

Research on the Provider Contribution to Race/Ethnicity Disparities in Medical Care

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OBJECTIVE. Little is known about why black patients and other ethnic/racial minorities are less likely to receive the best treatments independent of clinical appropriateness, payer, and treatment site. Although both provider and patient behavior have been suggested as possible explanatory factors, the potential role of provider behavior has remained largely unexplored. Does provider behavior contribute to systematic inequities? If so, why? The purpose of this paper is to build on existing evidence to provide an integrated, coherent, and sound approach to future research on the provider contribution to race/ethnicity disparities in medical care. First, the existing evidence suggestive of a provider contribution to race/ethnicity variance in medical care is discussed. Second, a proposed causal model, based on a review of the social cognition and provider behavior literature, representing an integrated set of hypothesized mechanisms through

which physician behavior may contribute to race/ethnicity disparities in care is presented.

CONCLUSION. There is sufficient evidence for the hypothesis that provider behavior contributes to race/ethnicity disparities in care to warrant further study. Although there is some evidence of support of the hypotheses that both *provider beliefs about of patients and provider behavior during encounters are independently influenced by patient race/ethnicity* further systematic rigorous study is needed and is proposed as a major immediate research priority. These mechanisms deserve intensive research focus as they may prove to be the most promising targets for interventions intended to ameliorate the provider contribution to disparities in care.

Key words: Provider behavior; disparities; race; ethnicity; clinical decision-making; stereotype; social cognition. (Med Care 2002;40 [supplement]:I-140-I-151)

There is extensive evidence of race/ethnicity disparities in access to care, medical care received, and outcomes.¹⁻⁴ However, little is known about *why* Black patients and other ethnic/racial minorities are less likely to receive the best treatments independent of clinical appropriateness, payer, and treatment site. Although both provider and

patient behavior have been suggested as possible explanatory factors, the potential role of provider behavior has remained largely unexplored. Does provider behavior contribute to systematic inequities? If so, why? Many medical care providers may find the notion that their actions (or the actions of their peers) are the cause of systematic inequities

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in medical care hard to believe at best, and highly offensive at worst. The medical profession has a historical commitment to, and has made considerable efforts toward, principles of fairness, equity, and distributive justice.³ How is it possible that a profession dedicated to the health of all American citizens could perpetuate systematic inequities? Why would this happen? If there really is a provider contribution to race/ethnicity disparities, what can be done to understand and intervene in this process?

The lack of research in this area leaves these questions largely unanswered. However, both the research on provider behavior and the massive body of research on social cognition and social interaction can provide considerable insight into how well-meaning individuals may inadvertently and unintentionally create systematic inequities. The purpose of this paper is to build on existing evidence to provide an integrated, coherent, and sound approach to future research on the provider contribution to race/ethnicity disparities in medical care. First, the existing evidence regarding a provider contribution to race/ethnicity variance in medical care is discussed. Second, a proposed causal model representing an integrated set of hypothesized mechanisms through which physician behavior may contribute to race/ethnicity disparities in care is presented and discussed. The hypothesized causal model emerged from a review of the social cognition and provider behavior literature and is comprised of those hypothesis for which there is enough evidence to warrant further research attention. Social cognition researchers focus on social perception, social judgment, and social interaction and have paid particular attention to the effect of race/ethnicity on these processes independent of conscious bias. This massive body of empirical work, in combination with the provider behavior research, provides a useful framework for guiding research on the provider contribution to race/ethnicity disparities in care.

Materials and Methods

Is There Evidence for a Provider Contribution to Race/Ethnicity Disparities in Medical Care Independent of Clinical, Treatment Site, and Payer?

Research on the contribution of provider behavior to disparities in medical care is in its infancy,

and there have been few studies specifically designed to test the effect of provider behavior on these disparities. Nevertheless, there is some evidence for a provider contribution to race/ethnicity inequities in access to kidney transplant, access to cardiac procedures, psychiatric care, and pain control.

Kidney Transplant. There has been extensive documentation of race/ethnicity disparities in evaluation for transplant, placement on waiting lists, and transplant rates, even among children.^{5,6} Ayanian et al⁷ found that black dialysis patients were less likely than their clinically similar white counterparts to report that they had been told about transplantation before undergoing dialysis, that they received all the medical information from their nephrologist they desired, that a physician had discussed the possibility of receiving a kidney from a family member, and that a physician had recommended a transplantation. This study examined the role of patient preferences and found that, among these patients who reported that they were certain they wanted a transplantation, black patients were less likely than white patients to be referred for evaluation and less likely to be placed on a waiting list. The probability of being placed on a waiting list or receiving a transplant was significantly lower for black patients than white patients, adjusting for patient preferences and expectations, type of facility, sociodemographics, health status, comorbidities, and cause of renal conditions. Although patients' preferences and expectations for renal transplant were mildly different by race, these differences did not explain the disparity in transplant rates.⁷ This study serves as a reminder that identifying race/ethnicity differences in patient beliefs does not necessarily mean that such differences are causally related to disparities in care.

Cardiac Procedures. Race/ethnicity disparities have been extensively documented in relation to cardiac procedures.⁸ A prospective study of 1261 of patients undergoing angiogram revealed both that there were significant race/ethnicity differences in revascularization procedures among patients appropriate or necessary for such procedures (or both) and that, in 90% of the cases where clinically appropriate patients who did not receive revascularization, the physician reported that he or she did not recommend revascularization.⁹ Consistent with this finding, the Coronary Artery Surgery Study (CASS) examined 13,000 patients appropriate for bypass graft surgery and found

that black patients were less likely to receive a recommendation for surgery than white patients independent of clinical and angiographic characteristics.¹⁰ A study in one large VA tertiary care facility revealed similar findings.¹¹ Last, after controlling for age, sex, insurance status, socioeconomic status, number of visits, and other cardiovascular risk factors, it was found that minorities receiving care in a family medicine residency program ($n = 4256$) were less likely to have been screened for cholesterol levels than white patients and, among those with a cholesterol level greater than 240 mg/dL, were less likely than white patients to receive a hypercholesterolemia diagnosis.¹² Although a number of studies have found race differences in patient attitudes toward illnesses and treatments, most studies have either failed to causally link these to variations in procedures or have found that they do not adequately explain variation in procedure rates.^{13,14}

Psychiatric Treatment. To date, provider bias has been most heavily studied in relation to mental health services, resulting in substantial evidence that patient race/ethnicity influences psychiatrists' clinical decision-making. Both United States and British psychiatrists are more likely to prescribe antipsychotic medications, hospitalize involuntarily, and place nonwhite patients in seclusion once hospitalized than their white counterparts, independent of appropriateness and clinical factors.^{15,16-29}

Treatment of Pain. A number of studies have found that nonwhite patients are at significantly higher risk for inadequate pain assessment and control than their white counterparts. Studies have documented disparities in pain management and control in several settings and conditions, including: likelihood of receiving no pain treatment at all or inadequate pain control or both when examined at the emergency department with long bone fractures and identical pain complaints;^{30,31} non-malignant pain in a nursing home;³² treatments for cancer-related pain;^{33,34} and evaluation of chest pain emergencies.³⁵ A randomized, videotaped simulated vignette study in which all factors were held constant except patient race and sex found an interesting interaction between physician gender and patient race, with male physicians providing more pain relief to white patients and female physicians more pain relief to black patients with renal colic and kidney stone pain.³⁶

It must be noted that neither the pain management studies nor the psychiatric care studies con-

trolled for patient preferences (with the exception of the videotape study). These studies are included for consideration here because, although possible, it is unlikely that inadequate pain relief or placement in seclusion or both are a result of patient choice.

The body of evidence reviewed above provides ample justification for further study of the provider contribution to race/ethnicity disparities in health care. However, some significant limitations must be noted. First, some of the studies relied on patient report of physician behavior. Although there is no evidence to support the hypothesis that black patients' recollection of provider behavior systematically differs from white patients, it cannot be definitively ruled out. Clearly, rigorous studies specifically designed to test the hypothesis that provider behavior is causally linked to disparities in care are needed. Second, these studies do not provide sufficient insight into why providers' behavior varied by patient race to allow for meaningful conclusions or intervention directions. Thus, the remainder of this paper is intended to inform future research and intervention directions by integrating current research on provider-patient interaction and social cognition into a set of causal hypotheses regarding the mechanisms through which provider behavior may result in disparities in medical care.

How Does Physician Behavior Contribute to Race/Ethnicity Disparities? Hypotheses Emerging From the Social Cognition and Interaction Literature.

Figure 1 represents an integration of the social cognition and provider behavior research into a hypothesized model of mechanisms through which provider behavior may contribute to race/ethnicity disparities in medical care. Each arrow in the model should be interpreted as a hypothesis worth additional testing rather than a proven causal pathway.

Macrae and Bodenhausen³⁷ found that, "in attempting to make sense of others, perceivers regularly construct and use categorical representations (eg, stereotypes) to streamline the person perception process. . . Rather than viewing individuals on the basis of their unique constellation of attributes and proclivities, perceivers instead furnish categorical (ie, stereotype-based) conceptions of others."

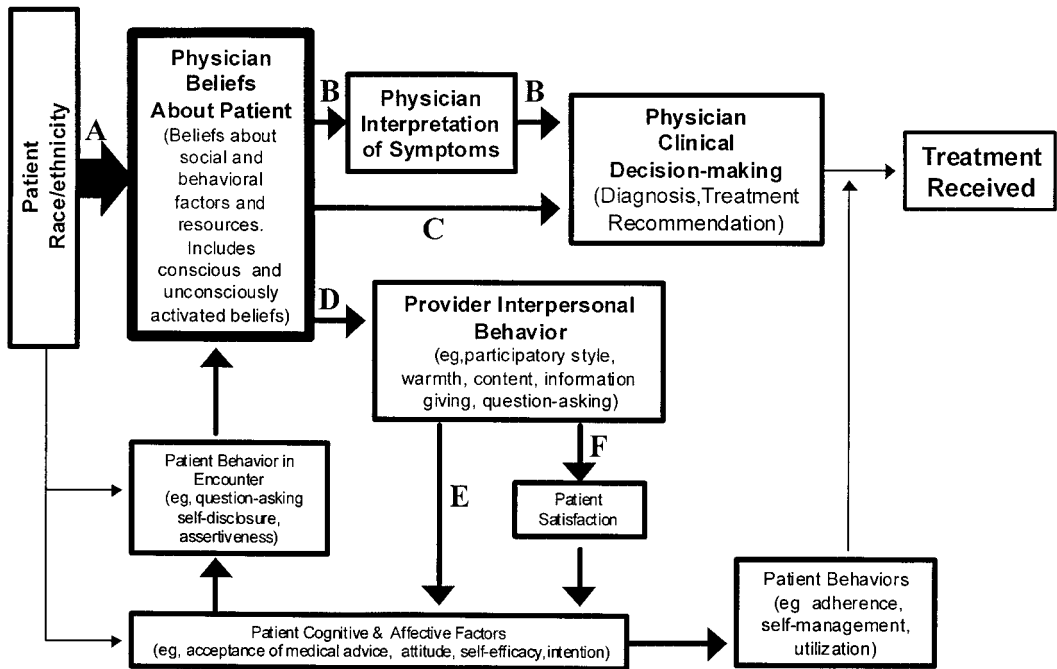


FIG. 1. Hypothesized mechanisms through which provider factors influence race/ethnicity disparities in treatments received (independent of clinical appropriateness, payer, and treatment site).

Arrow A reflects the hypothesis that the primary cognitive mediator of the effect of patient race/ethnicity on provider behavior is providers' conscious and unconscious beliefs about the patient. This hypothesis is the foundation for the rest of the ideas contained in this article and is based on and supported by a massive body of evidence on the relationship between race/ethnicity and social cognition.

Physicians are generally expected to view each patient objectively and impartially, using biomedical information obtained from physical examination and diagnostic test results to develop a diagnosis and effective treatment plan.^{38,39} Unfortunately, the research on social categorization and stereotyping suggests that these expectations are unrealistic.⁴⁰ All humans share the cognitive strategy of making the world more manageable by using categorizing and generalizing techniques to simplify the massive amounts of complex information and stimuli to which they are exposed.^{41–43} This generally adaptive process simplifies cognitive processing, reduces effort, and frees up cognitive resources.⁴⁴ In applying this process to the social world, people develop beliefs

and expectations about categories or groups of people and generalize these beliefs and expectations to all the individuals mentally assigned to that category or group.^{41,42,45–47} When individuals are mentally assigned to a particular class or group, the characteristics assigned to that group are *unconsciously and automatically* applied to the individual, a process referred to as stereotype application.^{46,48,49} Given that this type of strategy is common to all humans in all cultures, the expectation that physicians be immune is unrealistic.

The hypothesis that stereotyping influences providers' perceptions and treatment of patients has received extensive attention beginning 50 years ago.^{50,51} There is a substantial body of evidence indicating that patient sex, age, diagnosis, sexual orientation, sickness^{52–66} and, more recently, race/ethnicity^{28,40,67,68} influences provider beliefs about and expectations of patients. As one example, cardiac patients' race/ethnicity and socioeconomic status were found to independently and negatively influence physicians' ratings of patients' personality, education, intelligence, career demands, and adherence even after controlling for

physicians' characteristics and patients' frailty, age, sex, mental health, personality, social support, education, and occupational characteristics.⁴⁰

It is possible that the effect of race/ethnicity on providers' beliefs about patients can be moderated by patient behavior. Krupat et al⁶⁹ conducted a study in which physicians viewed randomly assigned videotapes of women seeking care for breast cancer. The videotapes varied on the patients' sociodemographic characteristics, general health status, and assertiveness. This study revealed that physician decisions were affected by an interaction of patient assertiveness with race and SES in that assertive behavior among black and low SES patients, but not in white or upper SES patients, resulted in greater likelihood of full tumor staging.⁶⁹ Although these findings lead to speculation that interventions targeting patient behavior may help ameliorate the effect of race/ethnicity on provider behavior, more evidence is needed to determine the specific behaviors to target and to create confidence in the efficacy of such an approach.

There is substantial evidence that patient sociodemographic characteristics independently influence physician expectations, perceptions, and affect toward patients. However, we do not know enough to accurately predict the circumstances under which provider perceptions will or will not be influenced by patient characteristics, nor can we predict the specific perceptions that will be influenced or the exact implications of a set of perceptions for patient care.

Arrow B reflects the hypothesis that providers' beliefs about patients influence their interpretation of patients' symptoms. There is ample evidence from the social cognition and interaction literature that we interpret information about others through a "screen," or framework of beliefs, created by the way we cognitively classify the individual.⁷⁰ A number of studies have found that observers assign different meaning to the same behavior depending on the race, class, or other demographic characteristics of the actor.^{42,71,72,72,73,73-75} This effect is exacerbated when the behavior is ambiguous.^{71,72,76} In one example, mental health workers were randomly assigned to watch identical videotapes portraying an adolescent. Those in one randomly assigned condition were told that the adolescent was the child of an alcoholic, and those in the other condition were told the child was a social success. Mental health diagnoses significantly varied by experimental

condition, even though they were based on the same adolescents exhibiting the same behavior.⁷⁷ Another example of this phenomena can be found in a study in which one group of 20 psychotherapists was presented with a scenario involving a white adolescent and a second group of 20 psychotherapists was presented with an identical scenario involving a black adolescent. The behaviors of the black adolescent were rated overall as less clinically significant than the behaviors of the white adolescent.⁷⁸ In addition, both medical students' and physicians' assessment of normal children was found to be negatively influenced by whether they were told the child had been born prematurely or not.^{59,60} The effect of patient demographics on providers' symptom interpretation may also explain the results of a study in which primary care physicians were randomly assigned to view a videotape in which the only difference by assigned condition was the race and sex of the patient. Physicians were less likely to recommend cardiac catheterization for black female patients than for their identical counterparts who were white or male.⁶⁸

Arrow C reflects the hypothesis that providers' beliefs about patients' social and behavioral characteristics directly influence their clinical decision-making. This may occur as a result of either of two kinds of interconnected reasoning: moral rationing and opinions about appropriateness. In the case of moral rationing, the provider believes that a patient's characteristics make her or him more or less deserving of treatment. For example, a cardiac surgeon told the author that he wasn't going to treat cardiac patients that were "just going to go out and do drugs." In the case of appropriateness, the provider believes that a social or behavior characteristic makes the patient more or less appropriate for a treatment. To date, there are only two studies testing this hypothesized cause of race/ethnicity disparities in treatment. Bogart et al⁷⁹ found that physicians were more likely to provide highly active antiretroviral therapy (HAART) to HIV/AIDS patients they perceived likely to be adherent. They then examined patient characteristics associated with physician predictions of adherence by randomly assigning physicians to review patient vignettes that varied only on patient gender, disease severity, ethnicity, and risk group. This study revealed that black patients were more likely to be rated as nonadherent than their otherwise identical counterparts.⁸⁰ Similarly, physician ratings of patients' likelihood of having

adequate social support or participating or both in cardiac rehabilitation was found to predict physicians' recommendations for revascularization, independent of clinical appropriateness for revascularization and other demographic characteristics.⁸¹ In turn, this same group of physicians was more likely to rate black patients as lacking in social support and as unlikely to participate in cardiac rehabilitation than white patients.⁴⁰

It is possible that these findings are because of providers' over-application of population statistics to individual patients. Epidemiologic data on population likelihoods may be incorporated into physicians' general belief systems such that group data are inaccurately applied to individuals. For example, a physician may see a low-income patient and unconsciously activate and apply the belief that low-income patients are less likely to exercise. In this way, physicians may fail to correctly incorporate individual data, instead being swayed by their beliefs regarding the probabilities of individuals in a sociodemographic category having a given characteristic.⁸² This is a disturbing possibility as it suggests that statistical data on marginalized populations may be incorporated and applied by providers in a way that reinforces their marginalization.

Arrow C also reflects the evidence that patient race/ethnicity or other demographic factors influences diagnostic accuracy.²¹ McKinlay and et al⁸³ conducted a study in which primary care physicians were asked to view a randomly assigned videotape of an encounter where the patient had an atypical breast lump. The randomly assigned encounters differed only on patient sociodemographic characteristics. There was considerable variation both in physician diagnosis and in physician self-reported certainty of diagnosis, with physician certainty being positively correlated with higher patient SES.⁸³ Similarly, a study of more than 19,000 patients receiving care from 349 primary care provider found that black patients were significantly more likely to have their depression go undetected than were white patients.⁸⁴

In a set of related studies, there is some evidence that patient race and income is associated with provider diagnostic accuracy. A study of just under 300 cancer patients undergoing radiotherapy revealed that oncologists' were less able to accurately identify high levels of distress among their low income cancer patients (and thus less likely to provide an appropriate therapeutic response), controlling for a variety of other influenc-

es.⁸⁵ In a related study, cancer providers were significantly more likely to underestimate the amount of pain minority cancer patients were experiencing than they were white cancer patients.³³

The effect of race/ethnicity on psychiatric diagnoses has received considerable research attention. As a result, there is a significant body of evidence that patient race has a significant effect on psychiatric diagnosis, with black patients consistently having a greater likelihood of receiving a schizophrenia diagnosis, and a lower likelihood of a depression diagnosis than similar white patients.^{17-21,24,25,86-88} Two studies have attempted to examine the processes through which these differential diagnoses occur. One study found that clinicians applied different aggregate decision models to patients of differing race in determining psychiatric diagnoses,⁸⁶ and the other speculated that differences in provider intake behaviors (Arrow E) may result in differences in the kind of information obtained in the ED, and thus create differences in diagnoses (Arrow C).

Arrow D reflects the hypothesis that providers' conscious beliefs and unconscious stereotypes about patients influences their interpersonal behaviors. There is extensive documentation of social cognition processes in which beliefs about others are activated automatically, below the level of consciousness and without intention.^{37,42,43,89-91} For example, subliminal exposure to photographs of black patients versus white patients caused naïve participants to unknowingly behave in a more hostile manner.⁹⁰ Others studies have found that subliminal exposure to black faces increases participants' negative affect (eg, Fazio et al, 1995). There are two classic studies that illustrate the vicious cycle that can be created by these phenomena. In the first, white participants each interviewed a white and a black job applicant who was in reality a confederate trained to behave in a standard manner. They found that interviewers maintained a greater physical distance, made more speech errors, and were more brusque with confederate black applicants than with their white applicant counterparts.⁹² (The observed interviewer differences could be because of increased hostility or increased discomfort, or some combination of the two.) In an ingenious follow-up study, white Princeton students were interviewed for a job by white confederates who treated a randomly assigned half as the white applicants in the earlier study had been treated, and half as the

black applicants had been treated. Naïve judges rated the applicants' competence. Those given the "black treatment" were rated less competently than those given the "white treatment".⁹²

In the second study, white participants were exposed to either subliminal images of black or of white men. Then, they were paired with a naïve partner and audio taped while playing a word-guessing game. Independent naïve raters listened to the audio tapes and rated the interactions between the pairs. Both partners in the dyads where one partner had been subliminally exposed to a black man were rated as showing significantly more hostility than those in the dyads where one participant has been subliminally exposed to a white man. Presumably the naïve partner was responding to the subliminally exposed partners' hostility.⁹³ It is important to note that the participants had no awareness of the factors contributing to their hostility.

These studies provide basis for further tests of the hypothesis that race/ethnicity disparities are at least partially mediated by variations in provider communication and interpersonal behaviors, that in turn influences patient behavior. There are a few studies of variations in provider behavior that support this possibility. A study of 8316 patients receiving care from 344 physicians found that nonwhite patients rated their physicians as having a less participatory decision-making style than white patients did.⁹⁴ Similarly, a study of 1816 adults found that black patients rated their white providers as significantly less participatory than white patients rating white providers or black patients rating black providers, independent of length of doctor-patient relationship, patient education, marital status, sex, age and health status as well as physician race and sex.⁹⁵ In a related study, both low income and black race were found to be predictive of likelihood of physicians adopting a "narrowly biomedical" communication pattern (characterized by low patient control of communication and psychosocial talk and high levels of physician biomedical information giving and close-ended question-asking).⁹⁶ Similarly, social class of patients has been found to be positively associated with provider communication effectiveness, resulting in a disadvantage for low SES patients.^{97,98} In a departure from studies relying on patient self-report, independent observers coded 150 physician-patient encounters and found that patient characteristics (ethnicity, sex, age, appearance) significantly influenced physician interper-

sonal behaviors, such as nonverbal attention, empathy, courtesy, and information giving.³⁸

Roter⁹⁹ comments that "physicians' use of communication strategies can act to reinforce an experience of patient dependence or self-reliance in regard to the patient-physician relationship generally and treatment decision-making, in particular. Certain communications enhance patient participation in the medical visit's dialogue, contribute to patient engagement in problem posing and problem-solving, and finally, facilitate patient confidence and competence to undertake autonomous action."

Arrows E and F represent the hypotheses that provider interpersonal behavior influences, respectively, patient cognitive factors such as attitudes, self-efficacy, trust, and behavioral intentions, and patient satisfaction, which, in turn, also influences patients' attitudes. There is a substantial body of evidence of a strong relationship between encounter characteristics and patient satisfaction, adherence, utilization, and outcomes.^{100,99,101-104} Providers' participatory decision making style, which can be defined as increasing patients' engagement in medical care through information-sharing, negotiation, and consensus seeking, has been shown to be positively associated with patient satisfaction,^{65,66,94-96} patient disclosure,¹⁰⁵ and other outcomes including successful self-management, adherence, lower pain levels, and recovery from symptoms.^{104,106-109}

In addition, there is evidence that patient race/ethnicity and SES influences the content of encounters, that is, what providers talk about. For example, four separate studies of patients with advanced illness found that nonwhite patients were less likely to report that their provider discussed end-of-life care with them than their white counterparts, despite their equal or stronger desire to have such a discussion.^{98,110-112} Similarly, black patients and low income patients have been found to be less likely to report receiving advice to quit smoking during their primary care visit,¹¹³ less likely to have their physician discuss diet and exercise,¹¹⁴ less likely to receive a recommendation for mammography,^{115,116} and less likely to receive prenatal preventive care advice regarding smoking cessation, alcohol use, and breastfeeding.¹¹⁷ In addition, physicians may be less likely to discuss other kinds of treatments. A study of 118 patients receiving care in the same hospital-based urban general medicine practice in Boston revealed that black women were significantly less likely to re-

port having discussed hormone replacement therapy with their providers, independent of a variety of patient factors including osteoporosis, cardiac risk factors, age, income, and education.⁵² These studies support the hypothesis that patient race/ethnicity influences the content covered in encounters. However, the degree to which these studies represent persistent disparities in provider communication patterns across settings is unknown. A better understanding of variations in provider preventive health recommendations is vital, as physician recommendation has been found to be a powerful determinant of patient preventive health behaviors.^{52,107,118–123}

Conclusion

There is sufficient evidence for the hypothesis that provider behavior contributes to race/ethnicity disparities in care to warrant further study. The model presented in Figure 1 proposes an interrelated set of hypothesized causal pathways through which provider behavior may contribute to race/ethnicity disparities in care. The model is complex, reflecting the complex nature the phenomena under study. However, validation of the central hypotheses that *provider beliefs about patients*, and *provider behavior during encounters* are independently influenced by patient race/ethnicity is a necessary first step to testing the validity of the model. Although there is evidence of support of these hypotheses, further systematic rigorous study is needed and is proposed as a major immediate research priority. In addition, these mechanisms deserve intensive research focus as they may prove to be the most promising targets for interventions intended to ameliorate the provider contribution to disparities in care. Two overarching categories of research are suggested by the evidence to date:

1. Multimethod studies (combining clinical, survey, and qualitative data) intended to test the primary hypotheses in the proposed model and provide greater knowledge of the conditions under which provider behavior is and is not influenced by patient race/ethnicity; and,
2. Intervention research intended to develop and test methods for minimizing race/ethnicity variations in provider beliefs about patients and behavior in encounters, as well

as examining the effect such changes on race/ethnicity variations in care.

There has been a lamentable dearth of research focused on potential provider contribution to race/ethnicity disparities in care. There are many reasons for this, including significant methodological challenges. In addition, of all the potential reasons for race/ethnicity disparities in care, the possibility of provider bias is perhaps the most uncomfortable and disturbing to medical care researchers and practitioners.^{124,125} However, it can be argued that hesitancy to devote resources to testing the hypothesis that provider behavior contributes to disparities reflects a lack of understanding of the automatic and unconscious nature of the social cognition processes described above. Furthermore, the current lack of research in this area creates a significant barrier to the development of evidence-based interventions addressing race/ethnicity disparities in care.

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