Disclosures

- Consultant, Zimmer (Healthcare Disparities)
- Consultant, Stryker (non-personal payment)
- ABJS Board of Directors
- CORR Board of Trustees
The Fundamental Questions

• Do women do as well as men after TKA?
• Are the results for women less predictable?
Patient Sex and Gender
TKA Outcomes

- Implant survival
- Pain relief
- Functional scores
Influence on Implant Survival

• Numerous studies show higher revision rate in males
  • 3,817 patients (5,279 TKA, min 2-year follow-up)
  • 10.2% men vs. 8% women (P=0.006)

MacDonald SJ et al CORR 2008
What About Pain?

Follow-up questionnaire 2-5 years

- Primary TKA 5,290 pt 2 yr; 2,602 pt 5 yr
- Revision TKA 1,109 pt 2 yr; 505 pt 5 yr
What About Pain?

Moderate-severe pain levels higher in women than men after both primary and revision TKA

<table>
<thead>
<tr>
<th></th>
<th>2 yr Women</th>
<th>2 yr Men</th>
<th>5 yr Women</th>
<th>5 yr Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>9%</td>
<td>6.6%</td>
<td>7.9%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Revision</td>
<td>28.6%</td>
<td>22%</td>
<td>28.9%</td>
<td>18.3%</td>
</tr>
</tbody>
</table>

Singh JA et al CORR 2008
What About Pain?

- Women have same or slightly greater improvement in pain as compared to men but still greater pain at final outcome*

- Sex differences have been identified with females have greater sensitivity to painful stimuli

*Dalury JBJR Br 2009
*Ritter J Arthroplasty 2008
What about Function?

<table>
<thead>
<tr>
<th></th>
<th>Pre-Op</th>
<th>Post-Op</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ritter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>45.8</td>
<td>85.8</td>
</tr>
<tr>
<td>Females</td>
<td>42.4</td>
<td>77.5</td>
</tr>
<tr>
<td><strong>MacDonald</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>48.7</td>
<td>70.8</td>
</tr>
<tr>
<td>Females</td>
<td>41.3</td>
<td>59.9</td>
</tr>
</tbody>
</table>

MacDonald et al CORR 2008
Ritter et al J Arthroplasty 2008
What about Function?

- Data shows that women improve to same degree or even slightly better than men.
- Data shows, however, that women do not reach the same final level of outcome at 2 years.
- *Final function for women is not as good*
“Never Catch Up” Syndrome

• Women are more physically disabled at time of TKA as compared to men
  • Woman: Pre-op 40, +40, Postop 80
  • Man: Pre-op 50, +40, Postop 90
• Women undergo arthroplasty at a more advanced disease state than men do

“Never Catch Up” Syndrome

- Women are more physically disabled at time of TKA as compared to men
- Women report greater disability on SF-36 physical and mental component scores and Knee Outcomes Survey compared to men (P<0.05)
- Women more symptomatic than men for same degree of knee OA but less symptomatic with increasing severity of OA

Why do Women undergo TKA at a more advanced disease state?

- Do women elect to delay TKA or is it not offered to them at the same time in their disease course as men?
- Are orthopedic surgeons not offering surgery to women as they do men?
Surgery by Gender

• THA and TKA underutilized by both sexes by degree of underutilization 3X greater in women (Hawker 2000)

• Women underutilize other surgical procedures also such as CABG, kidney transplantation

• Girls 22% less likely to be placed on kidney transplant list (Pediatric Transplantation 2011)
Our Hypothesis

- Unconscious bias influences whether surgeons offer patients TKA
- Surgeons more likely to offer surgery to:
  - Men > Women
  - Whites > African-Americans
Our Study

• Standardized patients
  • Male vs. Female
  • Caucasian vs. African American

• Our barrier: standardized insurance
  • Self-Pay may bias surgeons
  • Commercial insurance may bias surgeons
  • Ideally Medicare as insurance

• How do we do this?
Discussion
Thank you!