



Outpatient Parenteral Antimicrobial Therapy (OPAT) for periprosthetic joint infections in the Republic of Ireland from 2013 - 2021



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Background

- Periprosthetic joint infection (PJI) is a complication of joint arthroplasty that is seen in 1-2% of primary and 4% of revision arthroplasty cases [1].
- In the Republic of Ireland, between 2013 – 2021, there were 67,353 hip and knee arthroplasties performed in our public hospitals and the demand for this procedure is rising [2].
- Patient numbers requiring joint arthroplasty are projected to rise significantly, based on figures from both the UK and the US, with conservative estimates suggesting a 40% increase by 2060 [3,4].
- Since its initiation in 2013, the national OPAT programme has facilitated the outpatient management of intravenous antimicrobials for periprosthetic joint infections.
- It is a safe, cost-effective and patient-centred programme that enables treatment at home for patients who no longer require inpatient care, thus saving hospital bed-days [5].
- This study aims to describe the clinical epidemiology of patients on OPAT with PJI between the years 2013 and 2021, examining not only trends in OPAT delivery (self-OPAT versus healthcare-OPAT) but also antimicrobial use per patient.

Methods and Materials

- A retrospective analysis of patients discharged on OPAT between 1/1/2013 to 31/8/2021 was performed using data available from the national OPAT portal, a database to which all patients are enrolled prior to commencement of the programme.
- Variables including patient demographics, diagnosis, antimicrobial agent(s) used, duration of therapy and method of OPAT delivery were collected. This study focused on patients with PJI, categorised as hip, knee and 'other'.
- The data were anonymised and analysed using STATA/SE version 17.0. A two-sample t-test was used to compare means.

OPAT PATIENT NUMBERS FOR PROSTHETIC JOINT INFECTION

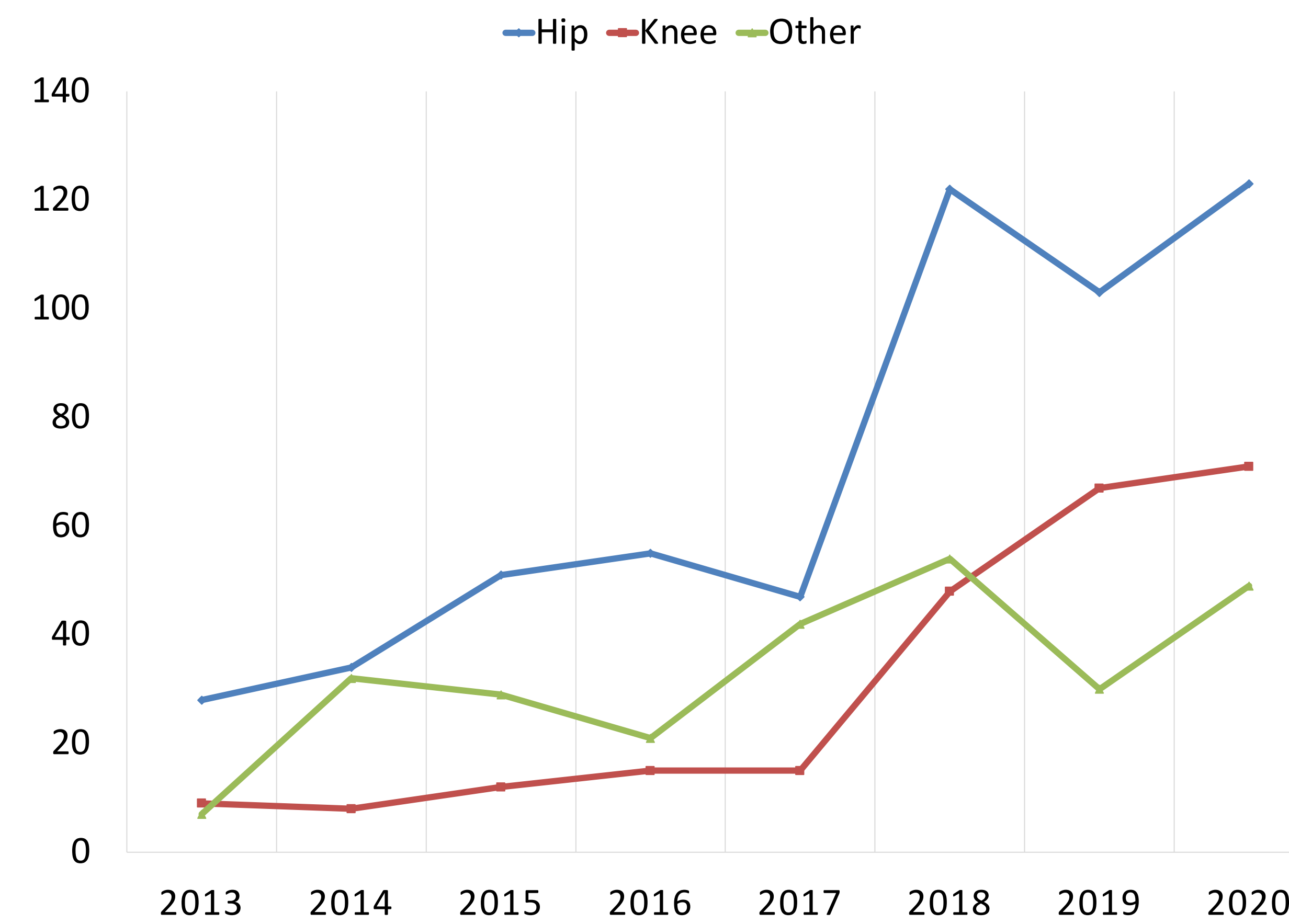
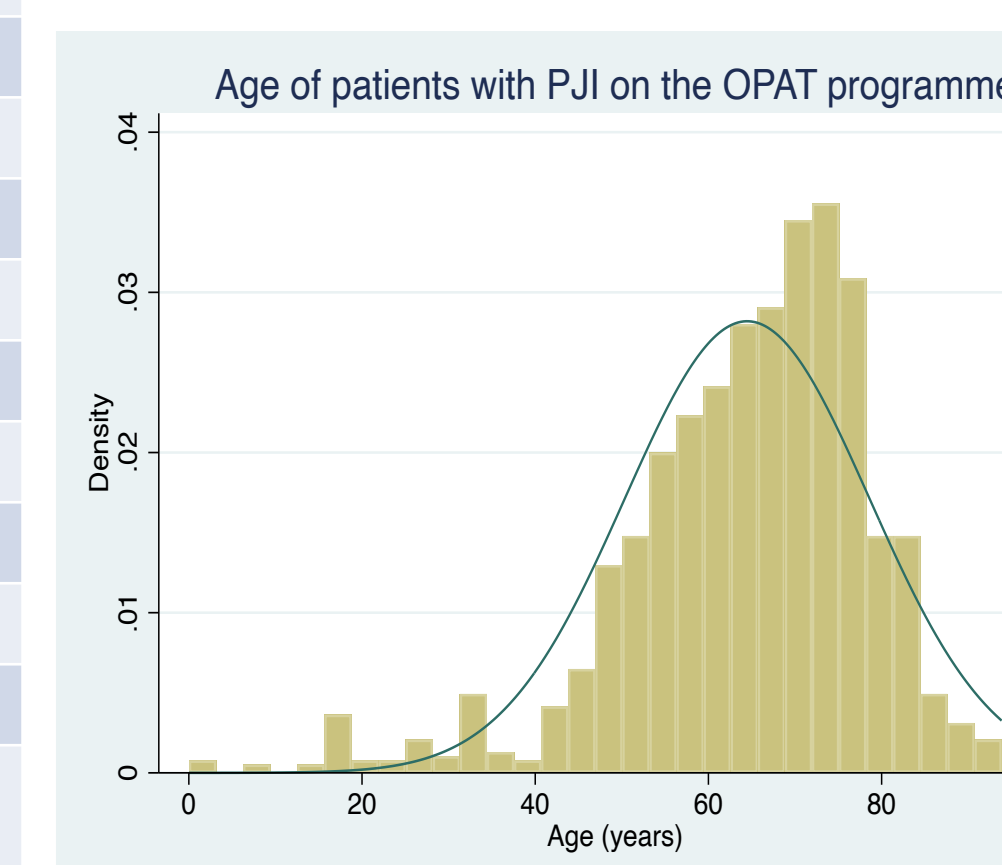
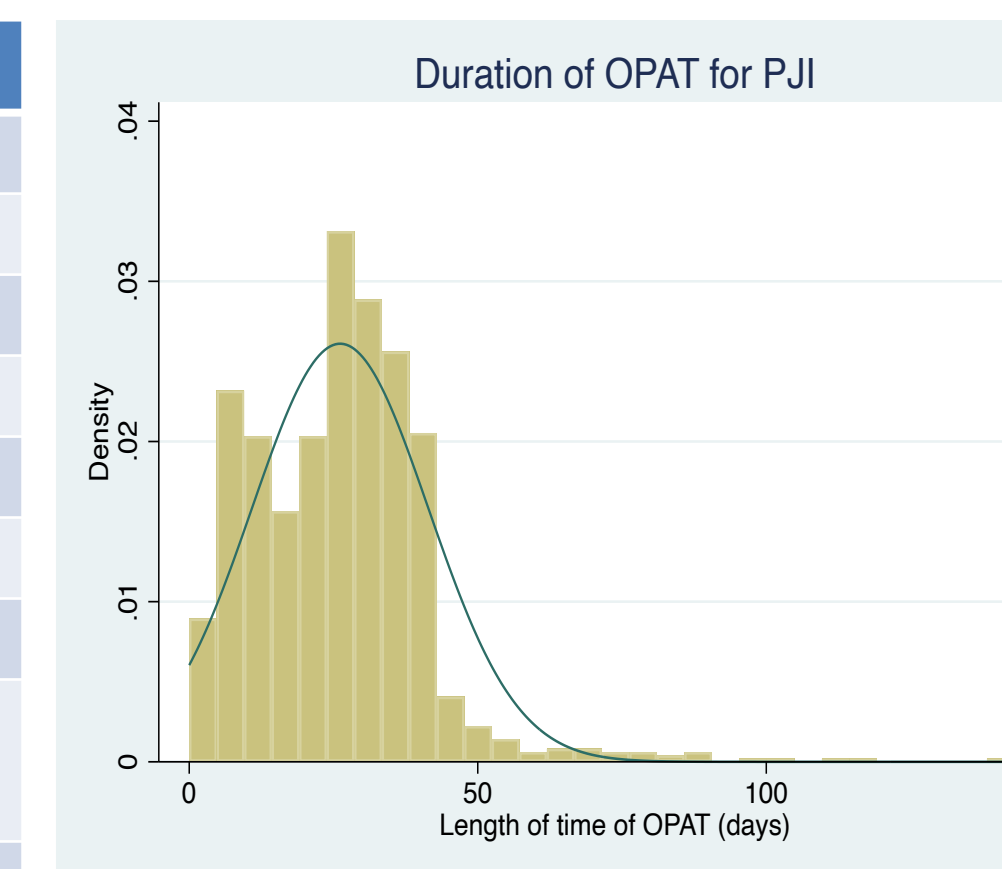


Chart 1. Trend graph demonstrating the increasing utility of OPAT for PJI

	1st antimicrobial	2nd antimicrobial	Total
Daptomycin	403	38	441
Ceftriaxone	257	5	262
Flucloxacillin	189	6	195
Vancomycin	102	11	113
Teicoplanin	68	8	76
Cefazolin	62	7	69
Tigecycline	31	4	35
Piperacillin-Tazobactam	29	20	49
Ertapenem	21	11	33
Meropenem	19	-	19
Ceftazidime	14	-	14
Amoxicillin	12	-	12
Cefuroxime	6	-	6
Fluconazole	5	-	5
Caspofungin	3	-	3
Ciprofloxacin	3	1	4
Cefotaxime	2	-	2
Clindamycin	2	-	2
Co-amoxiclav	2	-	2
Liposomal Amphotericin	1	-	1
Aztreonam	1	-	1

Table 1. Antimicrobials used for PJI on OPAT



Figures 1 & 2. Histogram demonstrating duration and age distribution

Results

- From 1/1/2013 until 31/8/2021 there were 14,749 patients managed through the national OPAT programme, 8.35% (1232/14749) of which were PJI. Of these, 53% (653/1232) were hip arthroplasty, 22.7% (280/1232) knee arthroplasty and 24.3% (299/1232) other. The mean age was 64.5 years (SD 14.15 years, 95% confidence interval (CI) 63.7 – 65.3 years).
- Of those on OPAT, 66.15% (815/1232) were H-OPAT (healthcare-administered) while 33.85% (417/1232) were S-OPAT (self-administered).
- Patients on S-OPAT were statistically younger than those on H-OPAT (61 years versus 66 years, p<0.001, 95% CI 14.1 – 63.6 years).
- The most common antimicrobial prescribed was daptomycin (35.8%; 441/1232) followed by ceftriaxone (21.2%; 262/1232) and flucloxacillin (15.8%; 195/1232).
- Two antimicrobials were prescribed in 9% (111/1232) of patients.
- The median duration on the OPAT programme was 27 days (IQR 14.5 – 35 days).
- There were 26,992 hospital bed days saved in those with a PJI.

Discussion

- The role of the national OPAT programme in the outpatient management of PJI is growing. While OVIVA offers promise regarding the non-inferiority of oral therapy, bone and joint infection is not a homogenous entity and the varying pathological processes encompass very different infection types (PJI, diabetic foot infection and spondylodiscitis) [6]. As such, the OPAT programme will continue to play a significant role in the ambulation of orthopaedic infections.
- While S-OPAT is the preferred strategy and should be considered for all patients, our data demonstrate that H-OPAT is required more frequently in the older person. As such, the availability of H-OPAT must be retained and promoted nationwide given the increasing utility of primary arthroplasty, particularly among older adults who may require treatment for PJI.

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