The Impact of Unconscious Biases on Healthcare Outcomes

Adil H Haider MD, MPH, FACS
Associate Professor of Surgery, Anesthesiology and Health Policy and Management
Director, Center for Surgery Trials and Outcomes Research (CSTOR)
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American College of Surgeons C. James Carrico Fellowship for the study of Trauma and Critical Care

Johns Hopkins Dean’s Research Fellowship for Medical Students
Table 1. Relative Risk (RR) of Black and White Patients to Have Inguinal-Hernia Repairs and Cholecystectomies Performed by Resident Surgeons.

<table>
<thead>
<tr>
<th>Year of Operation</th>
<th>Race of Patient</th>
<th>Status of Surgeon</th>
<th>% Treated by Resident</th>
<th>Relative Risks and Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1952</td>
<td>Black</td>
<td>148</td>
<td>12</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>69</td>
<td>206</td>
<td>275</td>
</tr>
<tr>
<td>1957</td>
<td>Black</td>
<td>234</td>
<td>24</td>
<td>258</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>102</td>
<td>279</td>
<td>381</td>
</tr>
<tr>
<td>1962</td>
<td>Black</td>
<td>268</td>
<td>29</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>131</td>
<td>239</td>
<td>370</td>
</tr>
<tr>
<td>1967</td>
<td>Black</td>
<td>255</td>
<td>45</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>99</td>
<td>279</td>
<td>378</td>
</tr>
<tr>
<td>1972</td>
<td>Black</td>
<td>165</td>
<td>121</td>
<td>286</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>44</td>
<td>288</td>
<td>332</td>
</tr>
</tbody>
</table>

*Relative risk = 4.6; chi-square = 34, P < 0.001.

Table 2. Relative Risk* for a Black Patient to Be Treated by a Resident Surgeon as Compared with a White Patient (All Patients Paying Directly or with Commercial Insurance).

<table>
<thead>
<tr>
<th>Race of Patient</th>
<th>Type of Surgeon</th>
<th>% Treated by Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resident Staff Totals</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>26</td>
<td>51</td>
</tr>
<tr>
<td>White</td>
<td>20</td>
<td>51</td>
</tr>
</tbody>
</table>

*Relative risk = 4.6; chi-square = 34, P < 0.001.

Reprinted from the *New England Journal of Medicine* 297:90-91 (July 14), 1977
Disparities in Surgical Outcomes are Well Documented in the Literature


• Pedestrians Struck By Motor Vehicles Contribute To Disparities In Trauma Outcomes: The Case For Inner City Pedestrian Injury Prevention Programs Surgery, Aug 2010
Potential Mechanisms that lead to Disparities

- Poor Access to Medical Care
- Sub Standard Medical Care
  If so? What are the exact differences in care; are they in treatments, major procedures, complications?
- Differential treatments
  What is the role of the provider bias?
Are Surgical Care Providers Biased?

Would we treat this patient differently?

There is no data to suggest that any of us would do so knowingly.
Hypothesis

Like the general population doctors may possess unconscious biases or preferences.

These Unconscious or Implicit Biases may lead us to unknowingly treat patients differently.
Race Implicit Association Test

Computer-based test of social cognition

Measures time it takes to match representatives of social groups with good and bad attributes

Test-takers with an implicit preference for whites complete the tasks in screens a and b more quickly than those in screens c and d

https://implicit.harvard.edu/implicit
African American

Put your middle or index fingers on the E and I keys of your keyboard. Words or images representing the categories at the top will appear one-by-one in the middle of the screen. When the item belongs to a category on the left, press the E key; when the item belongs to a category on the right, press the I key. Items belong to only one category. If you make an error, an X will appear - fix the error by hitting the other key.

This is a timed sorting task. GO AS FAST AS YOU CAN while making as few mistakes as possible. Going too slow or making too many errors will result in an uninterpretable score. This task will take about 5 minutes to complete.

Press the space bar to begin.

If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
African American  European American

If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
See above, the categories have changed. The items for sorting have changed as well. The rules, however, are the same.

When the items belong to a category on the left, press the E key; when the item belongs to a category on the right, press the I key. Items belong to only one category. An X appears after an error - fix the error by hitting the other key. **GO AS FAST AS YOU CAN.**

Press the **space bar** to begin.

If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
European American or African American or Good or Bad

If the E and I keys do not work, click the mouse inside the white box and try again.

If the red X appears, press the other key to make the red X go away.
Race IAT: Implicit preference for whites: Response to these pairings is faster...

- **African American** & **bad**
  - pain
  - death
  - stink
  - grief
  - agony
  - filth
  - tragedy
  - vomit

- **European American** & **good**
  - gentle
  - happy
  - smile
  - joy
  - warmth
  - pleasure
  - paradise
  - rainbow
If faster on these... preference for Blacks

European American & bad
- pain
- death
- stink
- grief
- agony
- filth
- tragedy
- vomit

African American & good
- gentle
- happy
- smile
- joy
- warmth
- pleasure
- paradise
- rainbow
Understanding and Using the Implicit Association Test: III. Meta-Analysis of Predictive Validity

Anthony G. Greenwald  
University of Washington

T. Andrew Poehlman  
Southern Methodist University

Eric Luis Uhlmann  
Northwestern University

Mahzarin R. Banaji  
Harvard University

This review of 122 research reports (184 independent samples, 14,000 subjects) found average \( r = .274 \) for prediction of behavioral, judgment, and physiological measures by Implicit Association Test (IAT) measures. Parallel explicit (i.e., self-report) measures, available in 156 of these samples (13,068 subjects), also predicted effectively (average \( r = .361 \)), but with much greater variability of effect size. Predictive validity of self-report was impaired for socially sensitive topics, for which impression management may distort self-report responses. For 32 samples with criterion measures involving Black-White interracial behavior, predictive validity of IAT measures significantly exceeded that of self-report measures. Both IAT and self-report measures displayed incremental validity, with each measure predicting criterion variance beyond that predicted by the other. The more highly IAT and self-report measures were intercorrelated, the greater was the predictive validity of each.

Keywords: Implicit Association Test, implicit measures, validity, implicit attitudes, attitude–behavior relations

Supplemental materials: http://dx.doi.org/10.1037/a0015575.supp
Race IAT Results from General Population (> 1 million responders)

- Strong preference for White people: 27%
- Moderate preference for White people: 27%
- Slight preference for White people: 16%
- Little to no automatic preference: 17%
- Slight preference for Black people: 6%
- Moderate preference for Black people: 4%
- Strong preference for Black people: 2%
Physicians Have Unconscious Preferences as Well

PART IV: ORIGINAL PAPER

Physicians’ Implicit and Explicit Attitudes About Race by MD Race, Ethnicity, and Gender

Janice A. Sabin, PhD, MSW
Brian. A. Nosek, PhD
Anthony G. Greenwald, PhD
Frederick P. Rivara, MD, MPH

Abstract: Recent reports suggest that providers’ implicit attitudes about race contribute to racial and ethnic health care disparities. However, little is known about physicians’ implicit racial attitudes. This study measured implicit and explicit attitudes about race using the Race Attitude Implicit Association Test (IAT) for a large sample of test takers (N = 404,277), including a sub-sample of medical doctors (MDs) (n = 2,535). Medical doctors, like the entire sample, showed an implicit preference for White Americans relative to Black Americans. We examined these effects among White, African American, Hispanic, and Asian MDs and by physician gender. Strengths of implicit bias were pooled and differences by race and gender were not statistically significant.
# Results

## Table 2.

**Implicit and Explicit Attitude Measures: All Test Takers, MD, Others with Doctoral Degree**

<table>
<thead>
<tr>
<th>Race Implicit Association Test (IAT)</th>
<th>Effect size</th>
<th>Explicit (self report)</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>Standard</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----</td>
<td>------------------</td>
<td>----------</td>
</tr>
<tr>
<td>All test takers</td>
<td>344,469</td>
<td>0.35</td>
<td>0.42</td>
</tr>
<tr>
<td>MD (medical doctor)</td>
<td>2,535</td>
<td>0.39</td>
<td>0.47</td>
</tr>
<tr>
<td>JD (lawyer)</td>
<td>6,144</td>
<td>0.32</td>
<td>0.43</td>
</tr>
<tr>
<td>PhD (doctorate)</td>
<td>7,952</td>
<td>0.32</td>
<td>0.45</td>
</tr>
</tbody>
</table>

<sup>a</sup> Implicit and explicit measures range from −2 to +2, with zero indicating no bias

<sup>b</sup>A positive mean indicates some degree of automatic preference for white Americans, a negative mean indicates some degree of automatic preference for black Americans

<sup>c</sup>Effect size: Cohen’s D is a standardized effect size, comparing the mean to M = 0 (no bias), interpreted as; D of 0.2 = small effect, D of 0.5 = medium effect, and D of 0.8 = large effect
Results

Table 3.

<table>
<thead>
<tr>
<th>Race Implicit Association Test (IAT)</th>
<th>Effect size</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MD race/ethnicity</td>
<td>N</td>
<td>Mean</td>
<td>Standard</td>
<td>Cohen’s D</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>White</td>
<td>1682</td>
<td>0.44</td>
<td>0.42</td>
<td>1.05</td>
<td>1915</td>
<td>0.42</td>
</tr>
<tr>
<td>African American</td>
<td>206</td>
<td>0.05</td>
<td>0.47</td>
<td>0.11</td>
<td>244</td>
<td>-0.75</td>
</tr>
<tr>
<td>Asian</td>
<td>288</td>
<td>0.40</td>
<td>0.43</td>
<td>0.93</td>
<td>346</td>
<td>0.34</td>
</tr>
<tr>
<td>Hispanic</td>
<td>115</td>
<td>0.40</td>
<td>0.45</td>
<td>0.89</td>
<td>131</td>
<td>0.22</td>
</tr>
</tbody>
</table>

*Implicit and explicit measures range from -2 to +2, with zero indicating no bias.

A positive mean indicates some degree of automatic preference for white Americans, a negative mean indicates some degree of automatic preference for Black Americans.

Effect size: Cohen’s D is a standardized effect size, comparing the means to M=0 (no bias), interpreted as: D of 0.2 = small effect, D of 0.5 = medium effect, and D of 0.8 = large effect.

MD = medical doctor.
Do Implicit Preferences Impact Clinical Decision Making?

Implicit Bias among Physicians and its Prediction of Thrombolysis Decisions for Black and White Patients

Alexander R. Green, MD, MPH\textsuperscript{1}, Dana R. Carney, PhD\textsuperscript{2}, Daniel J. Pallin, MD, MPH\textsuperscript{3}, Long H. Ngo, PhD\textsuperscript{4}, Kristal L. Raymond, MPH\textsuperscript{5}, Lisa I. Iezzoni, MD, MSc\textsuperscript{6}, and Mahzarin R. Banaji, PhD\textsuperscript{2}

\textsuperscript{1}The Disparities Solutions Center, Massachusetts General Hospital, Harvard Medical School, 50 Staniford Street, Suite 901, Boston, MA 02114, USA; \textsuperscript{2}Department of Psychology, Harvard University, Boston, MA, USA; \textsuperscript{3}B Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, USA; \textsuperscript{4}Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA; \textsuperscript{5}University of North Carolina–Chapel Hill, Chapel Hill, NC, USA; \textsuperscript{6}The Institute for Health Policy, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA.

\textbf{CONTEXT:} Studies documenting racial/ethnic disparities in health care frequently implicate physicians’ unconscious biases. No study to date has measured physicians’ unconscious racial bias to test whether this predicts physicians’ clinical decisions.

\textbf{OBJECTIVE:} To test whether physicians show implicit race bias and whether the magnitude of such bias predicts thrombolysis recommendations for black and white patients with acute coronary syndromes.

\textbf{DESIGN, SETTING, AND PARTICIPANTS:} An internet-based tool comprising a clinical vignette of a patient presenting to the emergency department with an acute coronary syndrome, followed by a questionnaire and three Implicit Association Tests (IATs). Study invitations

\textbf{CONCLUSIONS:} This study represents the first evidence of unconscious (implicit) race bias among physicians, its dissociation from conscious (explicit) bias, and its predictive validity. Results suggest that physicians’ unconscious biases may contribute to racial/ethnic disparities in use of medical procedures such as thrombolysis for myocardial infarction.

\textbf{KEY WORDS:} unconscious bias; thrombolysis; race; clinical decisions; disparities.

DOI: 10.1007/s11606-007-0258-5

Conclusion: Implicit Bias Predicts Thrombolysis

n=220 IM and Emed Residents

How is this moderated? Is it Lack of Understanding and Empathy?

- Cultural Differences?
  - Difficulty in contextualizing
  - Language barriers

- Intra-group Preferential Treatment
  - We may do more “favors” for patients who we can more closely relate to
The Associations of Clinicians’ Implicit Attitudes About Race With Medical Visit Communication and Patient Ratings of Interpersonal Care

Lisa A. Cooper, MD, MPH, Debra L. Roter, DrPH, Kathryn A. Carson, ScM, Mary Catherine Beach, MD, MPH, Janloe A. Sabin, PhD, MSW, Anthony G. Greenwald, PhD, and Thomas S. Inui, MD

Racial/ethnic disparities in healthcare are documented across conditions, settings, diagnostic and treatment modalities, and dimensions of technical quality, and ethnic minorities rate interpersonal quality of care from physicians more negatively than do Whites. Minorities experience poorer communication with physicians, particularly in race-discordant patient-clinician relationships. The Institute of Medicine’s report “Unequal Treatment” suggests disparities in healthcare emerge from biases (or prejudice) against minorities; greater clinical uncertainty when interacting with minority patients; and beliefs (or stereotypes) held by the provider about the behavior or health of minorities.

Biases may reflect explicit (conscious) biases or implicit (unconscious) biases. There is evidence that physicians have more negative explicit attitudes toward Blacks than towards Whites, including stereotypes about nonadherence, and that negative explicit attitudes are associated with and mediate racial disparities.

Objectives. We examined the associations of clinicians’ implicit attitudes about race with visit communication and patient ratings of care.

Methods. In a cross-sectional study of 40 primary care clinicians and 269 patients in urban community-based practices, we measured clinicians’ implicit general race bias and race and compliance stereotyping with 2 implicit association tests and related them to audiotape measures of visit communication and patient ratings.

Results. Among Black patients, general race bias was associated with more clinician verbal dominance, lower patient positive affect, and poorer ratings of interpersonal care; race and compliance stereotyping was associated with longer visits, slower speech, less patient centeredness, and poorer ratings of interpersonal care. Among White patients, bias was associated with more verbal dominance and better ratings of interpersonal care; race and compliance stereotyping was associated with less verbal dominance, shorter visits, faster speech, more patient centeredness, higher clinician positive affect, and lower ratings of some aspects of interpersonal care.

Clinicin Bias and Patient Perceptions of Clinician Respect

-30%  

+87%  

*p<0.05
Clinician Bias and Patient Liking of Clinician

Predicted Probability (%)

-30%

+38%

Black
White

Race Implicit Attitudes
No Pro-White Bias
Pro-White Bias

*p<0.05
Clinician Bias and Patient Recommendation of Clinician

Predicted Probability (%)

<table>
<thead>
<tr>
<th>Patient race</th>
<th>Race Implicit Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>No Pro-White Bias</td>
</tr>
<tr>
<td></td>
<td>Pro-White Bias</td>
</tr>
<tr>
<td>White</td>
<td>-27%</td>
</tr>
<tr>
<td></td>
<td>-10%</td>
</tr>
</tbody>
</table>

*p<0.05
Paradox of Cognitive Dissonance

- Humans: 2 cognitive systems
  - 1\textsuperscript{st}: Conscious, controlled & effortful processing of stimuli which produces explicit beliefs & attitudes.
  - 2\textsuperscript{nd}: Responds automatically through implicit knowledge, beliefs, attitudes & skills through repeated exposure
One Needs Conscious Mental Processing to overcome Bias

• “Implicit attitudes are more likely to influence behaviors when cognitive processing capacity is low:
  – due to fatigue or illness
  – under pressure or cognitive overload

• It takes “cognitive luxury” to override implicit biases and replace them with controlled consideration of patients’ unique characteristics.”
Association of Unconscious Race and Social Class Bias With Vignette-Based Clinical Assessments by Medical Students

Adil H. Haider, MD, MPH
Janel Sexton, PhD
N. Sriram, PhD
Lisa A. Cooper, MD, MPH
David T. Efron, MD
Sandra Swoboda, RN
Cassandra V. Villegas, MPH
Elliott R. Haut, MD
Morgan Bonds, BA
Peter J. Pronovost, MD, PhD
Pamela A. Lipsett, MD
Julie A. Freischlag, MD
Edward E. Cornwell III, MD

Context  Studies involving physicians suggest that unconscious bias may be related to clinical decision making and may predict poor patient-physician interaction. The presence of unconscious race and social class bias and its association with clinical assessments or decision making among medical students is unknown.

Objective  To estimate unconscious race and social class bias among first-year medical students and investigate its relationship with assessments made during clinical vignettes.

Design, Setting, and Participants  A secure Web-based survey was administered to 211 medical students entering classes at Johns Hopkins School of Medicine, Baltimore, Maryland, in August 2009 and August 2010. The survey included the Implicit Association Test (IAT) to assess unconscious preferences, direct questions regarding students’ explicit race and social class preferences, and 8 clinical assessment vignettes focused on pain assessment, informed consent, patient reliability, and patient trust. Adjusting for student demographics, multiple logistic regression was used to determine whether responses to the vignettes were associated with unconscious race or social class preferences.

Main Outcome Measures  Association of scores on an established IAT for race and a novel IAT for social class with vignette responses.

Results  Among the 202 students who completed the survey, IAT responses were consistent with an implicit preference toward white persons among 140 students (69%, 95% CI, 61%-75%). Responses were consistent with a preference toward those in the upper class among 174 students (86%, 95% CI, 80%-90%). Assessments generally did not vary by patient race or occupation, and multivariable analyses for all 8...
Methods:
A Two Year Prospective Study

Medical students entering JHSOM Classes of 2013 and 2014 were asked to complete a web survey including:

1) IAT: Race
   Social Class
2) Eight clinical scenario vignettes
3) Direct questions regarding explicit race and socioeconomic class preferences
Clinical vignettes randomly changed race and socioeconomic classes

White compared to Black

To compare Class Status: Occupation used for example Lawyer compared to Toll Booth collector
Race Implicit Association Test
Scores for Black vs. White

<table>
<thead>
<tr>
<th>Prefers Black</th>
<th>Strong 2.0%</th>
<th>Moderate 6.1%</th>
<th>Slight 5.6%</th>
<th>Both Equally 17.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefers White</td>
<td>Slight 15.2%</td>
<td>Moderate 31.0%</td>
<td>Strong 22.3%</td>
<td></td>
</tr>
</tbody>
</table>
Explicit vs. Implicit Race Preferences

- **Explicit**: Preferences Black
- **Implicit**: Preferences White

ρ = -0.08

Categories: Strong, Moderate, Slight, Both Equally, Slight, Moderate, Strong
Responses to Clinical Vignettes by Patient Race

Haider, A. H. et al. JAMA 2011;306:942-951

Copyright restrictions may apply.
Lower vs. Upper Social Class
Implicit Association Test Scores

- 0.0% Prefers Lower
- 1.6% Prefers Upper
- 2.1% Prefers Lower
- 10.4% Both Equally
- 9.9% Slight
- 22.9% Moderate
- 53.1% Strong

Strong | Moderate | Slight

Slight | Moderate | Strong

Prefers Lower | Prefers Upper
Explicit and Implicit Preferences
Lower vs. Upper Class

Strong
Moderate
Slight
Both Equally
Slight
Moderate
Strong

0.0%
10.0%
20.0%
30.0%
40.0%
50.0%
60.0%

Prefers Lower
Prefers Upper

ρ = -0.43
Responses to Clinical Vignettes by Patient Social Class

Haider, A. H. et al. JAMA 2011;306:942-951
Conclusion

A majority of medical students exhibit an unconscious bias preferring Whites and Upper Social class

Unlike data on physicians, these biases do not impact their assessment of surgical patients
Is it Useful to Know about ones biases?

Helping medical learners recognise and manage unconscious bias toward certain patient groups

Gayla R Teal,1,2 Anne C Gill,3,4 Alexander R Green5,6 & Sonia Crandall7,8

CONTEXT For the last 30 years, developments in cognitive sciences have demonstrated that human behaviour, beliefs and attitudes are shaped by automatic and unconscious cognitive processes. Only recently has much attention been paid to how unconscious biases based on certain patient characteristics may: (i) result in behaviour that is preferential toward or against specific patients; (ii) influence treatment decisions, and (iii) adversely influence the patient–doctor relationship. Partly in response to accreditation requirements, medical educators are now exploring how they might help students and residents to develop awareness of their own potential biases and strategies to mitigate them.

METHODS In this paper, we briefly review key cognition concepts and describe the limited published literature about educational strategies for addressing unconscious bias.

DISCUSSION We propose a developmental model to illustrate how individuals might move from absolute denial of unconscious bias to the integration of strategies to mitigate its influence on their interactions with patients and offer recommendations to educators and education researchers.
Implicit Bias and Contact: The Role of Interethnic Friendships

CHRISTOPHER L. ABERSON
CARL SHOEMAKER
CHRISTINA TOMOLILLO
Humboldt State University
Arcata, CA

ABSTRACT. In 2 studies, the authors examined the role of interethnic friendship with African Americans or Latinos in predicting implicit and explicit biases against these groups. White participants completed the Implicit Association Test (IAT; Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K., 1998), several self-report bias measures, and a friendship questionnaire. Participants with close friends who were members of the target group exhibited less implicit prejudice than participants without close friends from the target group. Friendship influenced only 2 of the 7 explicit measures, a result that likely stems from social desirability bias rather than truly nonprejudiced attitudes. Results support the importance of contact, particularly interethnic friendship, in improving intergroup attitudes.

Key words: contact, friendship, implicit attitudes, prejudice
Are Inter-Ethnic Friendships a good thing?

- Overwhelming majority of participants demonstrated no Explicit Preferences
- However: those with Interethnic Friendships had decreased levels of Implicit Bias towards friend’s group

Conclusion: Exposure decreases Implicit Preference differences and improves understanding
SPECIAL ARTICLE

RELATION BETWEEN THE RACE AND ECONOMIC STATUS OF PATIENTS AND WHO PERFORMS THEIR SURGERY

LAWRENCE D. EBERHARD, M.D., M.P.H., AND IRENE L. ROTHMAN, B.A.

Abstract We evaluated the relation between race and economic status of surgical patients and their likelihood of being treated by a surgeon in training rather than by a staff surgeon. Blacks were 2.2 to 4.3 times more likely than whites to be under the care of surgeons in training (P < 0.001). This relation has remained unchanged over the past two decades. It remains when the method of payment was via self-payment or private insurance, but disappeared when patients were paid for by Medicaid. In addition, black emergency patients were more likely than white emergency patients to be cared for by surgeons in training. (N Engl J Med 297:90-91, 1977)

The constitution of the World Health Organization states, "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." Clearly, if a health service is to be offered, it must be offered equally to all who need it.

Recent decades have witnessed much activity and many pronouncements of concern about social inequalities in the United States. Although change has undoubtedly occurred, its magnitude has often been difficult to estimate. Overt, discriminatory acts by individuals are easy to see and count, whereas social inequalities in institutions are less visible. Nevertheless, the challenge set forth by the World Health Organization makes it necessary to recognize and estimate the severity of persistent, if subtle, social inequalities within established institutions.

This challenge has led us to examine differences in treatment by race in a large hospital over a period of two decades.

Method

Data were obtained from computerized hospital records for patients undergoing gynecological or inguinal hernia repair operations. These procedures were selected because they are common and also well standardized. The record room provided a tally of operations performed since 1952. Race was recorded, as was the status of the responsible surgeon—resident surgeon or staff surgeon. We assume that resident surgeons are less skilled than staff surgeons since resident surgeons are in training; the staff surgeon is the teacher of the resident surgeon. We calculated relative risk by dividing the likelihood that a black patient would be operated on by a resident surgeon by the likelihood that a white patient would have the same surgery. If a study of the number of black patients with operations by a resident surgeon, the number of such patients with operations by a staff surgeon, then relative risk = ratio of the number of black patients with operations by a resident surgeon, and the number of white patients with operations by a resident surgeon, and the number of white patients with operations by a staff surgeon, relative risk = ratio of the number of black patients with operations by a resident surgeon, and the number of white patients with operations by a staff surgeon. The approach follows method II of Fleiss for use in a prospective study.

We assume that if a black patient is exposed to the same risk of being treated by a resident surgeon as a white patient (i.e., relative risk = 1), by this criterion, we have failed to demonstrate inequality for blacks in this institution. Conversely, if relative risk is greater or less than 1, racial inequality has been noted, and the question becomes whether or not this is a chance occurrence. To test this hypothesis, we used the chi-square test.

Results

Relative risk and chi-square values are shown in Table 1. For each year studied, the relative risk for Table 1. Relative Risks (RR) of Black and White Patients to Have Inguinal-Hernia Repairs and Cholecystectomies Performed by Resident Surgeons.

<table>
<thead>
<tr>
<th>Year</th>
<th>Race of Patient</th>
<th>Status of Surgeon</th>
<th>% Treated by Resident</th>
<th>Relative Risks and Statistics</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Black</td>
<td>Resident Staff</td>
<td>150</td>
<td>RR = 3.7 n = 150</td>
</tr>
<tr>
<td>1952</td>
<td>Black</td>
<td>Black</td>
<td>148</td>
<td>RR = 2.8 n = 148</td>
</tr>
<tr>
<td>1957</td>
<td>Black</td>
<td>White</td>
<td>224</td>
<td>RR = 3.6 n = 224</td>
</tr>
<tr>
<td>1962</td>
<td>Black</td>
<td>White</td>
<td>141</td>
<td>RR = 3.2 n = 141</td>
</tr>
<tr>
<td>1967</td>
<td>Black</td>
<td>White</td>
<td>131</td>
<td>RR = 3.3 n = 131</td>
</tr>
<tr>
<td>1972</td>
<td>Black</td>
<td>White</td>
<td>13</td>
<td>RR = 4.3 n = 13</td>
</tr>
</tbody>
</table>

Table 2. Relative Risk* for a Black Patient To Be Treated by a Resident Surgeon as Compared With a White Patient (All Patients Paying Directly or With Commercial Insurance).

<table>
<thead>
<tr>
<th>Race of Patient</th>
<th>Type of Surgeon</th>
<th>% Treated by Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Resident Staff</td>
<td>26</td>
</tr>
<tr>
<td>White</td>
<td>Resident Staff</td>
<td>20</td>
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<tr>
<td>Black</td>
<td>Staff</td>
<td>51</td>
</tr>
<tr>
<td>White</td>
<td>Staff</td>
<td>25</td>
</tr>
<tr>
<td>Black</td>
<td>Resident Staff</td>
<td>77</td>
</tr>
<tr>
<td>White</td>
<td>Resident Staff</td>
<td>7</td>
</tr>
</tbody>
</table>

*Relative risk = 4.6; chi-square = 34, P < 0.001.
Emergency Surgery: A Young / Inexperienced Surgeons Game?

• Until 2004 “Super Chiefs” took almost all emergent general surgery call @ JHH

• Acute Care Surgery (ACS) paradigm now helps ensure that patients receives a qualified and committed surgeon

• Now Halsted ACS service is staffed 24x7 by double board certified surgeons
What I Believe:

A Combination of
– Systemic Changes
– Societal Changes
– Health Care Work Force Changes

Will lead to the eradication of disparities
# Thank You - Mentors, Co-investigators & Students

<table>
<thead>
<tr>
<th>Dr Edward Cornwell III</th>
<th>Dr Tolulope Oyetunji</th>
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<tbody>
<tr>
<td>Dr Ellen MacKenzie</td>
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<tr>
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<td>Ms Sandra Swoboda, RN</td>
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<tr>
<td>Dr SM Sriram</td>
<td>Professor Susan Baker</td>
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