


POLAR3[◇] (ie, POLARSTEM[◇], OXINIUM[◇]/XLPE and R3[◇]) demonstrates a lower revision rate compared to all conventional THR in the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR)^{1,2}



2M records
24yrs follow-up data

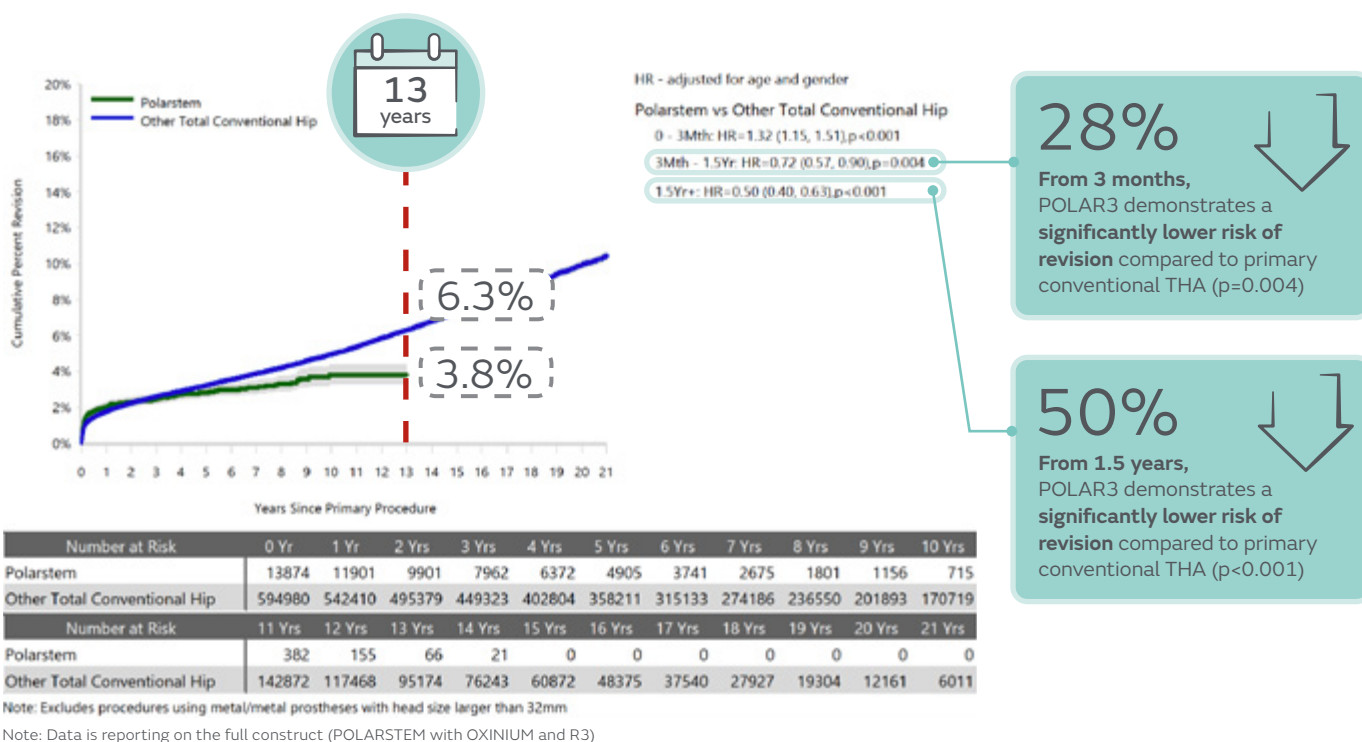
Top 10
most used implants

The AOANJRR, founded in 1999 and designated a Quality Assurance Activity (QAA), covers 99.2% of procedures since becoming fully national in mid-2002. With two million records, it provides up to 24 years of follow-up.¹



First implanted in 2008, POLARSTEM and R3 are both in the top 10 most used femoral and acetabular components respectively for primary total hip arthroplasty (THA), accounting for >17,000 THAs.¹

POLAR3 (ie, POLARSTEM, OXINIUM/XLPE and R3) demonstrates a significantly lower risk of revision compared to primary conventional THR for all diagnoses at 13 years; 3.8% versus 6.3% (p<0.001; Figure 1)²

Figure 1. Cumulative percent revision of primary total convention hip replacement by model (all diagnosis)



POLAR3, most frequently implanted through the anterior approach, demonstrates similar or lower incidence for revision at 10 years compared to conventional THR²

	Use of anterior approach ²	Reason for revisions			
		All revisions	Loosening	Fracture	Dislocation/instability
Anterior approach vs posterior and lateral approach ¹	 1 in 4	=	↑	↑	↓
POLAR3 vs conventional THR ²	 2 in 4	3.7% vs 4.6% ↓	0.4% vs 1.1% ↓	1.0% vs 1.0% =	0.8% vs 0.9% =

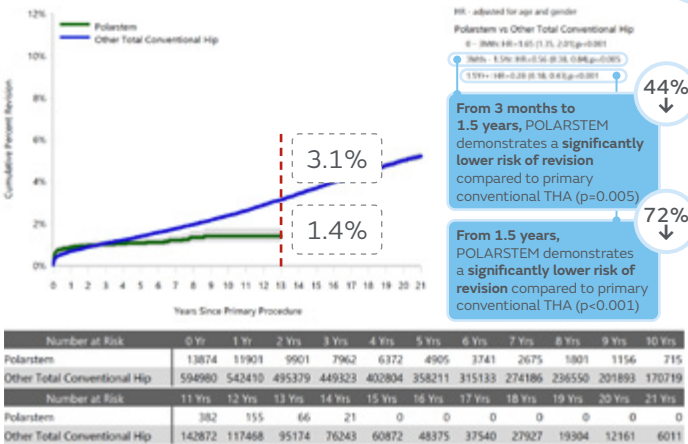
↑ Increased risk of revision ↓ Decreased risk of revision = Comparable risk of revision

POLARSTEM^o demonstrates survivorship of 98.6%²



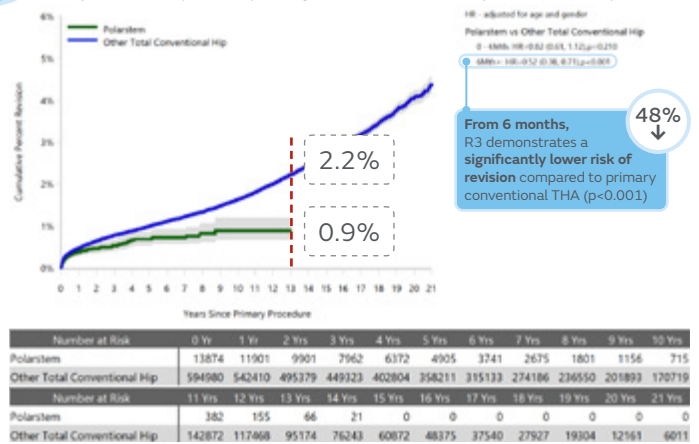
R3^o demonstrates survivorship of 99.1%²

Figure 2. Cumulative percent revision of primary total conventional hip replacement by model (all diagnosis, femoral stem revisions)



Note: Femoral stem revisions include both THR (femoral/acetabular) and stem only revisions
Note: Excludes procedures using metal/metal prostheses with head size larger than 32mm

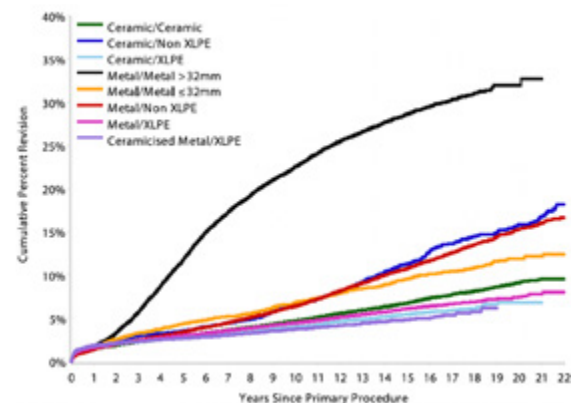
Figure 3. Cumulative percent revision of primary total conventional hip replacement by model (all diagnosis, acetabular component revisions)



Note: Acetabular component revisions include both THR (femoral/acetabular) and acetabular only revisions
Note: Excludes procedures using metal/metal prostheses with head size larger than 32mm

OXINIUM^o/XLPE has the highest survivorship of all bearing combinations up to 19 years¹

Figure HT32. Cumulative percent revision of primary total conventional hip replacement by bearing surface (primary diagnosis osteoarthritis)



95.1% Survivorship
15 years

Number at Risk	0 Yr	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs
Ceramic/Ceramic	927126	101263	90732	78607	41948	14629	2623
Ceramic/Non XLPE	9962	9108	7463	6050	3541	2150	784
Ceramic/XLPE	143653	122064	86968	56755	15458	3377	286
Metal/Metal >32mm	14424	14063	13216	11981	9306	4165	100
Metal/Metal ≤32mm	5143	5021	4840	4654	3954	2651	787
Metal/Non XLPE	25807	34413	32041	29306	20949	11722	3369
Metal/XLPE	196515	181105	153647	124529	56134	15691	1385
Ceramicised Metal/XLPE	34564	30720	24139	18672	8012	2230	0

Note: Only bearing surfaces with >5,000 procedures have been listed

HR — adjusted for age and gender	Metal/Metal >32mm vs Metal/XLPE	Metal/Metal ≤32mm vs Metal/XLP	Ceramicised Metal/XLPE vs Metal/XLPE
Ceramic/Ceramic vs Metal/XLPE Entire Period: HR=0.99 (0.96, 1.03), p=0.770	0 – 2Wk: HR=1.27 (0.96, 1.68), p=0.092 2Wk – 1Mth: HR=0.46 (0.31, 0.67), p<0.001 1Mth – 9Mth: HR=0.96 (0.79, 1.15), p=0.636 9Mth – 1.5Yr: HR=2.81 (2.38, 3.33), p<0.001 1.5Yr – 2Yr: HR=4.40 (3.66, 5.29), p<0.001 2Yr – 3Yr: HR=6.46 (5.72, 7.29), p<0.001 3Yr – 8Yr: HR=9.45 (8.90, 10.02), p<0.001 8Yr – 10Yr: HR=5.92 (5.28, 6.63), p<0.001 10Yr – 12Yr: HR=4.86 (4.29, 5.51), p<0.001 12Yr+: HR=3.35 (2.97, 3.77), p<0.001	Entire Period: HR=1.42 (1.30, 1.56), p<0.001	0 – 6Mth: HR=1.16 (1.06, 1.27), p=0.001 6Mth – 1Yr: HR=1.04 (0.85, 1.28), p=0.694 1Yr+: HR=0.62 (0.56, 0.69), p<0.001
Ceramic/Non XLPE vs Metal/XLPE 0 – 2Yr: HR=1.16 (1.01, 1.32), p=0.029 2Yr – 3.5Yr: HR=1.48 (1.15, 1.91), p=0.002 3.5Yr – 5Yr: HR=0.85 (0.58, 1.24), p=0.388 5Yr – 8Yr: HR=1.50 (1.18, 1.89), p=0.001 8Yr+: HR=2.67 (2.37, 3.01), p<0.001		Metal/Non XLPE vs Metal/XLPE 0 – 1Mth: HR=0.73 (0.62, 0.85), p<0.001 1Mth – 6Mth: HR=0.89 (0.77, 1.03), p=1.20 6Mth – 3.5Yr: HR=1.41 (1.30, 1.54), p<0.001 3.5Yr – 5Yr: HR=1.57 (1.36, 1.80), p<0.001 5Yr – 7Yr: HR=1.73 (1.53, 1.96), p<0.001 7Yr – 10Yr: HR=2.13 (1.93, 2.37), p<0.001 10Yr+: HR=2.56 (2.38, 2.76), p<0.001	
Ceramic/XLPE vs Metal/XLPE 0 – 2Yr: HR=1.01 (0.97, 1.06), p=0.562 2Yr+: HR=0.77 (0.72, 0.82), p<0.001			

38%
From 1 year, OXINIUM/XLPE demonstrates a significantly lower risk of revision compared to Metal/XLPE (p<0.001)

Comparing the rates of revision for these bearings, Ceramicised Metal/XLPE* has the lowest rate of revision at 15 years. As in previous years, the Registry urges caution in the interpretation of this result. This bearing is a single company product, used with a small number of femoral stem and acetabular component combinations. This may have a confounding effect on the outcome, making it unclear if the lower rate of revision is an effect of the bearing surface or reflects the limited combinations of femoral and acetabular prostheses. Tables and graphs have been reproduced in exact and complete form.

*The term 'Ceramicised Metal/XLPE' is equivalent to 'OXINIUM/XLPE'.

Conclusions

In this globally-recognised joint registry, POLAR3^o (ie, POLARSTEM, OXINIUM/XLPE and R3) reports lower revision rates compared to conventional THR.^{1,2} Despite a higher adoption of the direct anterior approach with POLAR3, which is a risk factor for implant loosening and fracture-related revisions, POLAR3 demonstrates a comparable or lower revision rate for all reasons for revision than conventional THR.^{1,2}

This material is intended for healthcare professionals. For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.

References: 1. Australian Orthopaedic Association National Joint Replacement Registry Hip, Knee & Shoulder Arthroplasty: 2023 Annual Report. Available at: <https://aoanjrr.sahmri.com/annual-reports-2023>. Accessed October 24, 2023. 2. Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR), Automated Industry Report System (AIRS), ID No.9857[†] for Smith & Nephew Australia, POLARSTEM Total Conventional Hip (Procedures from 1 September 1999 – 9 March 2023), Report Generated March 29, 2023, AOA, Adelaide: 1–25.

[†]AOANJRR is confident in the accuracy of the data included in this report, at the time it was provided. However, it was generated using an automated reporting system and has not been reviewed by the AOANJRR personnel.