

Investigating mechanisms of failure for unicompartmental knee replacements

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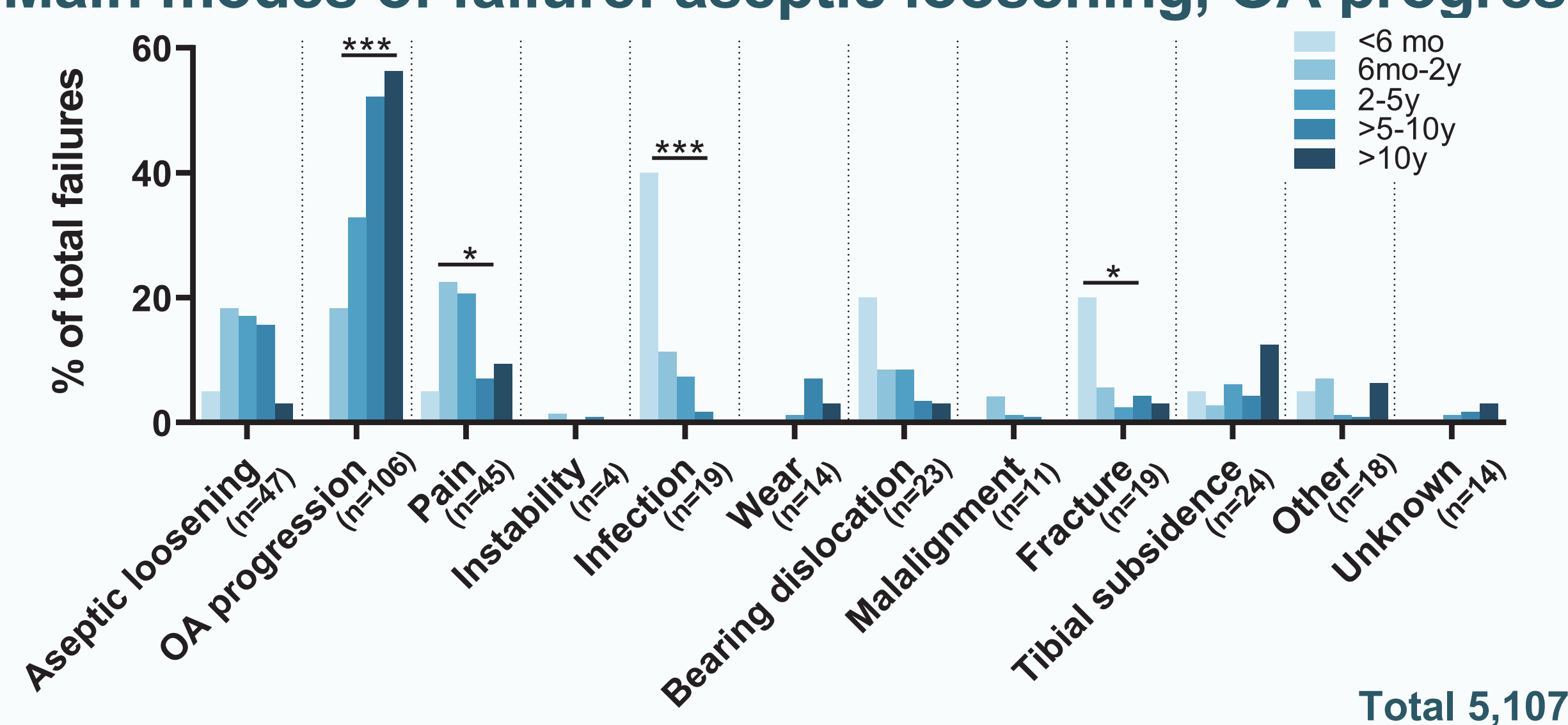
**MEDICAL AND
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Introduction

- There is increasing need for knee arthroplasty
- Up to 50% may be eligible for unicompartmental knee arthroplasty (UKA) instead of total knee arthroplasty (TKA)
- UKA is more cost-effective and has better outcomes, however UKA has a higher rate of failure
- A better understanding of failure mechanisms is needed for improved patient outcomes

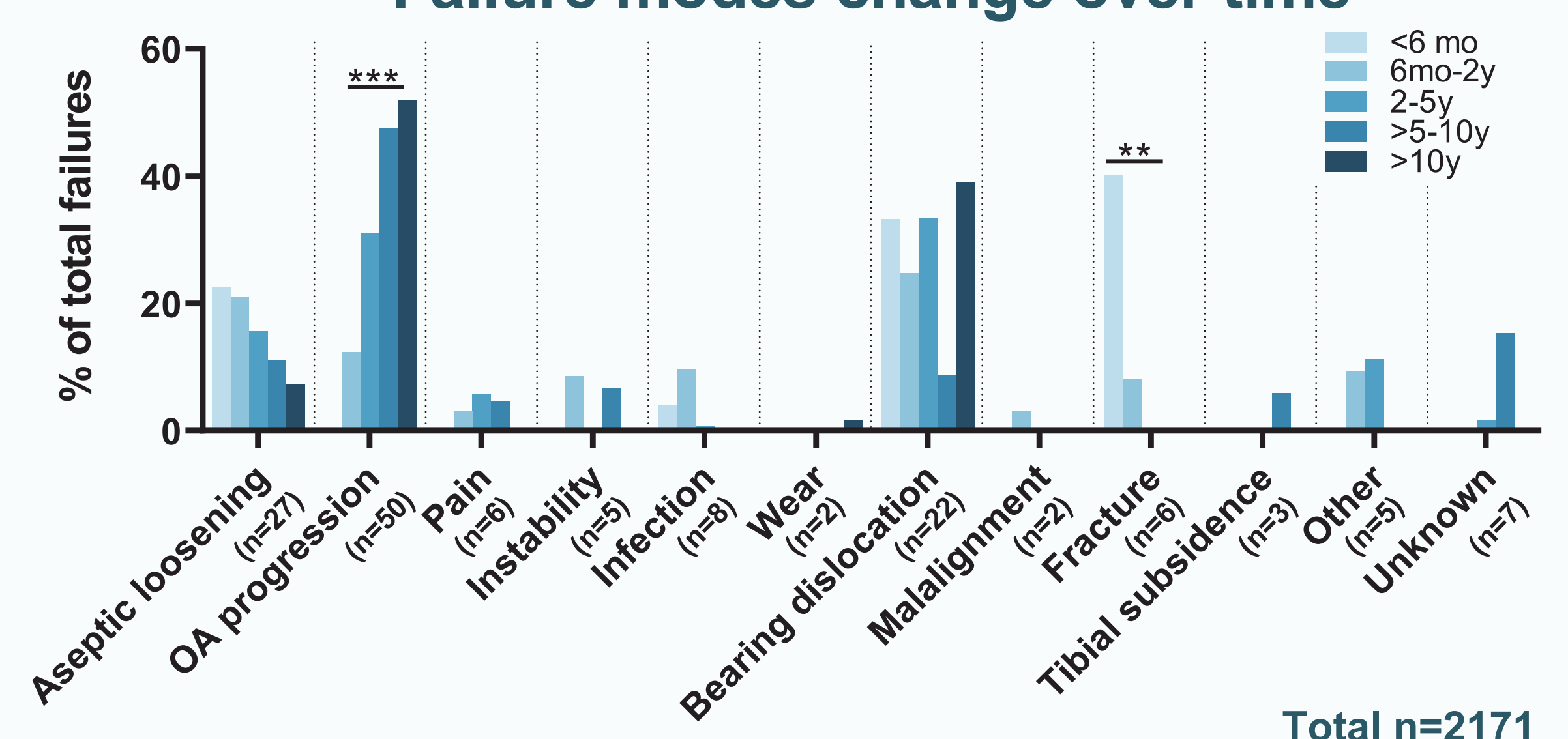
Systematic review: 6.1% failure, 5.7y follow-up

Main modes of failure: aseptic loosening, OA progression

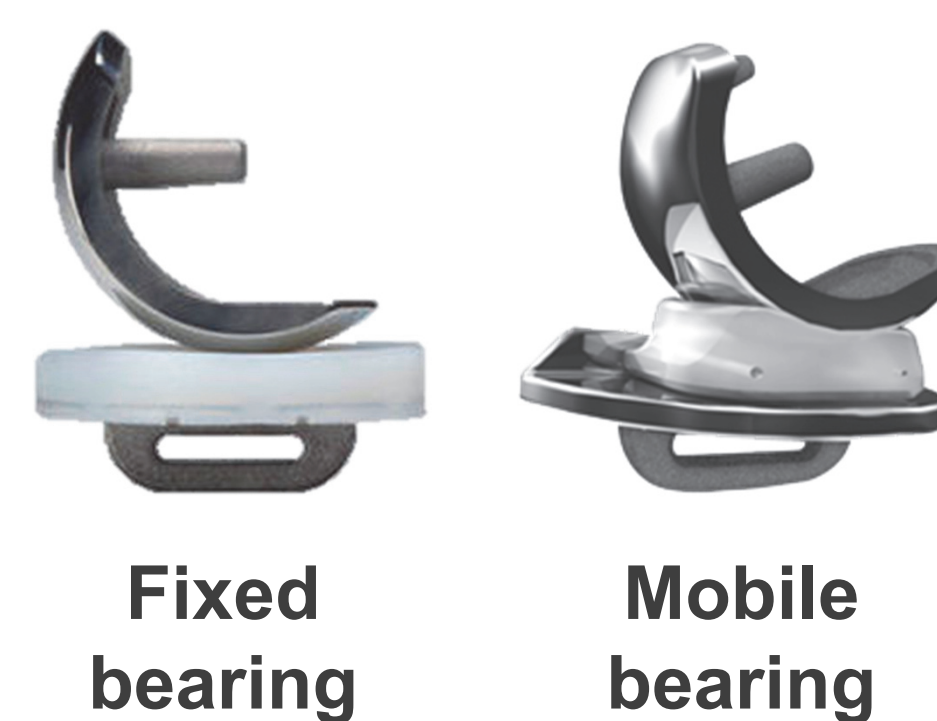
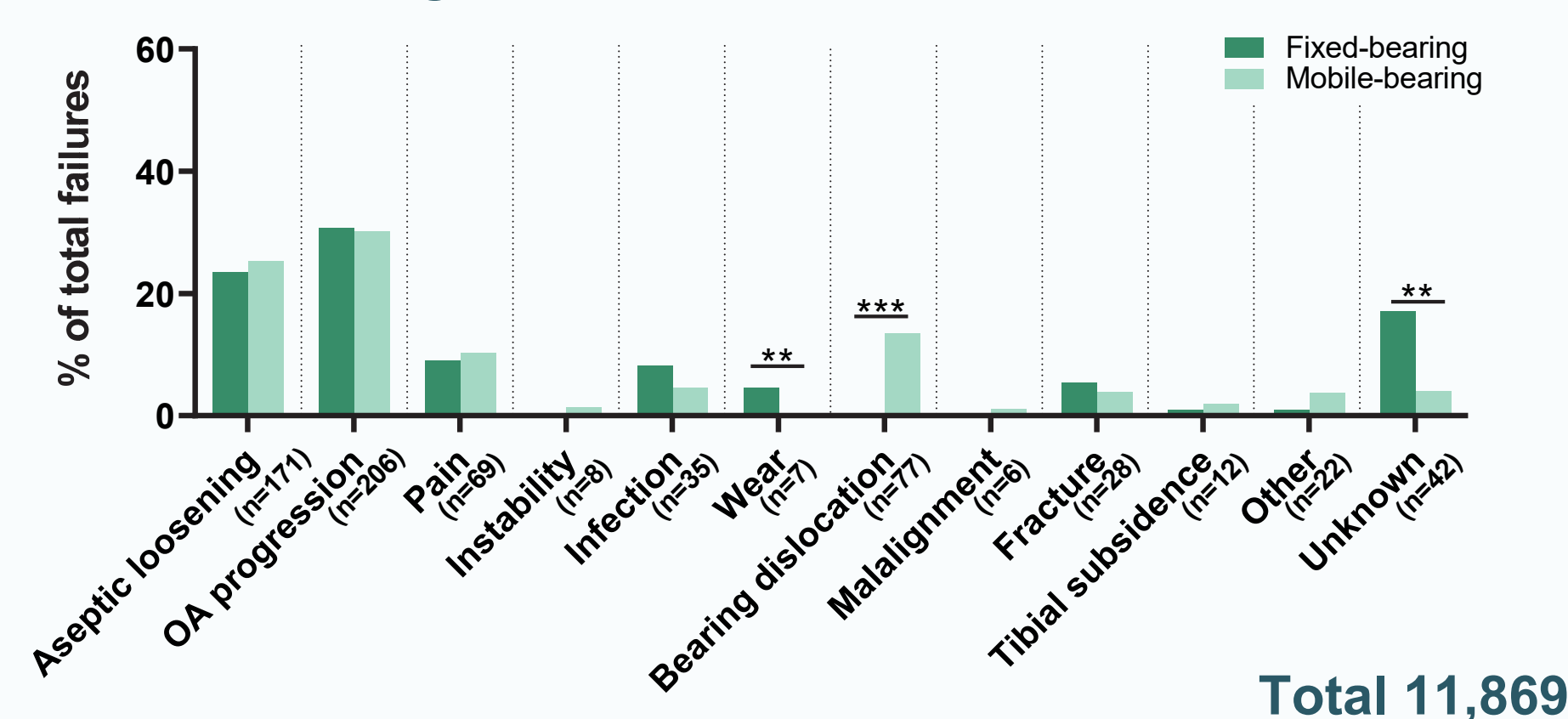


NZ cohort: 5.4% failure, 7.5y follow-up

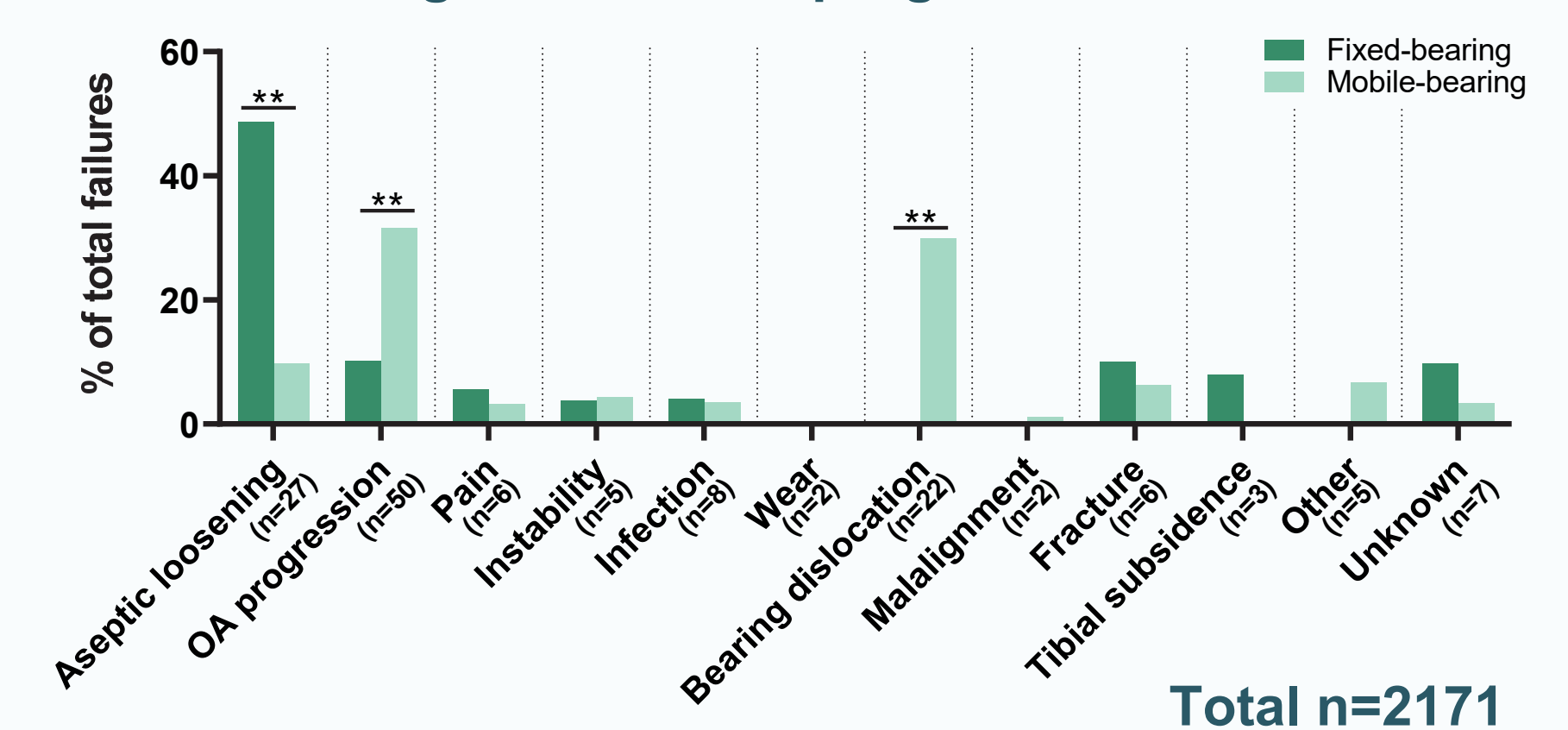
Failure modes change over time



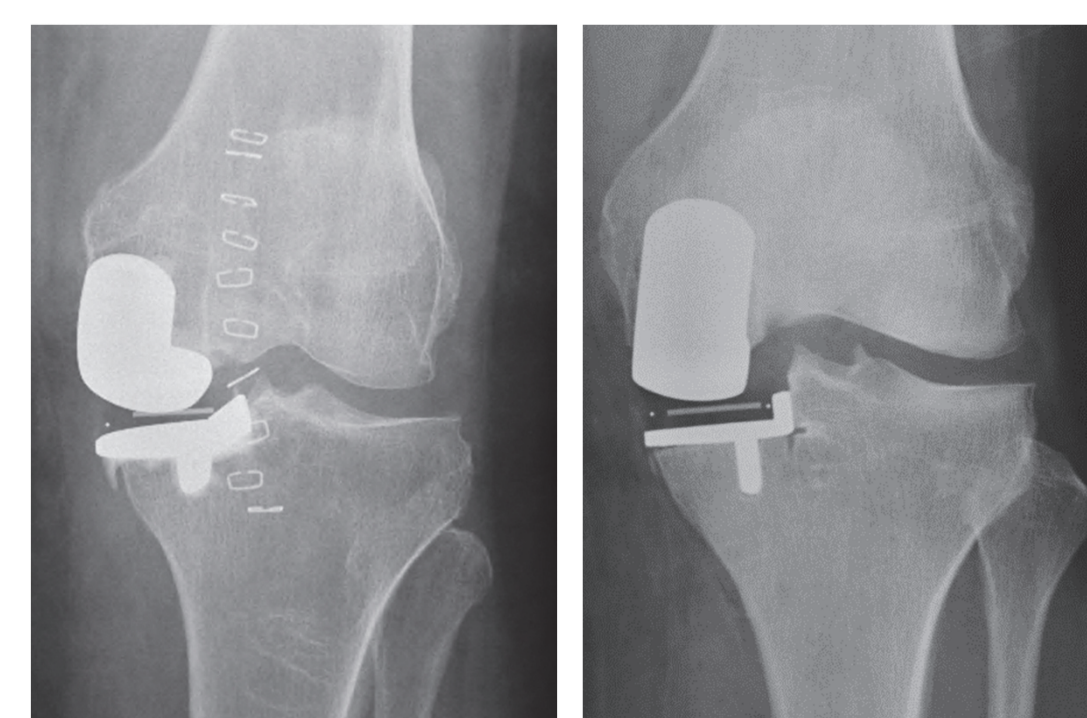
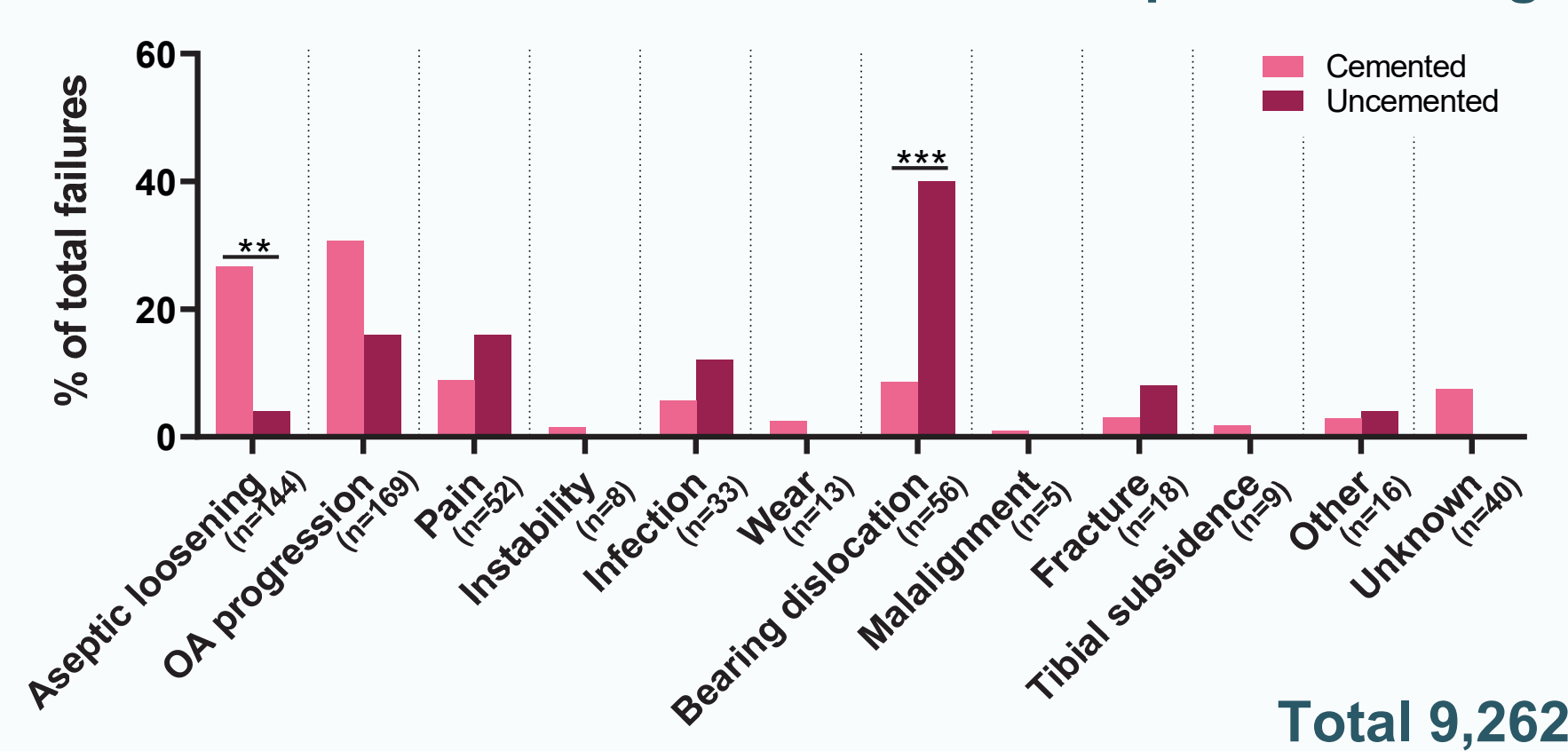
Mobile-bearing is associated with dislocation but not wear



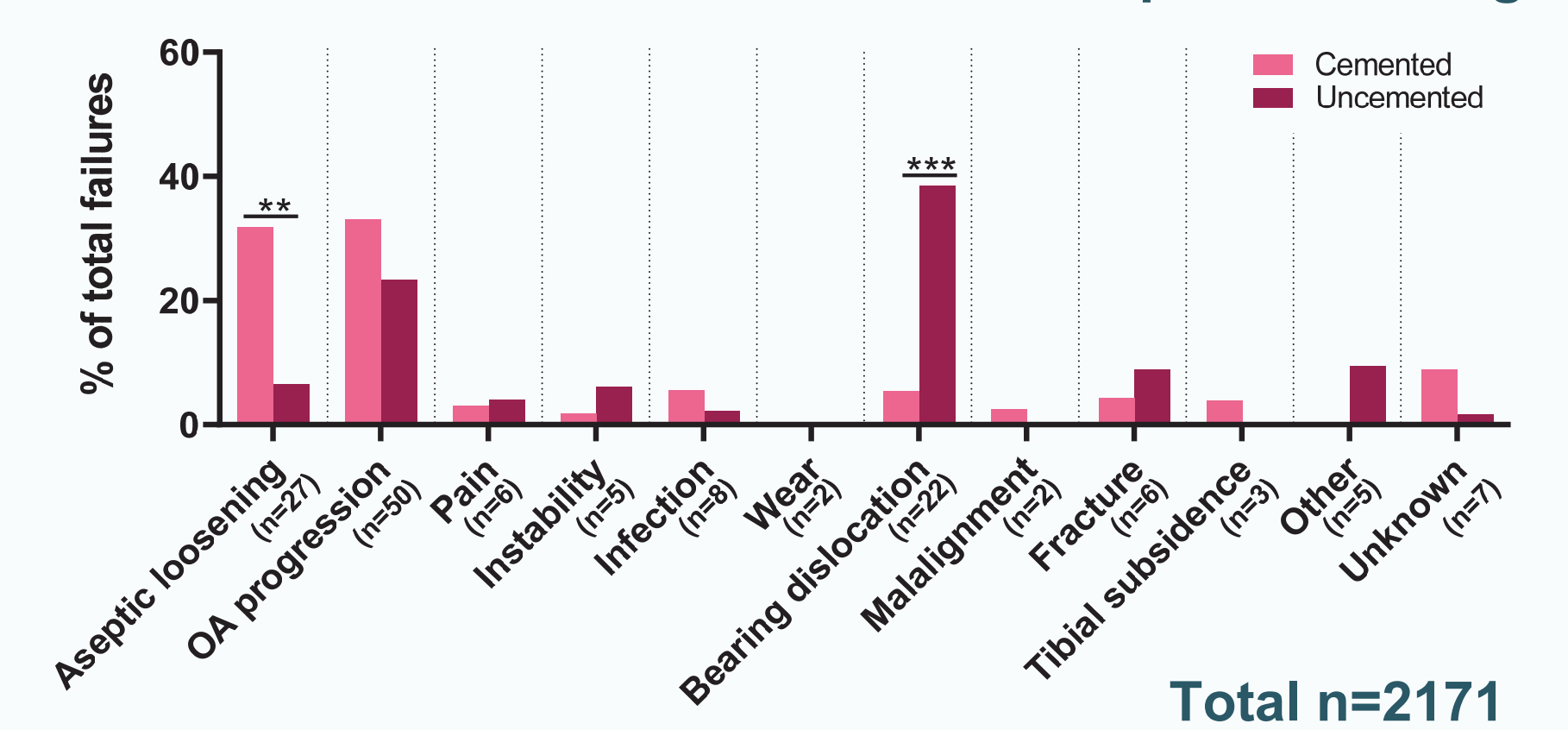
Mobile-bearing: ↑ risk of OA progression, ↓ risk of loosening



Cement use is associated with aseptic loosening



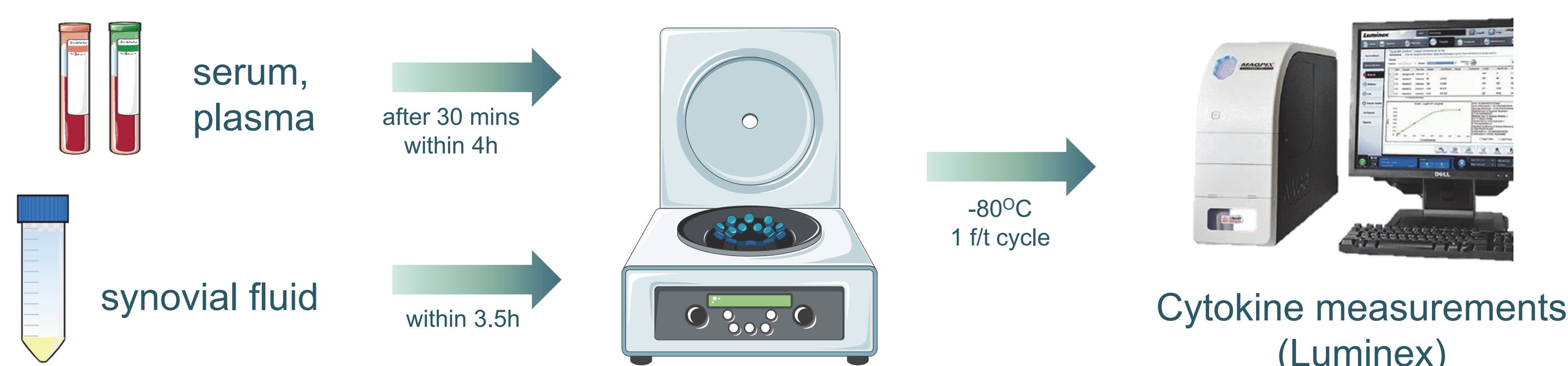
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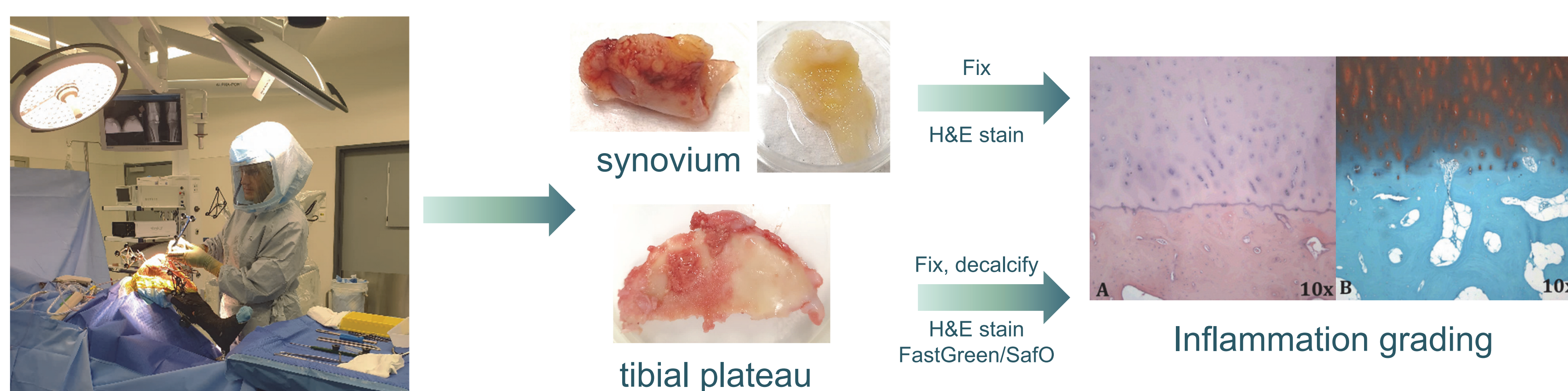
*p<0.05, **p<0.01, ***p<0.001

Next step: investigation of underlying biological mechanisms

Fluid



Tissue



Predictive biomarkers for surgical outcome

- The main reasons for UKA failure are **aseptic loosening** and **OA progression**; both are associated with inflammation
- Previous studies have reported associations between inflammatory cytokine markers and patient-reported outcomes after TKA
- We are now conducting a pilot study to investigate associations between pre-operative inflammatory markers and outcomes post-UKA
- Identification of predictive biomarkers can help clinical decision-making and improve patient outcomes after UKA