



Published in final edited form as:

Arch Phys Med Rehabil. 2015 August ; 96(8): 1371–1374. doi:10.1016/j.apmr.2015.04.017.

Disparity in Rehabilitation: Another Inconvenient Truth

Kenneth M. Jaffe, MD^{a,b,c,d} and Nathalia Jimenez, MD, MPH^{d,e}

^aDepartment of Rehabilitation Medicine, University of Washington, Seattle, WA

^bDepartment of Pediatrics, University of Washington, Seattle, WA

^cDepartment of Neurological Surgery, University of Washington, Seattle, WA

^dHarborview Injury Prevention and Research Center, University of Washington, Seattle, WA

^eDepartment of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA

Keywords

Healthcare disparities; Rehabilitation

“Of all the forms of inequality, injustice in health is the most shocking and inhuman(e).”

—M.L. King, Jr, Medical Committee for Human Rights, June 25, 1966

On the 50th anniversary of the passage of America’s Voting Rights Act and the historic civil rights march from Selma to Montgomery, with the country confronting an ever-increasing diversification of its population, we are still grappling with structural racialization and its inextricable link to poverty. Economic inequality is the highest it has been since 1928. Disparity, with its fractal-like presence, permeates far too many facets of our society including employment opportunity, law enforcement, criminal justice, education, housing, voting rights, and financial lending. Our health care system is an integral part of this troubling phenomenon with systems, structures, and processes of care that reinforce disparity, the root causes of which are complex, troubling, and without simple solutions.^{1,2}

Health disparities were defined in 1999 by the National Institutes of Health as “differences in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States.”³ Other definitions exist, but most of them agree with the fundamental concept of differences between population groups with regard to a specific health outcome or process. After the release of the 2002 Institute of Medicine report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*,⁴ numerous efforts have been undertaken to document and understand health disparities in the United States.^{5–7} Since 2003, the Agency for Healthcare Research and Quality has reported annual trends on disparities in health care delivery.⁸ Each year the report emphasizes one priority population. In 2013, the Agency for Healthcare

Corresponding author. Kenneth M. Jaffe, MD, University of Washington, Harborview Medical Center, and the Harborview Injury Prevention and Research Center, Box 359740, 325 Ninth Avenue, Seattle, WA 98104.

Disclosures: none.

Research and Quality provided expanded analyses of people with disabilities (defined as children with special health care needs and adults with multiple chronic health conditions), highlighting worse access to and lower quality of care for individuals with disabilities when compared to those without them.⁹

People requiring rehabilitation are a diverse and vulnerable population from multiple perspectives: social class, race, age, ethnicity, indigenous group membership, religion, geographic location, sexual orientation, gender identity, spoken language, immigration status, nationality, family structure, insurance coverage, comorbidities, and health beliefs, attitudes, and literacy. These numerous demographic and personal factors contribute to disparity. They often coexist and may be compounding in their impact, particularly for people with disabilities.^{10–12} To successfully achieve health care equity we must understand the complex interplay of these patient-related factors with the structures, financing, and processes of our imperfect health care system. Our field of rehabilitation must bring heightened awareness and understanding of how we, like other health care providers, while altruistic in our aspirations and beliefs, can inadvertently contribute to disparate care through our implicit biases, those unconsciously and unintentionally held preferences and stereotypes of which we are not aware.^{13–15} We must take responsibility for understanding how these implicit biases affect the entire patient-provider treatment experience, from patient satisfaction, utilization, and compliance; to provider decision making, diagnoses, interpersonal behavior, and communication; and, ultimately to our patients' short- and long-term functional and health outcomes. Making our care more just, more cross-difference competent, and our systems more equitable are daunting challenges, but ones that must be undertaken by identifying and targeting modifiable factors for intervention.

Looking back over the last decade, most of the literature on disparities in rehabilitation has been related to disparities in access and utilization of services, which are affected by a variety of sociodemographic characteristics.^{16–27} Racial and ethnic minority groups are less likely to receive postacute rehabilitation after stroke,^{16,17} traumatic brain injury (TBI),^{18–21} hip fracture,²² spinal cord injury (SCI),²³ and multiple trauma.²⁴ Uninsured patients, as well as those covered by government insurance (Medicaid and Medicare), are less likely to receive rehabilitation after multiple trauma,²⁵ hip fracture,²⁶ and TBI²⁷ when compared to those with commercial insurance. Disparate wheelchair prescribing and funding practices for people with SCI has also been noted, with socioeconomically disadvantaged people (ie, low income, Medicare/Medicaid recipients, less educated) receiving less than the standard of care for manual or power wheelchairs in our nation's Model Spinal Cord Injury Systems funded by the U.S. Department of Education.²⁸

The effect of insurance is not limited to differences between governmental and commercial coverage, but also by differences in eligibility, preauthorization requirements, scope of coverage, and idiosyncratic gatekeeping practices. Although there are no studies comparing the effect of differences in coverage between commercial insurance programs, differences in Medicaid coverage by state result in disparities in access to postacute inpatient rehabilitation for patients with stroke.²⁹

Geographic distribution, independent from insurance, also has an important role in access to rehabilitation. Patients in urban areas with closer proximity to rehabilitation centers have better access to rehabilitation when compared to those who live further from these centers, when controlling for insurance coverage.^{30,31} In North Carolina, patients with strokes from rural or more impoverished counties are less likely to be discharged to inpatient rehabilitation.³² There also is large interstate variation in postacute rehabilitation care after TBI in children³³ and hip fractures in older adults.²⁶

Gender is associated with differences in receipt of rehabilitation. Women are less likely to be discharged to inpatient rehabilitation after acute treatment for stroke,¹⁶ and hip replacement³⁴ when compared to men with similar clinical and sociodemographic characteristics. Age, too, is an important predictor of receipt of rehabilitation. Older adults are less likely to be discharged to inpatient rehabilitation after a stroke,^{16,30} and younger children (typically 0–4y of age) are less likely to receive inpatient rehabilitation after a TBI when compared to children 15 years and older.³³

Studies^{34–38} examining disparities in functional outcomes after rehabilitation focus mainly on differences by race and ethnicity. Fyffe et al³⁵ report less improvement in self-care and mobility after SCI following inpatient rehabilitation for non-Hispanic black (NHB) patients, but not for Hispanic patients, when compared to non-Hispanic whites (NHWs). Two studies^{34,36} examining functional independence after inpatient rehabilitation for hip replacement surgery³⁴ and hip fracture³⁶ show poorer outcomes for all minority groups (Asians, NHBs, Hispanics) compared to NHWs. In contrast, 2 other studies^{37,38} looking at motor function after inpatient rehabilitation for stroke found nonsignificant differences between NHBs and NHWs after controlling for patient characteristics, therapy frequency and intensity, and specific interventions within therapy activities. There were, however, differences across racial groups in the amount of therapy received and specific therapy interventions and activities, highlighting that issues of racial disparity and rehabilitation outcomes are multidimensional and complex.

Until this year's publication of the pilot work by Hausmann et al³⁹ that focused on physiatrists specializing in the care of people with SCI, we are unaware of an investigation of implicit bias among rehabilitation providers. Implicit racial bias against NHBs relative to NHWs has been found in many provider groups including pediatricians, internists, family physicians, emergency department residents, and nurse practitioners.^{40–44} The degree of implicit racial bias among health care providers appears similar to that of the general population and that of the community served by the provider. We appear to be as biased as the community and society from which we come.

Hausmann,³⁹ motivated to undertake this investigation by the known racial and ethnic disparities in health and health-related quality of life among people with SCI, not only found a strong implicit racial bias (prowhite/antiblack) among their physician cohort,^{28,45–47} but a stronger bias than that found among other health care provider samples. Also noteworthy was the association of this physician implicit bias with patient outcomes assessed beyond a single clinical encounter. The physicians' implicit racial bias was linked to reported worse social integration, depression, and life satisfaction in the patients for whom they provided

care. Such biases were not, however, associated with functional outcomes in the spheres of mobility, occupation, physical independence, or overall health status.

If, as demonstrated in this bold pilot study and a growing body of health care literature, implicit bias can adversely affect the immediate- and long-term patient-provider experience and associated health outcomes of our patient populations, isn't it time that rehabilitation providers, educators, administrators, policy makers, and researchers systematically determine the impact implicit bias has on our work?^{41-43,48,49} Unlike explicit biases, which operate at the level of our conscious awareness and which various programs at all levels have sought to address, implicit biases dwell in our subconscious and are ingrained societally and historically, affecting all of us as individuals and communities. Unchecked implicit biases and attitudes, however, govern our behavior, trumping our rationally held values and beliefs.⁵⁰⁻⁵² We describe Hausmann's work as bold because it challenges us at the personal and professional level to know our inner selves with respect to the emotionally, politically, and socially charged factors that contribute to disparity. While facing this challenge requires courage, Hausmann has paved the way by showing that such an undertaking is feasible. Personal recognition of implicit biases, while a vital first step, must be accompanied by intentional, concerted, and durable organizational change and commitment necessary to develop a heightened level of cultural and cross-difference competence through training and education.^{53,54}

It is a professional and ethical imperative that we establish ourselves and our organizations as allies to those patient groups at high risk for disparate treatment. We must establish a personal ethos, organizational culture, and national conscience that mandate equitable care for all. One approach to accomplish this is through the framework of continuous quality improvement (CQI). Although CQI traditionally has not been used to address disparity,⁵⁵ recent work substantiates the concept that a byproduct of efforts to improve overall quality of care can also reduce racial and ethnic disparities.⁵⁶ A culturally and cross-difference competent CQI approach must first identify disparities. Such data can then be used to target and monitor mitigating interventions for barriers either common or unique to specific vulnerable populations. This requires standardized mechanisms for tracking patients' race, ethnicity, language, insurance status, and other relevant sociodemographic information.⁵⁷ To be of maximal value, there must be disaggregation of these variables from the traditionally broad, general classification schemes (ie, Asian, African, etc) into more finely granular subgroups.⁵⁸ If not, important distinctions are lost. Perhaps some day our health care organizations will be mandated to publically post disparity indicators as they now do for many other quality-of-care measures. That which is valued is that which is measured; that which is unmeasured will not be improved.

Although there has been a history of political and economic debate over entitlement programs in the United States, there should be no controversy that all our patients are entitled to equitable health care, including rehabilitation. While we have made progress in the past half-century, the increasing diversity of our patients and the complexity of their health care needs make the achievement of equitable care a humbling challenge. Reaching this goal will necessitate input from a broad array of stakeholders—patients and their families, health care providers and insurers, educators, community and faith leaders, policy

makers, scientists, funding agencies, corporate and business leaders, human and social service agencies, and the media. All stakeholders have a moral imperative to help move the arc of history toward more just and equitable health care. “Somewhere we must come to see that human progress never rolls on the wheels of inevitability. It comes through the tireless and persistent work of dedicated individuals. Without this hard work, time becomes an ally of the primitive forces of social stagnation. So we must help time and realize that the time is always right to do right.” (M.L. King, Jr, Oberlin College commencement address, June 1965.)

Acknowledgments

Supported in part by the National Institute of Child Health and Human Development (grant no. 1K23HD078453-01) and by the Centers for Disease Control and Prevention (grant no. 5 UO1 CE0002196-03).

I dedicate this commentary to my colleagues, coworkers, and the leadership team at Harborview Medical Center, who during my 40-year affiliation have been unwavering in their commitment to egalitarian care.

List of abbreviations

CQI	continuous quality improvement
NHB	non-Hispanic black
NHW	non-Hispanic white
SCI	spinal cord injury
TBI	traumatic brain injury

References

1. Smedley, BD.; Stith, AY.; Nelson, AR. Unequal treatment: confronting racial and ethnic disparities in health care [executive summary]. Washington (DC): National Academies Pr; 2003.
2. Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. Washington (DC): National Academies Pr; 2001.
3. National Cancer Institute. [Accessed February 22, 2015] Cancer health disparities definitions. 2015. Available at: <http://crchd.cancer.gov/>
4. Institute of Medicine. Unequal treatment: confronting racial and ethnic disparities in health care. Washington (DC): National Academies Pr; 2002.
5. Institute of Medicine. In the nation’s compelling interest: ensuring diversity in the health care workforce. Washington (DC): National Academies Pr; 2004.
6. U.S. Department of Health and Human Services. [Accessed April 12, 2015] Strategic plan for 2010–2015. 2015. Available at: <http://www.hhs.gov/secretary/about/priorities/priorities.html>
7. Department of Health and Human Services. [Accessed April 12, 2015] HHS 2011 action plan to reduce racial and ethnic health disparities. 2015. Available at: http://minorityhealth.hhs.gov/npa/files/Plans/HHS/HHS_Plan_complete
8. AHRQ. 2014 National Healthcare Quality and Disparities Report. Rockville, MD: Agency for Healthcare Research and Quality; 2015. AHRQ Pub No 15-0007
9. AHRQ. 2013 National Healthcare Quality and Disparities Report. Rockville, MD: Agency for Healthcare Research and Quality; 2014. AHRQ Pub No 14-0006
10. Meade MA, Mahmoudi E, Lee SY. The intersection of disability and healthcare disparities: a conceptual framework. *Disabil Rehabil.* 2015; 37:632–641. [PubMed: 25060038]

11. Myaskovsky L, Burkitt KH, Lichy AM, et al. The association of race, cultural factors, and health-related quality of life in persons with spinal cord injury. *Arch Phys Med Rehabil.* 2011; 92:441–448. [PubMed: 21353826]
12. Fyffe DC, Botticello A, Myaskovsky L. Vulnerable groups living with spinal cord injury. *Top Spinal Cord Inj Rehabil.* 2011; 17:1–9. [PubMed: 23966760]
13. Greenwald AG, McGhee DE, Schwartz JL. Measuring individual differences in implicit cognition: the Implicit Association Test. *J Pers Soc Psychol.* 1998; 74:1464–1480. [PubMed: 9654756]
14. Nosek BA, Greenwald AG, Banaji MR. Understanding and using the Implicit Association Test: II. Method variables and construct validity. *Pers Soc Psychol Bull.* 2005; 31:66–180.
15. Staats, C.; Patton, C. State of the science: implicit bias review. Columbus: Kirwan Institute; 2013.
16. Freburger JK, Holmes GM, Ku LJ, Cutchin MP, Heatwole-Shank K, Edwards LJ. Disparities in postacute rehabilitation care for stroke: an analysis of the state inpatient databases. *Arch Phys Med Rehabil.* 2011; 92:1220–1229. [PubMed: 21807141]
17. Ottenbacher KJ, Campbell J, Kuo YF, Deutsch A, Ostir GV, Granger CV. Racial and ethnic differences in postacute rehabilitation outcomes after stroke in the United States. *Stroke.* 2008; 39:1514–1519. [PubMed: 18340094]
18. da Silva Cardoso E, Romero MG, Chan F, Dutta A, Rahimi M. Disparities in vocational rehabilitation services and outcomes for Hispanic clients with traumatic brain injury: do they exist? *J Head Trauma Rehabil.* 2007; 22:85–94. [PubMed: 17414310]
19. Meagher AD, Beadles CA, Doorey J, Charles AG. Racial and ethnic disparities in discharge to rehabilitation following traumatic brain injury. *J Neurosurg.* 2015; 122:595–601. [PubMed: 25415069]
20. Asemota AO, George BP, Cumpsty-Fowler CJ, Haider AH, Schneider EB. Race and insurance disparities in discharge to rehabilitation for patients with traumatic brain injury. *J Neurotrauma.* 2013; 30:2057–2065. [PubMed: 23972035]
21. Bowman SM, Martin DP, Sharar SR, Zimmerman FJ. Racial disparities in outcomes of persons with moderate to severe traumatic brain injury. *Med Care.* 2007; 45:686–690. [PubMed: 17571018]
22. Nguyen-Oghalai TU, Ottenbacher KJ, Kuo YF, et al. Disparities in utilization of outpatient rehabilitative care following hip fracture hospitalization with respect to race and ethnicity. *Arch Phys Med Rehabil.* 2009; 90:560–563. [PubMed: 19345769]
23. Lad SP, Umeano OA, Karikari IO, et al. Racial disparities in outcomes after spinal cord injury. *J Neurotrauma.* 2013; 30:492–497. [PubMed: 23113561]
24. Shafi S, de la Plata CM, Diaz-Arrastia R, et al. Ethnic disparities exist in trauma care. *Trauma.* 2007; 63:1138–1142.
25. Nirula R, Nirula G, Gentilello LM. Inequity of rehabilitation services after traumatic injury. *J Trauma.* 2009; 66:255–259. [PubMed: 19131836]
26. Freburger JK, Holmes GM, Ku LJ. Postacute rehabilitation care for hip fracture: who gets the most care? *J Am Geriatr Soc.* 2012; 60:1929–1935. [PubMed: 23036079]
27. Slomine BS, McCarthy ML, Ding R, et al. Health care utilization and needs after pediatric traumatic brain injury. *Pediatrics.* 2006; 117:663–668.
28. Hunt PC, Boninger ML, Cooper RA, Zafonte RD, Fitzgerald SG, Schmeler MR. Socioeconomic factors associated with disparity in wheelchair customizability among people with traumatic spinal cord injury. *Arch Phys Med Rehabil.* 2004; 85:1159–1164.
29. Skolarus LE, Burke JF, Morgenstern LB, et al. Impact of state Medicaid coverage on utilization of inpatient rehabilitation facilities among patients with stroke. *Stroke.* 2014; 45:2472–2474. [PubMed: 25005437]
30. Chan L, Wang H, Terdiman J, et al. Disparities in outpatient and home health service utilization following stroke: results of a 9-year cohort study in northern California. *PM R.* 2009; 1:997–1003. [PubMed: 19942185]
31. Sandel ME, Wang H, Terdiman J, et al. Disparities in stroke rehabilitation: results of a study in an integrated health system in northern California. *PM R.* 2009; 1:29–40. [PubMed: 19627870]

32. Gregory PC, Han E. Disparities in postacute stroke rehabilitation disposition to acute inpatient rehabilitation vs. home: findings from the North Carolina Hospital Discharge Database. *Am J Phys Med Rehabil.* 2009; 88:100–107. [PubMed: 19169175]
33. Greene NH, Kernic MA, Vavilala MS, Rivara FP. Variation in pediatric traumatic brain injury outcomes in the United States. *Arch Phys Med Rehabil.* 2014; 95:1148–1155. [PubMed: 24631594]
34. Bergés IM, Kuo YF, Ostir GV, Granger CV, Graham JE, Ottenbacher KJ. Gender and ethnic differences in rehabilitation outcomes after hip-replacement surgery. *Am J Phys Med Rehabil.* 2008; 87:567–572. [PubMed: 18574348]
35. Fyffe DC, Deutsch A, Botticello AL, Kirshblum S, Ottenbacher KJ. Racial and ethnic disparities in functioning at discharge and followup among patients with motor complete spinal cord injury. *Arch Phys Med Rehabil.* 2014; 95:2140–2151. [PubMed: 25093999]
36. Graham JE, Chang PF, Bergés IM, Granger CV, Ottenbacher KJ. Race/ethnicity and outcomes following inpatient rehabilitation for hip fracture. *J Gerontol A Biol Sci Med Sci.* 2008; 63:860–866. [PubMed: 18772475]
37. Deutscher D, Horn SD, Smout RJ, DeJong G, Putman K. Black-white disparities in motor function outcomes taking into account patient characteristics, nontherapy ancillaries, therapy activities, and therapy interventions. *Arch Phys Med Rehabil.* 2010; 91:1722–1730. [PubMed: 21044717]
38. Putman K, Horn S, Smout R, et al. Racial disparities in stroke functional outcomes upon discharge from inpatient rehabilitation facilities. *Disabil Rehabil.* 2010; 32:1604–1611. [PubMed: 20158376]
39. Hausmann LR, Myaskovsky L, Niyonkuru C, et al. Examining implicit bias of physicians who care for individuals with spinal cord injury: a pilot study and future directions. *J Spinal Cord Med.* 2015; 38:102–110. [PubMed: 24621034]
40. Green AR, Carney DR, Pallin DJ, Raymond KL, Iezzoni LI, Banaji MR. Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. *J Gen Intern Med.* 2007; 22:1231–1238. [PubMed: 17594129]
41. Sabin J, Nosek BA, Greenwald A, Rivara FP. Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender. *J Health Care Poor Underserved.* 2009; 20:896–913. [PubMed: 19648715]
42. Sabin JA, Rivara FP, Greenwald AG. Physician implicit attitudes and stereotypes about race and quality of medical care. *Med Care.* 2008; 46:678–685. [PubMed: 18580386]
43. Cooper LA, Roter DL, Carson KA, et al. The associations of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care. *Am J Public Health.* 2012; 102:979–987. [PubMed: 22420787]
44. Blair IV, Havranek EP, Price DW, et al. Assessment of biases against Latinos and African Americans among primary care providers and community members. *Am J Public Health.* 2013; 103:92–98. [PubMed: 23153155]
45. Krause JS, Kemp B, Coker J. Depression after spinal cord injury: relation to gender, ethnicity, aging, and socioeconomic indicators. *Arch Phys Med Rehabil.* 2000; 81:1099–1109. [PubMed: 10943762]
46. Krause JS, Saunders LL. Risk of hospitalizations after spinal cord injury: relationship with biographical, injury, educational, and behavioral factors. *Spinal Cord.* 2009; 47:692–697. [PubMed: 19255585]
47. Krause JS, Saladin LK, Adkins RH. Disparities in subjective wellbeing, participation, and health after spinal cord injury: a 6-year longitudinal study. *NeuroRehabilitation.* 2009; 24:47–56. [PubMed: 19208957]
48. Penner LA, Dovidio JF, West TV, et al. Aversive racism and medical interactions with black patients: a field study. *J Exp Soc Psychol.* 2010; 46:436–440. [PubMed: 20228874]
49. Sabin JA, Greenwald AG. The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: pain, urinary tract infection, attention deficit hyperactivity disorder, and asthma. *Am J Public Health.* 2012; 102:988–995. [PubMed: 22420817]
50. Dovidio JF, Kawakami K, Johnson C, Johnson B, Howard A. On the nature of prejudice: automatic and controlled processes. *J Exp Soc Psychol.* 1997; 33:10–40.

51. Greenwald AG, Poehlman TA, Uhlmann EL, Banaji MR. Understanding and using the Implicit Association Test: III. Metaanalysis of predictive validity. *J Pers Soc Psychol.* 2009; 97:17–41. [PubMed: 19586237]
52. McConnell AR, Leibold JM. Relations among the Implicit Association Test, discriminatory behavior, and explicit measures of racial attitudes. *J Exp Soc Psychol.* 2001; 37:435–442.
53. Beach MC, Gary TL, Price EG, et al. Improving health care quality for racial/ethnic minorities: a systematic review of the best evidence regarding provider and organization interventions. *BMC Public Health.* 2006; 6:104. [PubMed: 16635262]
54. Smith WR, Betancourt JR, Wynia MK, et al. Recommendations for teaching about racial and ethnic disparities in health and health care. *Ann Intern Med.* 2007; 147:654–665. [PubMed: 17975188]
55. Green AR, Tan-McGrory A, Cervantes MC, Betancourt JR. Leveraging quality improvement to achieve equity in health care. *Jt Comm J Qual Patient Saf.* 2010; 36:435–442. [PubMed: 21548504]
56. Trivedi AN, Nsa W, Hausmann LR, et al. Quality and equity of care in U.S. hospitals. *N Engl J Med.* 2014; 371:2298–2308. [PubMed: 25494269]
57. Ulmer, C.; McFadden, B.; Nerenz, DR., editors. Race, ethnicity, and language data: standardization for health care quality improvement. Washington (DC): National Academies Pr; 2009.
58. Islam NS, Khan S, Kwon S, Jang D, Ro M, Trinh-Shevrin C. Methodological issues in the collection, analysis, and reporting of granular data in Asian American populations: historical challenges and potential solutions. *J Health Care Poor Underserved.* 2010; 21:1354–1381. [PubMed: 21099084]