### Title
Outcomes of Ceramic Bearings After Primary Total Hip Arthroplasty in the Medicare Population

### Authors
Steven M. Kurtz, Edmund Lau, Doruk Baykal, Bryan D. Springer

### Journal
J Arthroplasty. Published online, 2016. DOI: 10.1016/j.arth.2016.02.054.

### Level of Evidence
None given.

### Summary
Kurtz et al analyze the outcome of total hip arthroplasty (THA) with ceramic-on-ceramic (CoC), ceramic-on-polyethylene (CoP) and metal-on-polyethylene (MoP) bearings for 315,784 US Medicare patients. They looked at periprosthetic joint infection (PJI), dislocation, revision, and death. Propensity scores were developed (used to treat large data sets of retrospective registry data, such as the Medicare claims administrative data) to adjust for selection bias in the choice of bearing couples. Most patients received MoP (74.7%), followed by CoP (22.3%) and CoC (3%) bearings. Patients were on average 74.3 years of age, with CoP and CoC used more often in the age group below 70 years (MoP 24.2%, CoP 40.3%, CoC 38.2% of patients). 62% were females, 94% were white, and 57% were without significant comorbidities.

THA patients with CoP bearings exhibited a significantly reduced risk of dislocation (p<0.01), infection (p=0.001) and mortality (p=0.001) compared to patients with MoP bearings. Additionally a trend towards reduced revision risk with CoP in comparison to MoP bearings (p=0.095) was reported. The Charlson comorbidity index was consistently one of the most important predictors for mortality, dislocation, revision and infection. Obesity was the most important risk factor for infection and the second most important factor for revision.

When comparing patients with CoC and MoP bearings, there was no significant difference in risk of dislocation, revision, or mortality. However, there was a significantly reduced risk of infection (p=0.01). The authors conclude that their study results showed no significant difference in risk of revision at 8-9 years follow up for THAs with any bearing. However, after adjusting for selection bias and various other confounding factors, ceramic bearings exhibit an association with lower risk of infection compared with MoP bearings.

### Study Limitations
Analysis is limited to THAs from the Medicare records including ICD-9-CM (reporting bearing material) classification and diagnosis codes. Codes recording accuracy was not tested.

Study with only elderly patients, > 65 years

Several relevant factors such as differences in material (PE/XPE; type of ceramic), bearing diameter are not reported in the Medicare records.

36 mm CoC bearings, which have shown to reduce the risk of dislocation, were only available at the end of the study period.

### Key Messages
- Risk of infection was lower in patients with CoP and CoC bearings compared to patients with MoP bearings.
- Risk of mortality, dislocation, and infection was lower in patients with CoP bearings compared to MoP bearings.
- No significant difference in risk of overall revision rates between different bearing surfaces.
- Charlson comorbidity index was one of the most important risk factors for mortality, dislocation, revision and infection.