Descriptive analysis of the Irish national outpatient parenteral antimicrobial therapy (OPAT) programme

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INTRODUCTION

The Irish Outpatient Parenteral Antimicrobial Therapy (OPAT) programme, a national centrally administered outpatient antibiotic provision service was established in 2013 within the public hospital system and operated by the Health Service Executive (HSE).

Here we describe the programme usage to date and outline how the data can be used to help improve the service delivery and identify important trends in national antimicrobial usage

AIMS

The aims of this analysis are twofold. Firstly, we wish to identify trends in OPAT usage with a view to maximising appropriate usage; allowing for a reduction in bed days used due to infection related causes and subsequent financial savings to the healthcare system. Secondly, we wished to consider the effects of OPAT on antimicrobial stewardship in terms of spectrum versus ease of OPAT administration to determine if OPAT was having an adverse effect in terms of stewardship

METHOD

Using data extracted from the national electronic portal we describe total summary statistics from 2017 to end of August 2021 (56 months).

This data encompasses prescribing information from 36 hospitals involved in the OPAT programme.

NATIONAL OPAT SUMMARY STATISTICS

2017 – 1773 episodes
2018 – 1707 episodes
2019 – 2146 episodes
2020 – 1975 episodes
2021 - 1283 episodes (to end Aug 2021)

Hospital Administered OPAT (HOPAT) – 6279 episodes
Self Administered OPAT – (SOPAT) – 2605 episodes

Median OPAT duration 17 days. Average OPAT duration 21 days
Total bed days saved for 2017- Aug 2021 148,577
Average bed days saved per annum 37,144

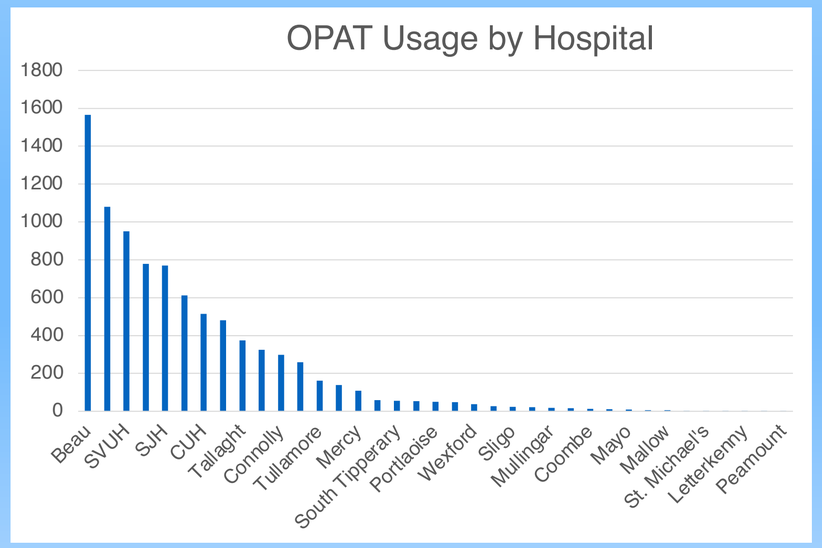
RESULTS

Over the 56-month period 8884 OPAT episodes were facilitated between 36 hospitals. 6279 episodes were home OPAT delivered by a healthcare worker vs 2605 self OPAT where patients were taught to administer the antimicrobials.

The median OPAT duration of therapy was 18 days with an average of 21. Average age of a referred patient was 56 years.

The top five diagnoses of osteomyelitis, abscesses, bacteraemia, cellulitis, and pyelonephritis accounted for 53.6% of referrals. 89.6% of patients were prescribed a single antimicrobial, 10% two agents and 0.4% prescribed three. Four antibiotics – ceftriaxone, daptomycin, flucloxacillin continuous infusion and cefazolin account for 59% of 143 antimicrobial choices; choices largely made to cover presumptive gram-positive cocci

Five of the 36 hospitals accounted for 57.9% of all OPAT prescriptions. The number of beds in a hospital was not the strongest predictor of OPAT usage with OPAT utilisation rates differing between hospitals. The total number of bed days saved in 56 months was 148,577 within a health system capacity that operates on 11,171 beds available per day for a population just exceeding 5 million. Per the HSE the average daily cost of running an inpatient acute hospital bed is €878 resulting in significant cost savings.



OPAT ANTIMICROBIAL STEWARDSHIP

To consider the antimicrobial stewardship implications of OPAT we looked at the sub-dataset that specified the bacteria being treated as opposed to the condition.

The largest such dataset was within the 'Bacteraemia/Blood stream infection/Septicaemia' diagnosis grouping. This contained the details of 127 episodes of MSSA bacteraemia.

The vast majority of prescriptions 97/127 were using first line narrow spectrum agents - either flucloxacillin on a multiple dose regimen or via a continuous infusion, or cefazolin.

This leaves 30/127 (23.6%) using more wide spectrum agents. 28 of the 30 were for either ceftriaxone (14) or daptomycin (14) with two instances of use of meropenem and Piperacillin/Tazobactam.

Obviously the use of a carbapenem and an antipseudomonal beta-lactam are inappropriate for pure MSSA infection and is is probable that they were used for other reasons/bacteria not captured by the OPAT database.

Of more importance are the 28 uses of ceftriaxone and daptomycin, which were choices almost certainly made to allow ease of administration rather than being the best options in terms of antimicrobial stewardship. Factors to explain their use may include lack of access to elastomeric flucloxacillin driving demand for alternative once a day administration options.

CONCLUSIONS

- The Irish National OPAT programme is currently responsible for significant bed day and subsequent financial savings within the Irish health system.
- At a conservative estimate the programme saves the Health Service Executive ~€20 million per annum based on the cost of a bed day of €878.
- The current efficacy of the programme is driven largely by acute tertiary academic centres, and the size of the hospital is not the main predictor of OPAT utilisation.
- There is significant scope to increase OPAT usage amongst district and county hospitals provided they have access to an infectious diseases or clinical microbiology service that could oversee governance.
- Based on a subset of the national data there are some concerns that ease of administration of an antibiotic via the OPAT programme may be overriding antimicrobial stewardship concerns.
- Increased use of self -administered OPAT and availability of elastomeric pump infusions may be important drivers of good antimicrobial stewardship within OPAT programmes