REVIEW ARTICLE

Unconscious (Implicit) Bias and Health Disparities: Where Do We Go from Here?

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Abstract

Disparities in health care are of great concern, with much attention focused on the potential for unconscious (implicit) bias to play a role in this problem. Some initial studies have been conducted, but the empirical research has lagged. This article provides a research roadmap that spans investigations of the presence of implicit bias in health care settings, identification of mechanisms through which implicit bias operates, and interventions that may prevent or ameliorate its effects. The goal of the roadmap is to expand and revitalize efforts to understand implicit bias and, ultimately, eliminate health disparities. Concrete suggestions are offered for individuals in different roles, including clinicians, researchers, policymakers, patients, and community members.

Substantial attention has been paid in recent years to the possibility that unconscious (implicit) bias among health care professionals contributes to health disparities.[1-3] In its 2003 report, *Unequal Treatment,*[1] the Institute of Medicine concluded that unrecognized bias against members of a social group, such as racial or ethnic minorities, may affect communication or the care offered to those individuals.

There exists a gap, however, between reasonable inferences and what is known. To what extent does implicit bias exist in health care? How does it affect different social groups? Is implicit bias more likely in some domains than in others? Does implicit bias affect clinical outcomes? Is intervention possible and if so, what strategies are most likely to be successful?

This article provides a roadmap for research in implicit bias in health care, spanning investigations of the presence of implicit bias in health care settings, identification of mechanisms through which implicit bias operates, and interventions that may prevent or ameliorate its effects. The goal of the roadmap is to expand and revitalize efforts to eliminate health disparities. Its intended audience is researchers, clinicians, and policymakers. For reasons of clarity, this analysis is limited to the potential effects of implicit bias on the patient-clinician relationship and associated care processes, leaving aside the important issue of the potential for implicit bias to affect the working environment of the health care workforce and other ways in which implicit bias might affect health.

Definitions and Measures

In the present context, *bias* is the negative evaluation of one group and its members relative to another. Such bias can be expressed directly (eg, "I like whites more than Latinos.") or more indirectly (eg, sitting further away from a Latino than a white individual). In addition to their different expressions, direct or *explicit bias* differs from *implicit bias* in terms of underlying process. Explicit bias requires that a person is aware of his/her evaluation of a group, believes that evaluation to be correct in some manner, and has the time and motivation to act on it in the current situation.[4-6] Congruent with everyday experience, research suggests that explicit bias toward ethnic/racial groups has declined significantly over the past 50 years[7] and is now considered unacceptable in general society. In contrast, implicit bias appears to be common and persistent.[8,9]

Implicit bias operates in an unintentional, even unconscious manner. This type of bias does not require the perceiver to endorse it or devote attention to its expression.[4-6] Instead implicit bias can be activated quickly and unknowingly by situational cues (eg, a person's skin color or accent), silently exerting its influence on perception, memory, and behavior.[4-6,8-10] Because implicit bias can operate without a person's intent or awareness, controlling it is not a straightforward matter.

Implicit bias cannot be measured with standard (self-report) survey questions. Instead, sophisticated

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instruments have been developed for this purpose, the most commonly used being the *Implicit Association Test* (IAT).[11,12] The IAT is a computer-based measure that relies on differences in response latency to reveal implicit bias. The IAT has been used in hundreds of studies across a wide array of disciplines, including psychology, health, political science, and market research.[8,9,12] The IAT operates on the principle that it is easier to make the same response (eg, a key press) to concepts that are more strongly associated, compared to concepts less strongly associated. Respondents are thus asked to sort words or pictures into one of four superordinate groups, representing two concept dimensions (eg, *race*: black vs white; and *evaluation*: good vs bad). The strength of association between concepts is determined by the respondents' speed in sorting the items under two different conditions, with faster responses in one condition indicating a stronger association. Most white respondents, for example, are significantly faster when the "black" and "bad" items require the same response and the "white" and "good" items require another response, compared to when "black" and "good" responses are the same and "white" and "bad" responses are the same.[8,9,12] The larger the performance difference, the stronger the implicit association or bias for a particular person. Demonstrations of this test can be found at https://implicit.harvard.edu.

Background: What We Know So Far

The theoretical framework for the role of implicit bias in health care is based on well-established empirical findings in social psychology and research on health care processes. We refer interested readers to existing reviews of that work,[13,14] confining ourselves to broad strokes for the present purposes. Figure 1 provides an illustration of the pathways through which implicit bias may affect the patient-clinician relationship and related processes. Consider a white male clinician whose implicit bias has been activated by a clinic visit with an elderly African-American patient who is receiving antihypertensive medications but whose blood pressure is uncontrolled. Without realizing that he is being unduly influenced, the clinician perceives the patient as uncooperative and unlikely to adhere to a more intensive drug regimen. The clinician may even erroneously "remember" that this patient can't afford the pharmacy copay. Consequently, although the patient's hypertension is not under control, the clinician decides not to intensify the treatment regimen. This clinician believes that he made the best decision given the situation, unaware that his perceptions were distorted by implicit bias.

Also shown in the figure is the possibility that in addition to affecting clinical decisions directly, implicit bias may also affect treatment through its effects on interpersonal communication. A number of studies have shown that people with more implicit ethnic/racial bias have poorer interpersonal interactions with minority individuals, often in very subtle ways.[6,9,10] Such interactions, in turn, may contribute to a lack of trust and commitment on the part of the patient, leading to poor adherence. The figure also notes that patients bring their own implicit biases to the clinical encounter (eg, against a white physician), further complicating communication, treatment, and achievement of mutual clinical goals.

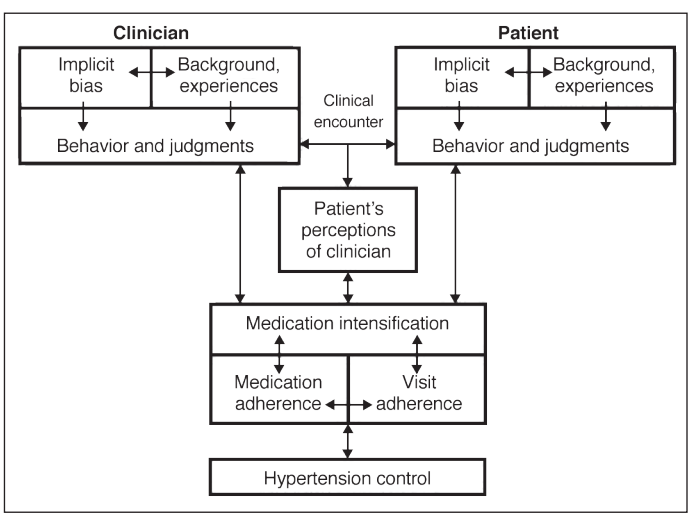

Figure 1. Conceptual model of the influence of implicit bias on hypertension control.

Research to Date on Implicit Bias in Health Care

Presence of implicit bias in health care. A handful of studies have measured implicit bias among clinicians[15-21] (Table 1), all using the IAT. Five of these studies examined racial/ethnic bias, specifically against African Americans as compared to whites. Four of the five studies found evidence for implicit race bias among clinicians (Table 1), with the average level of bias ranging across the studies from "small" (Cohen's $d = 0.41$) to "large" ($d = 0.90$). The one study that did not find bias against African Americans[17] is notable in its reliance on a small and primarily minority clinician sample.

Although the magnitude of the reported bias varies, the presence of implicit bias is generally consistent across the studies and suggests that clinicians have similar implicit biases to others in society. The presence

of implicit bias among clinicians further suggests that it could play a role in health care disparities just as it plays a role in differential outcomes elsewhere in society.

At the same time, the limitations of the existing work cannot be ignored. First, there are questions about the degree to which the results can be applied to clinicians more generally. Four of the studies listed in Table 1 are of relatively young and inexperienced clinicians (residents and students), and six of the studies include either a low number of respondents from the pool of eligible clinicians (26% to 38%) or the response rate is unknown. For example, the study by Sabin et al[18] is impressive with its large sample size. However, the individuals in this study decided of their own accord to visit the Web site, and there is no known denominator of eligible clinicians who could have participated. It will be incumbent on future research to include more experienced clinicians and obtain response rates that are more representative of the entire study population.

The second major limitation of existing research is the almost exclusive focus on African Americans as targets of implicit bias. The vast health disparities shown for African Americans certainly raise the priority of assessing implicit bias against this group. However, disparities have also been shown for other racial and ethnic groups[22,23] that may be more prevalent in certain geographic regions. Disparities have also been found in many other social domains including gender, age, sexual orientation, and socioeconomic status (SES).[22-25] Implicit bias against individuals with specific clinical conditions such as disability, obesity, or mental illnesses may also be present as suggested by the two studies in Table 1 on implicit bias toward injecting drug users.

Consequences of implicit bias in health care. Of even greater need is research on the correlates and consequences of implicit bias in health care. Even if one were to accept the findings shown in Table 1 as sufficient evidence of implicit bias against African Americans among clinicians, one must still ask to what degree this bias affects health care and outcomes. There is even less evidence to answer these questions. Of the five published studies already discussed, two also investigated the degree to which the clinicians' implicit bias related to their clinical judgments in hypothetical scenarios, with one study[16] showing that implicit race bias was related to treatment recommendations for an African-American patient and the other study[19] showing that implicit race bias was not related to clinical judgment. One additional study[17] examined implicit race bias in relation to interpersonal

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Table 1. Published studies measuring implicit biases of clinicians

Citation	Participants		Focus of Implicit Bias	IAT Score	
	N (% of eligible)	Characteristics		Mean (SD)	Effect Size
Green et al (2007)[1]	220 (28%)	Residents in internal medicine and emergency medicine	African Americans	0.36 (0.40)	*d* = 0.90
Sabin et al (2008)[2]	43 (26%)	Residents and faculty in pediatrics	African Americans	0.18 (0.44)	*d* = 0.41
Sabin et al (2009)[3]	2535 (NA)	Physicians self-selected to Internet site, unknown specialties	African Americans	0.39 (0.47)	*d* = 0.83
White-Means et al (2009)[4]	331 (38%)	Students in pharmacy, medicine, and nursing	African Americans	0.40 (NA)	NA
Penner et al (2010)[5]	15 (83%)	Residents in family medicine	African Americans	-0.10 (0.35[a])	*d* = -.028
Brener et al (2007)[6]	60 (NA)	Nurses and doctors in drug and alcohol	Injecting drug users	0.36 (0.42)	*d* = 0.86
Von Hippel et al (2008)[7]	44 (NA)	Nurses in drug and alcohol	Injecting drug users	0.26 (0.41)	*d* = 0.63

d = Cohen's *d* with "small," "medium" and "large" effects indicated by *d* = 0.20, 0.50 and 0.80, respectively. NA = Not Available.
[a] = obtained from personal communication with the authors.

1. Green AR, Carney DR, Pallin DJ, et al. Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. J Gen Intern Med 2007 Sep;22(9):1231–8.
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6. Brener L, von Hippel W, Kippax S. Prejudice among health care workers toward injecting drug users with hepatitis C: does greater contact lead to less prejudice? Int J Drug Policy 2007 Oct;18(5):381-7.
7. Von Hippel W, Brener L, Von Hippel C. Implicit prejudice toward injecting drug users predicts intentions to change jobs among drug and alcohol nurses. Psychol Sci 2008 Jan;19(1):7–11.

behavior, showing that more biased clinicians were rated by their African-American patients as lower in warmth and friendliness. No published study yet has examined the relation between implicit bias and actual medical treatment or outcomes.

A Roadmap for Future Research on Implicit Bias in Health Care

The next generation of research on implicit bias in health care must accomplish three goals: 1) determine the degree of different implicit biases for different groups; 2) assess the associations among implicit bias and processes and outcomes of care; 3) test interventions to reduce implicit bias in health care and outcomes, if bias is found to be important in health care. In this section we expand on these three goals and highlight potential approaches to accomplish them.

Goal 1: Determine the degree of implicit bias with regard to the full range of social groups for which disparities exist

Health disparities have been shown along multiple social dimensions[22-25] (eg, race/ethnicity, gender, age and SES) and local circumstances may bring additional dimensions to the forefront (eg, military or religious groups). Research is needed to determine whether implicit bias exists toward each of these groups. In some cases, the approach used in existing research can be easily adapted. For example, an IAT has already been developed to assess bias against elderly vs young individuals.[26] In other cases, additional research is needed to determine what types of bias might be operating. This is likely to be particularly important with regard to gender. Research shows that people are more often implicitly biased *in favor* of women over men,[27,28] so why does it appear that in some situations women are less likely to receive high-quality care? An even greater challenge will be the consideration of overlapping group biases. Patients are not simply members of a racial/ethnic group, a gender group, *or* an age group; they are simultaneously members of all these groups. The interaction among biases for or against these groups is relatively unexplored. In our earlier example, the care provided to an elderly African American by a clinician with biases against both social groups may be of lower quality, whereas implicit bias *in favor* of the elderly may offset some of the effects of implicit bias against African Americans. As millions of newly insured individuals prepare to enter the health care system under health care reform legislation during the next few years, the interaction of socioeconomic bias and other forms of bias (eg, SES by race) will require particular attention.

The extent to which implicit bias exists among different groups of health care professionals (eg, physicians, nurses, front-office staff), with regard to patients from different social groups must also be more fully understood. As shown in Table 1, the few studies of implicit bias in health care have focused primarily on physicians. In an environment in which care is increasingly provided by multidisciplinary teams, it is important to assess the biases of the entire range of health care professionals. A bad health care experience may come from poor service in the pharmacy or on a phone call with front-desk staff. Furthermore, little research has addressed the implicit biases that patients themselves bring to clinical encounters (eg, bias against a clinician of different race/ethnicity or with a foreign accent). Given evidence that racial, ethnic, or gender concordance between clinician and patient can affect communication and treatment,[29-31] the implicit biases of patients, particularly in combination with those of their clinicians, need further study. Finally, research on implicit bias ought to be broadened to include health care beyond the US and in different cultures.

Goal 2: Understanding the relations between implicit bias and clinical outcomes

The second step is to test and refine the conceptual model presented earlier that describes how implicit bias might be related to the processes and outcomes of clinical care. As shown in Figure 1, the relevant processes of care necessary to achieve clinical goals also require assessment if we are to understand the mechanisms through which implicit bias affects those goals. Decisions or behaviors by either clinician or patient may suggest that implicit biases are at work. In our earlier example, both clinician-determined processes, such as the decision to prescribe an additional antihypertensive medication, and patient processes, such as the decision to adhere to that new drug, need to be assessed. The quality of communication between clinician and patient is also important to assess. If implicit bias is found to be expressed through simple aspects of communication such as speed of speech or body positioning, specific training for clinicians may be suggested. Insight may also be gained by stratifying analyses of current measures of patient satisfaction with clinicians by patient characteristics such as race and ethnicity.[32] There are also sophisticated analytic systems for coding audiotaped or videotaped encounters, that consider both the content and style of communication.[33,34]

Assessing the relation between implicit bias and outcomes is critical. In statistical terms, one needs to go beyond the demonstration of a main effect such as a health disparity between Latinos and whites, and determine whether differences in the levels of disparity found from one clinician to another co-vary with differences in levels of the clinicians' bias.

To refine the simplistic causal model shown in Figure 1, both laboratory and clinical studies are needed. In laboratory studies, implicit bias is most likely to have an effect in situations with substantial ambiguity, room for "judgment calls," and constraints on time and attention.[14,35] Translated to the clinical setting, implicit bias may be more influential when treatment algorithms are less developed than in situations that have clearly defined algorithms for treatment. Likewise, implicit bias may have more of an effect on decisions made during a one-time visit than on decisions made in the context of an ongoing clinical relationship in which one presumes more accurate patient data has accumulated. On the other hand, laboratory research has not examined implicit bias in long-term relationships, and the possibility exists that such bias may have a cumulative effect with early instances of miscommunication building into larger problems later on.

Goal 3: Interventions to reduce effects of implicit bias on processes of care and clinical outcomes

If implicit biases are found to be important in health care, the third step is to adapt and test theory-based interventions[36-38] at all levels, including the individual practitioner, the care team, and the delivery system. Such interventions could attempt to reduce implicit bias directly, could bolster patients' defenses against bias, or could alter care delivery systems to mitigate the effects of bias.

The most obvious point of intervention is with the individual. If health care professionals' implicit biases are contributing to disparities, reducing those biases seems an obvious solution. Basic research on implicit bias supports the plausibility of this approach by showing that implicit bias is potentially malleable, changing in response to situational cues and norms.[36] Despite its intuitive appeal, a direct approach of confronting an individual with evidence of bias may actually have little effect on that bias. Although people can be rationally convinced that they ought to feel or think differently and they are motivated to do so, the operation of implicit bias is not open to easy identification and effortful control. Indeed, research shows that intentionally trying to suppress bias may actually make it "rebound" at a later time.[39] Instead a less direct approach can be more effective.

If one thinks of implicit bias in psychological terms as an automatic cue-response association, then one might see that changing the cue is likely to be more effective than trying to will the response to change[36]—at least in the short term. The challenge then, becomes identifying cues or situational variables that matter. Laboratory research suggests that implicit bias can be diminished by cues that bring to mind associations that run counter to the bias.[4,40-42] To illustrate, one study found that white individuals who had been exposed to many admired African Americans, subsequently showed reduced implicit bias.[42] Such methods need to be adapted and tested in clinical settings, but they nonetheless suggest the real possibility of change.

In addition to direct intervention on health care professionals' implicit bias, the conceptual model shown in Figure 1 makes it clear that there are many pathways between implicit bias and health outcomes, with the possibility of intervention at each one. Patients play a role in the quality of the clinical interaction and successful treatment is often reliant on their own efforts. Patients may respond to bias in a variety of ways, some of which can worsen the situation and some of which can help to deflect a negative outcome.

Recent research on stereotype threat and, importantly, the positive effects of a self-affirmation intervention hold great promise. Stereotype threat[43] is a stressful psychological state that occurs when a person fears being judged by others on the basis of negative stereotypes. In health care settings, stereotype threat may impair patient-clinician communication, reduce self-efficacy, and increase mistrust.[44] Because stereotype threat can impair communication between patient and physician, interventions that reduce patients' perception of threat might lead to more functional behavior for both patients and physicians. Self-affirmation, a process in which people affirm their self-integrity (eg, important values) in the face of a threat, has been shown in educational settings to reduce racial differences in performance over time periods of up to two years.[45-47] Self-affirmation thus represents a possible component of a theory-driven intervention to reduce the impact of implicit bias in health care. Studies to assess this are in progress.

Of course, interventions at the team, clinic, or delivery system level can also reduce health care disparities. Such interventions are primarily organizational in nature, and, despite their great potential, are beyond the scope of this discussion.

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Table 2. Suggestions for action to understand and address implicit bias in health care

Clinicians	
• Consciously affirm egalitarian goals and consider specific ways to implement them.[1,2] • Consider "gut" reactions to specific individuals or groups as *potential* indicators of implicit bias,[3] and consider how these reactions might affect your work. • Acknowledge and reappraise[4,5] rather than suppress uncomfortable feelings and thoughts.[6]	• Consider the situation from the patient's perspective.[7] • Consider changing situations that increase negative or stereotypical responses.[8-11] • Partner with researchers and participate in research to advance understanding of implicit bias and to develop evidence-based interventions.
Researchers	
• Identify biases that may be active in your community, especially those that have been overlooked by others. • Conduct studies on a broad array of potential biases with different types of health care professionals. • Assess the relations between implicit bias and actual health care processes and outcomes, partnering with clinicians to define clinical interactions likely to be affected by implicit bias.	• Design and test theory-based interventions[12-14] in laboratory and field settings, working with clinicians to identify interventions that could be translated into actual practice. • Consider interventions at multiple levels (eg, patients, clinicians, and health care teams), acknowledging the interdependent nature of health care and the social networks that are involved.
Policymakers	
• Affirm equity of care and diversity as core organizational and institutional values.[1,2,15,16] • Consider ways to improve detection of disparities, and reconsider policies that may (unintentionally) worsen disparities.[17] • Support research that seeks to better understand bias and develop interventions to improve communication and lessen disparities.	• Support clinicians' efforts to implement change to address disparities directly. • Invite dialogue with community leaders to better identify services in need of improvement and unrecognized biases in the health care system and workforce. • Support efforts to increase workforce diversity, especially in leadership positions.[18-20]
Patients and Community Members	
• Consider implicit biases that you yourself may bring into the health care setting. What are your gut reactions and how might they affect your thoughts and behavior? • Partner with researchers and participate in research to better understand bias and develop interventions that are effective and responsive to the needs of the community.	• Realize that your clinicians are people too. To the degree that bias exists in health care, it is not unique to that arena and must be addressed as a community. Patience and honest communication can help solve many problems. • Provide feedback to help your clinicians improve services, especially in areas that appear to be inequitable.

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Conclusions: What can the Reader do?

Eliminating health disparities is of national importance, as highlighted in reviews, such as *Healthy People 2000*[48] and *Healthy People 2010*.[49] The National Institute of Health ranks this issue third among its top five priorities.[50] As part of this effort, health care professionals have been encouraged to consider how biases (ie, stereotypes, prejudice or discrimination) may contribute to disparities,[1] and to "dig deeper" because such effects may often be unintentional and not obvious from standard assessments.

Despite much discussion about the potential role of bias in health disparities, little research has directly investigated bias among health care professionals. The existing evidence does, however, suggest that implicit bias may affect clinical judgment and decision-making. The conceptual model in Figure 1 suggests further that implicit bias may also affect treatment outcomes by affecting clinical interactions and patients' adherence with their treatment.

This review and suggested roadmap may have already prompted readers to consider whether bias affects their own professional domains. If the readers' interest has been piqued but the next steps are still unclear, Table 2 offers a few concrete suggestions for individuals in different roles, including clinicians, researchers, policymakers, patients, and community members. These suggestions include prompts for conducting research as well as practical advice on combating implicit bias in health care. The latter is based on scientific theory and research on the factors that moderate implicit bias.[36-38] However, it is important to note that specific interventions have yet to be tested in health care settings.

To some degree, readers will see in Table 2 much common sense advice, "be thoughtful, consider others' perspectives and work together to achieve common goals." This sounds simple. We think it is not simple. The many, unrelenting demands of modern life (to say nothing of a busy medical practice) leave little time for reflection and the fulfillment of even the best of intentions. It is precisely for this reason that implicit bias may go unchecked in the pressured environment of health care, and why systematic investigation is needed to better understand and address this problem. For progress to be made, these biases must be rendered less implicit and unconscious to foster real reflection, analysis and change. ❖

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