

## Data from multiple arthroplasty registers suggest that OXINIUM<sup>◇</sup> on XLPE (VERILAST<sup>◇</sup> Technology) may provide superior mid- to long-term survivorship compared to other bearing combinations for total hip arthroplasty (THA)



### Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) 2018 Annual Report<sup>1</sup>

- The 2018 annual report presents findings from 437,605 primary THA procedures over a 17-year period
- Revision rates of ten different bearing surfaces, eight of which have been used in more than 5,000 procedures, are compared
- Ceramicised metal (OXINIUM) on XLPE (VERILAST Technology) demonstrated the highest survivorship of all bearing surfaces used in primary THA at 10 years (Table)
- Compared with Ceramic/XLPE and Metal/XLPE, VERILAST Technology showed a significantly lower cumulative revision rate at 10 years, based on 95% confidence intervals

Table HT30 Cumulative Percent Revision of Primary Total Conventional Hip Replacement by Bearing Surface (Primary Diagnosis OA)

Bearing Surface	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	16 Yrs
Ceramic/Ceramic	3130	84474	1.5 (1.4, 1.6)	2.4 (2.3, 2.5)	3.1 (3.0, 3.2)	5.0 (4.8, 5.2)	7.2 (6.8, 7.5)	7.6 (7.2, 8.1)
Ceramic/Non XLPE	483	6793	1.9 (1.6, 2.3)	3.2 (2.7, 3.6)	3.8 (3.3, 4.3)	7.1 (6.4, 7.9)	12.1 (10.9, 13.3)	13.4 (12.1, 14.9)
Ceramic/XLPE	1631	61666	1.7 (1.6, 1.8)	2.5 (2.4, 2.6)	3.1 (2.9, 3.3)	4.5 (4.2, 4.8)	5.8 (5.2, 6.5)	6.2 (5.3, 7.3)
Ceramic/Metal	20	299	1.7 (0.7, 4.0)	3.7 (2.1, 6.6)	4.4 (2.6, 7.4)			
Metal/Metal >32mm	3119	14421	1.7 (1.5, 1.9)	5.7 (5.3, 6.1)	11.7 (11.2, 12.2)	22.6 (21.9, 23.4)	29.6 (27.7, 31.6)	29.6 (27.7, 31.6)
Metal/Metal ≤32mm	373	5146	1.6 (1.3, 2.0)	3.3 (2.9, 3.8)	4.4 (3.8, 5.0)	6.6 (5.9, 7.4)	8.9 (8.0, 9.9)	9.2 (8.2, 10.2)
Metal/Non XLPE	2497	34837	1.4 (1.3, 1.5)	2.5 (2.3, 2.6)	3.4 (3.3, 3.7)	6.4 (6.1, 6.7)	10.9 (10.4, 11.3)	11.7 (11.2, 12.2)
Metal/XLPE	4577	143028	1.6 (1.5, 1.6)	2.4 (2.3, 2.4)	3.0 (2.9, 3.1)	4.5 (4.4, 4.7)	6.1 (5.8, 6.5)	6.3 (5.9, 6.7)
Ceramicised Metal/Non XLPE	40	293	1.7 (0.7, 4.1)	3.8 (2.1, 6.8)	4.2 (2.4, 7.3)	12.7 (9.1, 17.7)		
Ceramicised Metal/XLPE	517	20327	1.6 (1.5, 1.8)	2.2 (2.0, 2.4)	2.5 (2.2, 2.7)	3.5 (3.2, 3.9)		
<b>TOTAL</b>		<b>16387</b>						

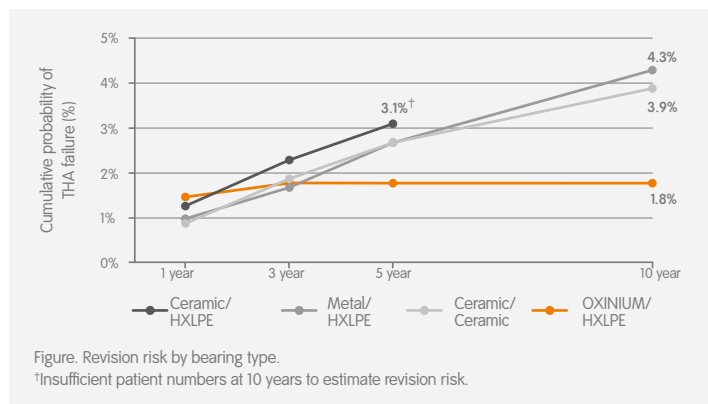
Data in the table are mean (95% CI). Comparing the rates of revision for these bearings, Ceramicised Metal/XLPE has the lowest rate of revision at 10 years. As in previous years, the Registry urges caution in the interpretation of this result. This bearing is a single company product, used with a small 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. Table has been reproduced in exact and complete form.

Note: Excludes 200 procedures with unknown bearing surface, one procedure with ceramicised metal/ceramic bearing surface and eight procedures with metal/ceramic bearing surface



### RIPO: Register for Orthopaedic Prosthetic Implantation, Emilia-Romagna, Italy<sup>2</sup>

- The RIPO database was used for this study
- An analysis of 21,000 THAs from 68 orthopaedic units, performed between 2000 and 2015 with 10-year follow-up
- The survivorship of four different bearing types was compared: Ceramic/HXLPE (n=4,045), Metal/HXLPE (n=2,869), Ceramic/Ceramic (n=13,607) and oxidised zirconium (OXINIUM) on HXLPE (n=433)
- OXINIUM on HXLPE (VERILAST Technology) demonstrated the highest long-term survivorship of the bearing combinations considered at 10 years (Figure)
- The authors concluded that these results were consistent with the AOANJRR



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## Evidence in focus (continued)



### Dutch Arthroplasty Register (LROI)<sup>3</sup>

- The LROI database was used for this study
- An analysis of 209,912 primary THAs with non-metal-on-metal implants registered between 2007 and 2016 with a maximum 10-year follow-up
- The survivorship of the six most frequently employed bearing types was compared: Ceramic/Ceramic (n=17,625), Ceramic/Non XLPE (n=40,109), Ceramic/HXLPE (n=70,175), Metal/Non XLPE (n=37,351), Metal/HXLPE (n=32,867) and OXINIUM<sup>®</sup>/(HXL)PE<sup>+</sup> (n=11,785)
- OXINIUM<sup>®</sup>/(HXL)PE<sup>+</sup> (VERILAST<sup>®</sup> Technology) demonstrated the highest mid- to long-term survivorship of all THA bearing types considered at 5 and 9 years (Table)
- The authors of the analysis concluded these results were consistent with those of other large registers such as the AOANJRR

**Table Cumulative Incidence of THA revision: mean (95% CI)**

Bearing Surface	N Revised	N Total	5 Yrs	9 Yrs
Ceramic/Ceramic	454	17625	2.8 (2.5, 3.0)	4.1 (3.4, 4.9)
Ceramic/Non XLPE	1186	40109	3.0 (2.8, 3.2)	4.0 (3.7, 4.3)
Ceramic/HXLPE	1649	70175	2.9 (2.7, 3.0)	4.0 (3.6, 4.4)
Metal/Non XLPE	1023	37351	2.7 (2.5, 2.9)	3.9 (3.6, 4.2)
Metal/HXLPE	890	32867	3.3 (3.1, 3.5)	4.2 (3.8, 4.6)
OXINIUM <sup>®</sup> /(HXL)PE <sup>+</sup>	262	11785	2.5 (2.2, 2.8)	3.5 (3.0, 4.1)

<sup>†</sup>Due to small group sizes, OXINIUM on highly crosslinked (HXLPE) or standard polyethylene (Non XLPE) were analysed together.



### Conclusion

VERILAST Technology demonstrated superior mid- to long-term implant survivorship compared to other bearing combinations for THA across multiple arthroplasty registers.



### \*Study citations

1. Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). Hip, Knee & Shoulder Arthroplasty: 2018 Annual Report. Adelaide: AOA, 2018. Accessed November 16 2018.

Available at: [Australian Orthopaedic Association National Joint Replacement Registry](#)

2. Atrey A, Ancarani C, Fitch D, Bordini B. Impact of bearing couple on long-term component survivorship for primary cementless total hip replacement in a large arthroplasty registry. Poster presented at: Canadian Orthopedic Association; June 20–23, 2018; Victoria, British Columbia, Canada.

3. Peters RM, Van Steenberg LN, Stevens M, Rijk PC, Bulstra SK, Zijlstra WP. The effect of bearing type on the outcome of total hip arthroplasty. *Acta Orthop*. 2018;89:163–169.

Available at: [Acta Orthopaedica](#)

CI: confidence interval; HXLPE: highly crosslinked polyethylene; XLPE: crosslinked polyethylene.