CORR Insights

CORR Insights®: Minorities Are Less Likely to Receive Autologous Blood Transfusion for Major Elective Orthopaedic Surgery

M. J. Grecula MD

Where Are We Now?

Menendez and Ring performed a retrospective cross-sectional analysis of the Nationwide Inpatient Sample database and found that black, Hispanic, uninsured, publicly insured, and low- to medium-income patients were less likely to receive autologous blood transfusion for major elective orthopaedic surgery than white, insured, and higher-income patients. When controlled for insurance and income levels, racial minorities still tended to

have lower use of autologous blood for elective orthopaedic surgery. This observation supports the findings of an earlier study by Segal et al. [14] who also noted socio-demographic disparities in the use of autologous blood.

This manuscript brings to light two topics of interest: (1) The appropriate use of autologous blood donation for elective orthopaedic surgery, and (2) racial, ethnical, and socioeconomic disparities in the delivery of health care.

Although presurgical autologous blood donation was first advocated in 1937 [4], its use did not peak until the

early 1990s in response to the knowledge that the HIV virus could be transmitted through allogenic blood. There has since been a steady decline in the use of pre-operative autologous donation related to the increased safety of allogenic blood, concerns for cost-effectiveness, large percentage of wastage, and evidence that despite decreasing allogenic transfusion rates, there is an overall increase exposure to all red cell transfusions [2, 6]. However, there are still concerns with allogeneic blood including hemolytic, febrile, or allergic reactions, alloimmunization, increased infection rates, and depletion of allogeneic blood supplies [5, 15].

Discrepancies in the delivery of health care are well documented including regional variations and differences related to racial, ethnic, and socioeconomic status [1, 8–10]. Barriers to equalizing health care delivery can be attributed to patient factors such as language barriers, health literacy, access (related to costs, transportation, or time commitments), cultural or religious beliefs, or distrust in health care providers. As health care providers, we try to exemplify unbiased treatment for

This CORR Insights® is a commentary on the article “Minorities Are Less Likely to Receive Autologous Blood Transfusion for Major Elective Orthopaedic Surgery” by Menendez and colleagues available at: DOI: 10.1007/s11999-014-3793-5.

The author certifies that he, or any member of his immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research®* editors and board

members are on file with the publication and can be viewed on request.

The opinions expressed are those of the writers, and do not reflect the opinion or policy of *CORR®* or the Association of Bone and Joint Surgeons®.

This *CORR Insights®* comment refers to the article available at DOI: 10.1007/s11999-014-3793-5.

M. J. Grecula MD (✉)
Department of Orthopaedic Surgery,
University of Texas Health Science
Center at Houston, 6410 Fannin St.,
Houston, TX 77030, USA
e-mail: Michael.grecula@uth.tmc.edu

CORR Insights

all patients. However, we also have barriers related to time constraints and system resources that may alter our ability to provide equal care. For example, discussions related to blood management options may be shortened for patients requiring translation services and less detailed for patients with decreased health literacy. There is conflicting evidence regarding racial differences in patient-physician communications related to biomedical issues or rapport-building dialogue [7, 12]. Therefore, the reasons for disparities in health care remain unclear, and some research suggests they are not solely explained by differences in health care access, clinical need, or differences in communication.

Where Do We Need To Go?

Evidence-based, cost-effective, and unbiased delivery of health care should be our ultimate goal. Reaching these goals requires answering these two basic questions: 1) What racial differences led to the inequality of autologous blood transfusion for major elective orthopedic surgery and 2) Is this discrepancy related to under use of autologous blood donation by minorities or overuse by nonminorities? To help answer these questions, there needs to be further clarification on the

appropriate use of autologous blood donation and on racial differences in health care decision making.

Menendez and Ring were able to show the association between insurance, income and racial class and autologous blood use but could not establish cause. Therefore, further research into the racial and cultural aspects of autologous blood donation is warranted. Autologous blood donation still has utility for elective orthopedic procedures but algorithms vary on their recommendation of blood management strategies. For example, predonation of autologous blood has been recommended if the risk of blood transfusion is greater than 10% to 50% [3, 11]. However, transfusion rates for THA vary from 2% to 70% [5]. With variable recommendations for procedures with variable blood loss, standardization is difficult.

How Do We Get There?

The topic of discrepancies in the delivery of health care is, appropriately, a focus of more and more research. Large databases help to identify and answer important questions; the next step is to design future studies to answer these questions. These studies ideally will be prospective clinical trials incorporating population surveys or examinations of

the physician-patient interaction to further address health care disparities in the use of autologous blood donation. As new evidence is revealed, we will need to assimilate it into our practices. We also need to focus on culturally and racially sensitive approaches to improving the health literacy of our patients, and on well-designed decision-making tools that take into account important differences in the values espoused by the diverse patient populations we treat. Healthcare providers will need to be not only educated in technical advances, but also informed of the racial and cultural preferences concerning the acceptance of new technology. Incorporating these new decision-making tools into the electronic medical record will further help improve their consistency of use.

References

1. American Academy of Orthopedic Surgeons Committee on Diversity. Racial and ethnic disparities in musculoskeletal medicine. Available at: <http://www3.aaos.org/about/diversity/pdfs/disparitiesreport.pdf>. Accessed July 29, 2014.
2. Billote DB, Glisson SN, Green D, Wixson RL: A prospective, randomized study of preoperative autologous donation for hip replacement surgery. *J Bone Joint Surg Am*.

CORR Insights

- 2002;84:1299–1304.
3. Birkmeyer JD, Goodnough LT, Au-Buchon JP, Noordsij PG, Littenberg B. The Cost-effectiveness of preoperative autologous blood donation for total hip and knee replacement. *Transfusion*. 1993;33:544–551.
4. Fantus B. Blood preservation. *JAMA*. 1937;109:128–131.
5. Friedman R, Homering M, Holberg G, Berkowitz SD. Allogeneic blood transfusions and postoperative infections after total hip or knee arthroplasty. *J Bone Joint Surg Am*. 2014;96:272–278.
6. Goldman M, Savard R, Long A, Gelin S, Germain M. Declining value of preoperative autologous donation. *Transfusion*. 2002;42:819–23.
7. Hausmann LR, Hanusa BH, Kresevic DM, Zickmund S, Ling BS, Gordon HS, Kwoh CK, Mor MK, Hannon MJ, Cohen PZ, Grant R, Ibrahim SA. Orthopedic communication about osteoarthritis treatment: Does patient race matter? *Arthritis Care & Research*. 2011;63:635–642.
8. Ibrahim SA. Racial and ethnic disparities in hip and knee joint replacement: A Review of research in the Veterans Affairs health care system. *J Am Acad Orthop Surg*. 2007;15(Suppl 1):S87–S94.
9. Ibrahim SA, Siminoff LA, Burant CJ, Kwoh CK. Variation in perceptions of treatment and self-care practices in elder with osteoarthritis: A comparison between African American and white patients. *Arthritis Care & Research*. 2001;45:340–345.
10. Institute of Medicine. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: The National Academies Press, 2003.
11. Klein, HG, McCurdy PR, Nemo G, Rogus, SD, Sloan E, Fink BJ. Transfusion alert: Use of autologous blood. National heart, lung, and blood institute expert panel on the use of autologous blood. *Transfusion*. 1995;35:703–711.
12. Levinson W, Hudak PL, Feldman JJ, Finkel RM, Kuby A, Berekenyi S, Braddock III C. It's not what you say... Racial disparities in communication between orthopedic surgeons and patients. *Med Care*. 2008;46:410–416.
13. Nguyen-Oghalai TU, Ottenbacher KJ, Kuo YF, Wu H, Greco MJ, Eschbach K, Goodwin JS. 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.
14. Segal JB, Guallar E, Powe NR. Autologous blood transfusion in the United States: Clinical and nonclinical determinants of use. *Transfusion*. 2001;41:1539–1547.
15. Squires JE. Risks of transfusion. *South Med J*. 2011;104:762–769.