Musculoskeletal Health Disparities
And The Underutilization of Hip and Knee Replacements in Diverse Populations

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NMQF Summit
April 20, 2015
Disclosures

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Overview

• Describe Musculoskeletal Disparities
• Current Knowledge Regarding the Incidence and Prevalence of Total Joint Replacements
• How Can Costs of Underutilization of Total Joint Replacement be Related to the Outcomes in Diverse Populations?
• Suggest A Role for Increased Utilization of Total Hip and Knee Arthroplasty in MSK Disparities Elimination
• Strategies to Improve Outcomes in Diverse Populations
Healthy People 2020 defines a health disparity as “a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.”

U.S. Department of Health and Human Services. The Secretary’s Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020. Phase I report
Why do Health and Health Care Disparities Matter?

• Disparities in health and health care limit continued improvement in overall quality of care and population health and result in unnecessary costs.

• Recent analysis estimates that 30% of direct medical costs for Blacks, Hispanics are excess costs due to health inequities and that the economy loses an estimated $309 billion per year due to the direct and indirect costs of disparities.
Musculoskeletal Health Disparities

2010 AAOS/ORS/ABJS Musculoskeletal Healthcare Disparities Research Symposium (MHD)

Dates: May 6-7, 2010
Location: Alexandria, Virginia

The AAOS/ORS/ABJS Musculoskeletal Health Care Disparities research symposium defined and outlined gender and ethnic musculoskeletal health care disparities in joint replacement, pain management, osteoporosis and fragility fractures, and diabetic foot management and amputation based on current knowledge.
Osteoarthritis in USA in 2000

- Over 41 million people out of 285 million people in the United States have arthritis.
- In the United States about 6 percent of adults over 30 have OA of the knee and about 3 percent have OA of the hip.
- The occurrence of the OA increases with age, rising 2- to 10-fold in people from 30 to 65 years of age.
- An estimated 50 million people will be diagnosed with arthritis by 2013.
- The current economic burden of arthritis in its various forms is approximately $82.4 billion.
- Direct costs are $34.6 billion (hospitals, doctors, transportation, nursing homes).
- Only 3% of the cost is for drugs.
- Indirect costs are $47.8 billion (primarily lost wages and lost productivity).
- Arthritis is a greater factor in limiting activity than heart disease, hypertension, blindness, or diabetes.
- Only 24% of people with arthritis report and achieve levels of physical activity that are recommended for health. The remainder are essentially inactive or insufficiently active.
Economic Impact of Osteoarthritis: 2011

DiBonaventure et al BMC Musculoskeletal Disorders 2011
“Severe joint pain, activity limitation and work limitation due to arthritis significantly higher among African-Americans and Hispanics.”

- April 2010 and Feb 2011 Reports
If We Do Nothing the Costs of Disparities Will Grow to $363.1 Billion in 2050

<table>
<thead>
<tr>
<th>Year</th>
<th>Black</th>
<th>Hispanics</th>
<th>Asians</th>
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<tr>
<td>2009</td>
<td>$5,223</td>
<td>$22,033</td>
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<td>2020</td>
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<td>$8,884</td>
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2009 Total: $82.2 billion
2020 Total: $126 billion
2050 Total: $363.1 billion

To Total
2009: $82.2 billion
2020: $126 billion
2050: $363.1 billion
A National Call to Action

An Epidemic of Comorbidity

Obesity Prevalence

Diabetes Prevalence

Source: CDC, 2013
The Direct and Indirect Costs to Society of Treatment for End-Stage Knee Osteoarthritis

D. Ruiz Jr., L. Koenig, T. Dall,, P. Gallo, A. Narzikul, J. Parvizi, and J. Tongue

Background: Although total knee arthroplasty for end-stage osteoarthritis is a cost-effective procedure, payers are focusing on its indications and cost because of its high and growing use.

Improvements in pain and physical function from total knee arthroplasty could yield benefits in the form of increased work life and lower disability payments. The purpose of this study was to estimate the value of total knee arthroplasty from a societal perspective, including the costs and benefits to patients, employers, and payers.
# An Economic Cost Model of Musculoskeletal Health Disparities

Movement Is Life Workshop Objectives:

- Understand the benefit of cost modeling
- Increase the knowledge of the cost of disparities in treatment of knee osteoarthritis
- Refine our model for the cost of knee

<table>
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<tr>
<th>Perspective</th>
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<td>Criminal Justices</td>
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<td>Out-of-Pocket Costs</td>
<td>Lost wages/ Household Production</td>
<td>Lost wages/ Household Production</td>
<td>Out-of-Pocket Costs</td>
<td>Amount Received</td>
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<tr>
<td>Other?</td>
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A recent study was published in the Aug. 21, 2013 \textit{Journal of Bone and Joint Surgery} and conducted by health economists, has confirmed that TKR is a cost-effective treatment for patients with end-stage osteoarthritis. By modeling indirect savings of the individual returning to the work force after surgery, researchers found that the lifetime societal net benefit for patients undergoing knee replacement averages between $10,000 and $30,000.
Factors Responsible for Musculoskeletal Disparities

• 1. Lack of access to Specialty care
• 2. Cultural differences as exhibited by patients
• 3. Bias shown by the provider
• 4. Lack of coordinated care
• 5. Lack of language proficiency by the provider, the institution and the patient
• 6. Knowledge gap with respect to the definition and impact of musculoskeletal disparities.
NEW ORLEANS


• More than 7 million Americans are living with an artificial joint
• 2.5 Million Americans Living with an Artificial Hip, 4.7 Million with an Artificial Knee
• There is increasing incidence of adults younger than age 65 undergoing total knee replacement (TKR) and total hip replacement (THR) surgeries
• There remains an underutilization of these procedures in some segments of the population, among women and among racial and ethnic minorities
Trends in Total Hip Arthroplasty in the United States: The Shift to a Younger Demographic” and “Trends in Total Knee Arthroplasty in the United States: Understanding the Shift to a Younger Demographic,”

- The incidence of TKR increased by 120 percent from 2000 to 2009: 188 percent for patients ages 45 to 64, and 89 percent for patients ages 65 to 84.
- The incidence of THR increased 73 percent from 2000 to 2009: 123 percent for patients ages 45 to 64 and 54 percent for ages 65 to 84.
- The number of revision total knee replacement (RTKR) procedures increased 133 percent, and the number of revision total hip replacement (RTHR) procedures by 27 percent.
- The increase in TKR and THR patients is primarily due to “the disproportionate growth in the rate of utilization among younger patients, and secondarily by overall population growth.”
- Medicare was the primary payer for 63.3 percent of all TKRs and 58.2 percent of THRs in 2000, and 54.7 percent of TKRs and 52.8 percent of THRs in 2009.
- Race and gender distribution have remained relatively stable for TKR, RTKR, THR and RTHR.
Total Knee Arthroplasty Volume, Utilization and Outcomes Among Medicare Beneficiaries, 1991-2010

- 600,000 TKA are performed in U.S. annually
- Cost of $15,000 per or $9 Billion in aggregate
- TKR leads to improved quality of life and functional status
- Racial incidence constant for Primary TKR since 1991—90% White and 5% Black
- Revision TKR for Black inc. 5.7% to 7.4%

Cram et al., *JAMA.* 2012;308(12):1227-1236
Maurer and Jones conclusions

- A global increase in the number of procedures occurred between 2000 and 2010
- The disparity of total joint replacement utilization between 2000 and 2010 remained constant
- The highest utilization was for white women and the lowest for African American men
- Hispanic/Latino women and men consistently low as African American men
- These differences are not related to differences in the rate of underlying disease or the need for total joint replacement

The increase in TKA can be viewed as an indication of the success of this procedure in safely reducing pain and improving functional status for an aging population.

However, the increase in TKA can also be viewed as yet another source of strain on government, insurers, individuals, and businesses struggling with unremitting growth in health care spending.

This growth is likely driven by a combination of factors including an expansion in the types of patients considered likely to benefit from TKA, an aging population, and an increasing prevalence of certain conditions that predispose patients to osteoarthritis, most notably obesity.13

Racial disparities in knee and hip total joint arthroplasty: an 18-year analysis of national medicare data


• **Objective:** To examine whether racial disparities in usage and outcomes of total knee and total hip arthroplasty (TKA and THA) have declined over time.

• **Methods:** We used data from the US Medicare Program (MedPAR data) for years 1991–2008 to identify four separate cohorts of patients (primary TKA, revision TKA, primary THA, revision THA).

• **Results:** In 1991, the use of primary TKA was 36% lower for African–Americans compared with Caucasians (20.6 per 10 000 for African–Americans; 32.1 per 10 000 for Caucasians; p<0.0001); in 2008, usage of primary TKA was 40% lower for African–Americans (41.5 per 10 000 for African–
Disparities in Arthritis Treatment: African-Americans

Insurance access not an issue.

CDC, MMWR Vol 58, 2009.
A National Call to Action

Ethnic / Racial Treatment Gap

◆ **CMS**: African Americans are 3 to 5 times less likely to undergo needed total knee replacement surgery.

![Graph showing the age-adjusted rates of total knee replacement among Medicare enrollees by white or black race in the United States, 2000–2006.](image)

*FIGURE.* Age-adjusted rates* of total knee replacement* among Medicare enrollees, by white or black race — United States, 2000–2006.
A National Call to Action

Gender-Based Surgical Disparities

- High BMI patients who undergo total knee replacement
  - Poorer outcomes
  - Greater complication risk
  - More likely to suffer diabetes / hypertension / depression
  - Are more likely to be female
Challenges of Improving Outcomes in Total Joint Replacement

• Women, African Americans, Hispanics and those who are poor have more complications and less good results than Caucasian patients.

• Clinical Trials for newly developed medical devices need more patient participant diversity.
Patient Willingness to Undergo Total Joint Replacement

- Community-based sample of patients.
- Substantial racial differences in perceptions of willingness to undergo total joint replacements.
- No sex differences in willingness.
- Findings support the need to reduce racial disparities re: knowledge about and perceptions of TJR.
Decision Making for Total Joint Replacement—Parks et al.

- Identified Psychological factors that influenced decision making
  Among African American and Hispanic Patients referred for hip or knee arthroplasty

1. self-assessment for fit for surgery
2. R & D of mental report cards of Surgeons
3. Reliving of social network experience
4. Reliance on Faith and Spirituality for Guidance
5. Acknowledgement of Fear and Anxiety
6. Setting expectations for recovery

Journal of Long-Term Effects of Medical Implants 24(2-3) 205-212 (2014)
Suggested Solutions for Musculoskeletal Disparities

• 1. Lack of Access
  – Enhance the pipeline for young specialty providers
  – Improve remote and rural access to care

• 2. Cultural Differences
  – Cultural Curriculum changes and enhancement
  – Knowledge and Skills a requirement for provider licensure
  – Collection of self-reported race, ethnicity and language data

• 3. Bias of Provider
  – Sensitivity Training
  – Coordination of Care
2010 Orthopaedic Surgery Residency Positions

• 3371 Orthopaedic Residents
  – 76.3% Caucasian
  – 4.6% African-American
  – 3.6% Latino
  – 13.6% Asian
  – 0.4% Native American/ Alaskan
  – 4.6% Other
Celebrating 10 Years of Service in 2014!

Educational Solutions, Inc.
501 (c)(3) Non-profit Organization

“Celebrating 10 Years of Service in 2014!”
Other Solutions

• Coordination of Care
  – Patient centered care at all facilities
  – Community-based clinics and Medical homes

• Language
  – Provide Interpreters
  – Multilingual educational materials

• Knowledge Gap
  – New Publications, e.g. the Journal of Racial and Ethnic Health Disparities
  – Symposia
  – Modification of existing reports such as the National Healthcare Disparities Report
• **Increase awareness** of musculoskeletal health and promote health-seeking behavior among women and racial/ethnic minorities

• **Create effective policies** and tools on available treatment options, and the importance of physical activity as prevention and safeguard against progression

• **Increase cultural competency and communication** skills of physicians to overcome subtle or overt biases when recommending a course of treatment, and build collaborative partnerships with patients

• **Improve access** and coordination between primary care and specialists

• **Encourage behavior change** through integrated programs that address the link between obesity, arthritis, physical activity, education, and individualized goal-setting
Thank-You

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