

Projected National Burden of Periprosthetic Joint Infection Following Hip and Knee Arthroplasty in Ireland: A Population-Based Study

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1 Background & Aim

Hip and knee arthroplasty volumes in Ireland are projected to rise substantially with an ageing population.

Periprosthetic joint infection (PJI) complicates ~1–2% of primary procedures and is among the most serious and costly complications in orthopaedic surgery.

The national Outpatient Parenteral Antibiotic Therapy (OPAT) programme is the most complete source of treated-PJI data in Ireland.

Aim: to project the national burden of PJI following primary hip and knee arthroplasty in Ireland to 2051.

2 Methods

Data sources

Annual PJI counts (2013–2019) from the national OPAT dataset; annual and projected THR/TKR volumes from national HIPE-based projections (St John et al., 2025).

Incidence

Procedure-specific PJI incidence calculated per year.

Base case = mean 2017–2019 incidence (hip 1.63%, knee 1.81%).

Projection & sensitivity

Base-case incidence applied to projected volumes under aggressive (M1F1) and conservative (M3F2) CSO population scenarios. Sensitivity analysis varied incidence by ±25%.

3 Observed PJI Incidence, 2013–2019

Year	Hip PJI	Hip %	Knee PJI	Knee %	Total
2013	28	0.53	9	0.39	37
2014	34	0.65	8	0.38	42
2015	51	0.90	12	0.49	63
2016	55	1.00	15	0.63	70
2017	47	0.82	15	0.63	62
2018	122	2.23	48	2.08	170
2019	103	1.84	67	2.72	170

170

PJIs in 2019
observed baseline

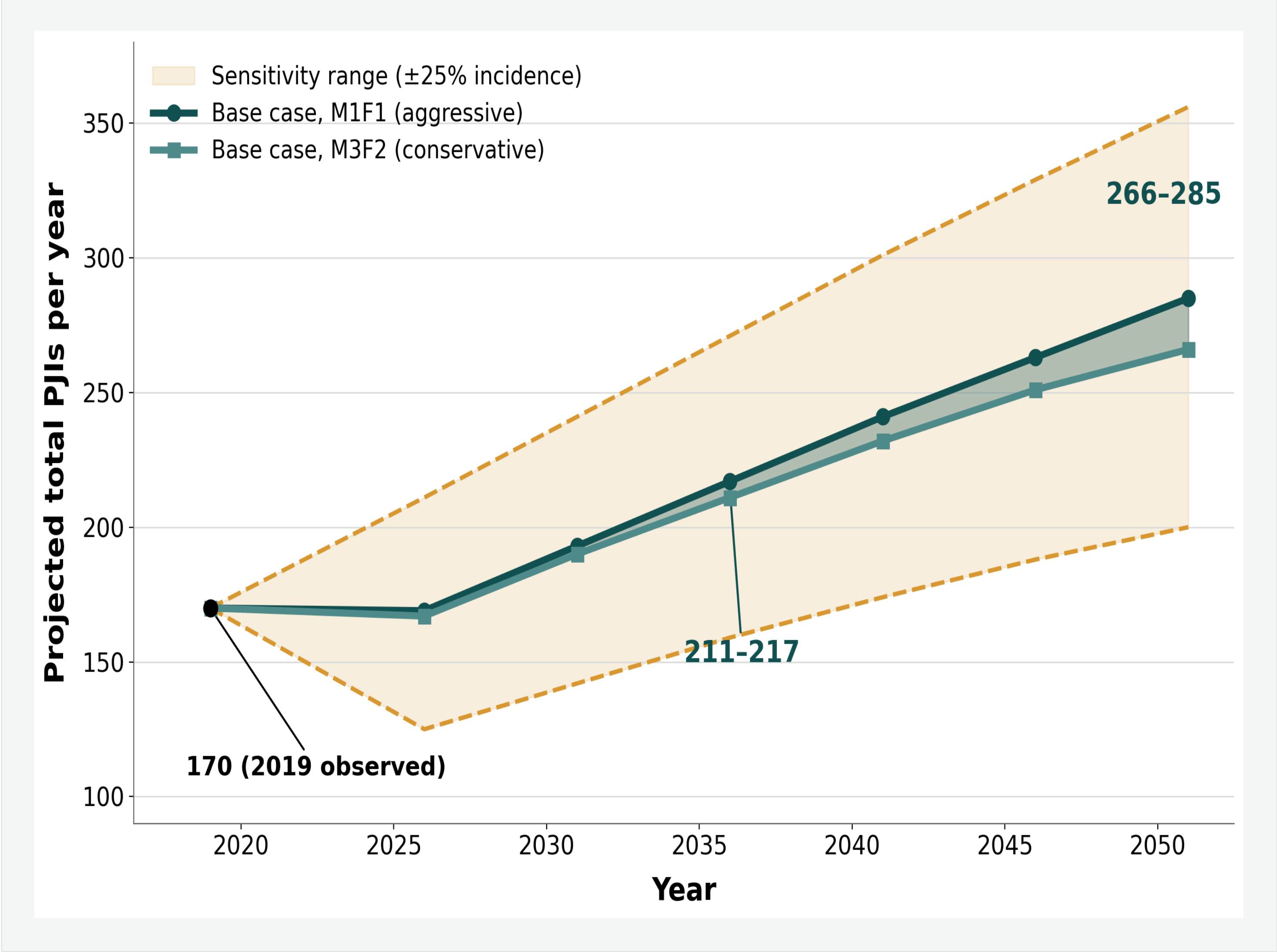
211–217

by 2036
base-case range

266–285

by 2051
base-case range

4 Projected PJI Burden to 2051



5 Projected Totals by Scenario

Year	Conservative	Base case	Aggressive
2026	125–127	167–169	209–211
2031	142–145	190–193	237–241
2036	159–163	211–217	264–271
2041	174–181	232–241	290–301
2046	188–198	251–263	313–329
2051	200–213	266–285	333–356

Ranges span M3F2 (conservative) and M1F1 (aggressive) CSO population models; conservative/aggressive columns apply ±25% to base-case incidence.

6 Conclusions

- PJI burden is projected to rise substantially over the coming decades: 167–169 cases (2026) to 266–285 by 2051 under baseline assumptions.
- Even under conservative assumptions, a marked increase is expected (125–127 in 2026 to 200–213 by 2051).
- OPAT data do not capture all PJI, so these estimates likely underestimate the true national burden.
- This will strain revision arthroplasty, microbiology and infectious diseases services, supporting investment in infection prevention, surveillance, and specialised PJI centres with multidisciplinary teams.
- These findings highlight the importance of ongoing monitoring and periodic updating of projections, to inform adaptive healthcare planning and resource allocation, both in Ireland and across comparable healthcare systems.

