Kettering General Hospital
NHS Foundation Trust

The quality of life and cost benefits of domiciliary 24-hour Piperacillin/Tazobactam 13.5g infusion in patients with diabetic foot disease

Yasir Sacranie, Michael Pierides
Kettering General Hospital

Aim

To evaluate patient satisfaction and cost benefit of using domiciliary piperacillin/tazobactam 13.5g administered with infusion pump in patients with a diabetic foot infection (DFI). DFIs with osteomyelitis often require 6-weeks of antibiotics.[1] This can result in a prolonged admission to treat Pseudomonas aeruginosa because thrice daily piperacillin/tazobactam is logistically difficult to administer at home and alternatives e.g., ciprofloxacin and ceftazidime carry a Clostridioides difficile risk. These patients could be managed in a domiciliary setting if the antibiotic is administered once daily.

Methods

Since March 2019 to present, we surveyed eight patients (7 males, 1 female aged 57 to 81 years) who received domiciliary intravenous antibiotics for a DFI with confirmed osteomyelitis. On completion, patients filled in a validated patient satisfaction questionnaire (Glasgow Benefit Inventory - GBI).[2]

Results

The GBI scale ranges from -100 (maximal negative benefit) to 0 (no benefit), to +100 (maximal benefit). Data collected suggested that domiciliary intravenous antibiotics for a DFI have a positive impact on total, general, social, and physical health.

Table 1 GBI scores for domiciliary versus hospital antibiotic treatment

	Total	General health	Social	Physical health
Range	**8.3 to 30.6**	**8.3 to 41.7**	**0 to 33.3**	**-33.3 to 33.3**
Median	**19.1**	**24.5**	**10.4**	**6.25**

The financial cost was compared to a 6-week stay in hospital for intravenous antibiotic therapy. 6-weeks in-patient care equates to £10,500 per patient. Piperacillin/tazobactam given thrice daily for 6-weeks costs £989.

Domiciliary treatment using the piperacillin/tazobactam 13.5g infusion device for 6-weeks costs £4,122 per patient. Once-daily domiciliary nursing visits cost £5,040 for 6-weeks. Treatment using a piperacillin/tazobactam as a 13.5g intravenous infusion in a domiciliary setting potentially saves £2,327 per patient.

Conclusion

This case series demonstrates patient satisfaction as well as cost effectiveness for domiciliary treatment of a DFI in a cohort of patients who would have historically required a prolonged admission.[3] All patients preferred to be treated at home, and there were no safety concerns raised. With domiciliary rather than in-patient therapy, a potential saving of £2,347 per patient can be obtained.

Reference(s):
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3. Malone, M., West, D., Xuan, W., Lau, N., Maley, M. and Dickson, H., 2015. Outcomes and cost minimisation associated with outpatient parenteral antimicrobial therapy (OPAT) for foot infections in people with diabetes. Diabetes/Metabolism Research and Reviews, 31(6), pp.638-645. intravenous antibiotic service models: CIVAS systematic review. BMJ Open, 2017;7:e013560. doi: 10.1136/bmjopen-2016-013560.