website training alone or plus pharmacist care via web communication for patients	% change in controlled BP: Home BP monitoring/web – no change vs. usual care Pharmacist care- +25% vs. usual care and +20% vs. home monitoring only	Greater improvements in % BP control and reductions in SBP and SBP among patients with SBP ≥ 160 mm Hg
Lee, 2006 ¹²³	RCT	200 community-based patients aged 65+ years taking at least 4 chronic meds 32% African American	comprehensive pharmacy care program (standardized medication education, regular follow-up by pharmacists, and medications dispensed in time-specific packs) vs. usual care	Change in SBP: pharmacy care (–6.9 mm Hg; 95% CI, –10.7 to –3.1 mm Hg) vs. usual care (–1.0 mm Hg; 95% CI, –5.9 to 3.9 mm Hg; P = .04)	After 6 mo persistence of medication adherence decreased to 69.1% for usual care, whereas it was sustained at 95.5% in pharmacy care (P<.001).
McLean, 2008 ¹²⁴	RCT 4 follow-up visits throughout 6 months.	14 community pharmacies in Edmonton, Alberta, Canada 227 patients with DM who had BPs higher than 130/80 mm Hg on 2 consecutive visits 2 weeks apart Ethnicity not reported	Comprehensive care from a pharmacist and nurse team with links to primary care provider vs. minimal intervention/attention control	The intervention group had an adjusted mean (SE) greater reduction in SBP at 6 months of 5.6 (2.1) mm Hg compared with controls.	In the subgroup of patients with a systolic BP greater than 160 mm Hg at baseline, BP was reduced by an adjusted mean (SE) of 24.1 (1.9) mm Hg more in intervention patients than in controls (P < .001).
Schroeder, 2005 ¹²⁵	RCT Followup 12 months	245 patients with Uncontrolled hypertension from 21 general practices in Bristol, UK Ethnicity not reported	Nurse-led adherence support for patients with uncontrolled high blood pressure compared with usual care. Intervention is 2 sessions, 20 min @ baseline and 10 min @ 2 mo	There was also difference at follow-up between the groups with regard to SBP (–2.7 mmHg; 95% CI –7.2 to 1.8) or DBP (0.2 mmHg; 95% CI –1.9 to 2.3).	No evidence of an effect of the intervention on timing compliance at follow-up (adjusted difference in means –1.0%; 95% CI –5.1 to 3.1).
Tobe, 2006 ¹²⁶	RCT 12 month followup	First Nations people with existing hypertension and type 2 DM	community-based treatment strategy implemented by home care nurses for patients vs UC by PCP	Both groups experienced a significant reduction in SBP by the final visit (–24.0 mm Hg intervention and –17.0 mm Hg control); p < 0.001 in each case). Difference between the 2 groups	Intervention group had a larger decrease in DBP over time than did control group (–11.6 mm Hg vs. –6.8 mm Hg respectively; p = 0.05)

Studies that included provider and patient interventions					
Author, year	Methods Study Design Duration Follow-up	Participants Specialty Clinical setting Types of patients	Intervention Content Method of delivery	Blood Pressure Outcomes	Notes Other Outcomes
				in this change was not significant	