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**CORR Insights®: Racial Disparities
in Above-knee Amputations after TKA:
A National Database Study**

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Where Are We Now?

In their retrospective analysis of National Inpatient Sample data from 2002 to 2011, George and colleagues found that even after adjusting for age and comorbidities such as septic and aseptic complications, black men had the highest risk of

This CORR Insights® is a commentary on the article “Racial Disparities in Above-knee Amputations after TKA: A National Database Study” by George and colleagues available at: DOI: 10.1007/s11999-016-5195-3.

The author certifies that he nor 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.

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This *CORR Insights®* comment refers to the article available at DOI: 10.1007/s11999-016-5195-3.

above-knee amputation (AKA) after TKA than any other group evaluated. The authors also found higher risks of AKA following knee arthroplasty for patients who were younger than 50 and older than 80 years of age. The current findings regarding disparities in AKA usage are consistent with other orthopaedic procedures shown to be associated with racial or gender disparities [11], including lower extremity arthroplasty [2, 12], total shoulder arthroplasty [13], cervical spine surgery [14], lumbar stenosis [8], and hip fractures [3].

AKA after a TKA is associated with short-term mortality (20% to 40%), as well as decreases in overall function and quality of life [4, 5]. The causes of racial disparities in healthcare procedures generally include quality of healthcare insurance, medical comorbidities, and support systems, both within the hospitalization and followup

care [6, 7, 9–11, 16]. Could better preoperative, postoperative, and followup care decrease the overall complication rate? A recent analysis [6] of 7924 postdischarge patients who underwent lower extremity arthroplasty suggests the answer might be yes. That report found disparities based on both race and gender for discharge placement, with black patients going home directly from the hospital more frequently.

The use of quality measures as a means for reimbursing hospitals under Medicare [15] is one of the unintended consequences of racial disparities in orthopaedic procedures. In 2013, hospitals in Detroit, MI, USA had the highest mean penalties from Medicare when compared to other major Midwestern cities because of higher readmission rates for congestive heart failure, acute myocardial infarction, and pneumonia. Blacks comprise more than 80% of the city’s population, the highest proportion of any major metropolitan city. Hospitals within the city will provide care for those who struggle economically and have difficulty with access to medical care.

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While the penalties by Medicare were meant to incentivize quality, they may in fact decrease the resources available for those treated in safety-net hospitals. For example, if the cuts limit the ability for a hospital to provide post-discharge planning services, it may exacerbate readmission rates.

Where Do We Need To Go?

Though we can identify some of the factors associated with racial disparity in orthopaedic procedures, there are several questions that remain unanswered. Are there other issues involved with care that cannot be accounted for by large database analysis? Are there cultural reasons why black males might be offered AKA as opposed to revision TKA or arthrodesis? Is there something about the severity of the prosthetic infections in black males that might lead to AKA at higher rates than others in the population? Is there an increased susceptibility to infection among these patients, or are there more-virulent organisms associated with those infections?

Identifying the causes of the disparities could improve the population health of all patients. For example, patients who underwent AKA after TKA are less likely to use a prosthesis compared to those who sustain AKA

from trauma [4]. Why? Patients who underwent AKA after TKA generally have comorbidities that limit a patient's ability to walk and hinder their overall quality of life. Recently, the use of percutaneous osseointegration for prosthetic limb attachment has allowed for improved function of some patients who had been previously wheelchair bound. Because the fixation method for osseointegration is similar to uncemented joint prosthesis, the risk of infection at 2 years followup remains high (15% to 18%) [1].

How Do We Get There?

Minimizing the differences between race and gender should be the goal of health policymakers for this, and all procedures, to ensure cost-effective and equitable care is available for the US population at large.

Identifying patient groups who are at risk for devastating complications like AKA after TKA can potentially help the medical community better target resources pinpointing causality and prevention measures. Because of studies like the one by George and colleagues, Medicare can better predict and properly identify racial disparities in orthopaedic procedures, as well as direct resources to minimize complications for those who are found to be more at risk.

Future studies should identify why these disparities exist. For example, a rigorous analysis of well-designed prospective arthroplasty registries could provide guidance for changing surgical indications, prevent complications, or identify changes in perioperative care like postdischarge support. A well-designed registry could further define missing data, allowing for a prospective study to investigate potential causes of racial disparities in healthcare. Finally, the factors for the disparities are determined, potential improvements should be tested prospectively for those at risk in the areas of indications, perioperative care, and prevention of infection.

Research to identify the cause(s) of the racial disparity in healthcare has been prioritized by insurance organizations and the NIH. Efforts to help research in these areas offer the opportunity to improve the care for those at risk in the population at large.

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