

Out-Patient and Home Parenteral Infusion Therapy

Economic Assessment Case Study

Statement of intent

The purpose of this economic assessment is to clarify the costs of running an **Out-patient and Home Parenteral Infusion Therapy (OHPiT) service**.

The intended audience for this presentation is the Isle of Wight NHS Trust and the Isle of Wight Commissioning group.

Introduction

The aim of this economic assessment is to directly compare the costs involved in inpatient stay as opposed to the delivery of the same treatment but in a community setting via an Out-patient and Home Parenteral Infusion therapy service.

Overview of service

Outpatient and Home Parenteral Antimicrobial Therapy (OPAT) has now become widely established in the UK as an effective means of treating complex and serious infections in settings outside acute care. The OHPiT service delivers not only antimicrobial therapy (OPAT), but also other IV therapy infusions that may avoid the need for Hospital admission.

OPAT can potentially provide effective treatment for infections that may otherwise require prolonged hospital stay for intravenous antimicrobial treatment. An effective OPAT service may also improve quality of life, provide patient choice, reduce necessity for hospital admission (reducing the risk for healthcare associated infection) and can also help to facilitate early discharge from the hospital and avoid the need for admission.

Patient selection, robust governance, good communication and monitoring arrangements are fundamental to ensure patient safety.

The Isle of Wight OHPiT service has currently been operational for almost five years and delivers intravenous therapy in the community setting. Initially the service provided the facilitation of early discharge through accepting referrals from hospital Consultants and consisted of one nurse specialist. As the service has evolved, and with greater exposure, activity has increased to a point that warrants expansion to the OHPiT team. And with the development of new pathways allowing for community referrals enabling complete admission avoidance, the aim of this economic assessment is to gain a true

understanding of its value in both cost and benefits to the patient, Trust and wider community. This would allow for appropriate investment from commissioners and the provider, to provide a sustainable service.

The OHPiT service provides intravenous (IV) therapy for two differing client groups:

1. Antimicrobial treatment (OPAT)
2. Infusion therapy

1. The OHPiT service can deliver IV antimicrobial therapy for patients who have an acute or chronic infection but do not need to occupy an acute hospital bed. Referrals to the service can come from either the primary or secondary care setting. The referring clinician will maintain clinical responsibility throughout the course of OHPiT treatment, though the day-to-day management will be co-ordinated by the OHPiT team which adopts a multidisciplinary approach with input from the Consultant Microbiologists and the Antimicrobial Pharmacist. The aim of this service is to provide appropriate care in the appropriate setting under a tight clinical governance framework. Treatment can be provided either in the patient's own home, or in the OHPiT infusion clinic, with the package of care tailored to patient / clinician need.

2. The OHPiT service also can provide infusions such as infliximab, immunoglobulin, iron, magnesium and illoprost. These patients are referred to the service from hospital Consultants or General Practitioners, and are treated within the OHPiT infusion clinic.

Key benefits of this innovation

As detailed previously, OHPiT is a service that delivers treatment that ordinarily would have needed to be provided in an in-patient setting.

The NHS five year forward view details that out-of-hospital care needs to become a much larger part of what the NHS does. OHPiT is a service that embraces this forward way of thinking.

The Department of Health issued guidance for antimicrobial stewardship in hospitals called the Start Smart – Then Focus document. It details that there are five Antimicrobial prescribing decision options, which are:

- Stop
- Switch
- Change
- Continue
- **OPAT**

Antimicrobial stewardship is an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness (PEH, 2013).

So the OHPiT service not only seeks to realise the benefits detailed below, but also is a service that is at the forefront of recent Department of Health's initiatives.

Quality Benefits

Benefits for the patient in moving this treatment away from the traditional hospital setting into the community allows for:

- Promotion of patient choice
- Independent/normal daily activities may be possible
- No separation from family
- Reduced risk of healthcare acquired infections
- Increased patient satisfaction

Innovation Benefits

By creating a service that transfers acute care into the community setting, utilising the District nursing workforce allows for:

- Exposure to new clinical skills
- New skills to be transferrable to differing types of infusions, treatments, etc (non –OHPiT)
- Increased job satisfaction

Productivity Benefits

By moving acute care away from the hospital setting it allows for:

- Reduction in length of hospital stay
- Cost effective treatment option
- Reduction in surgical waiting list times
- Reduction in non-essential admissions
- Decreased pressure on emergency departments
- Reduced Hospital Acquired Infections rates
- Enhanced multidisciplinary working across Primary and Secondary Care

Prevention Benefits

- Reduced risk of Health Care Acquired Infections
- Compliance with Department of Health Antimicrobial Stewardship Guidelines
- Avoidance of prolonged / unnecessary inpatient stay

Key costs of this innovation (direct costs)

As OHPiT aims to avoid days spent in hospital beds, for the purpose of this economic assessment the cost comparison would be direct costs associated with a 24 hour inpatient stay opposed to the same time equivalent but under OHPiT. The reason for this like for like comparison is that for each day a person is treated under the OHPiT scheme they would have had to remain as an inpatient whilst receiving treatment. Consultant costs have not been included in either comparison as these details were not incorporated into the inpatient stay costing's provided from the Trusts Person Identifiable Data (PIDs) department. Though it is estimated by the author that Consultant input would be consistently the same whether they were treated as an inpatient (hospital Consultant), or under the OHPiT scheme (Microbiology Consultant).

The OHPiT service in 2014-2015 (12 months) achieved:

- **1720** hospital inpatient bed days avoided
- **658** of the 1720 were complete admission avoidance
- **1062** of the 1720 were through facilitation of early discharge

Referrals came from both medical and surgical wards, Emergency Department, Out-Patient clinics, and directly from the community via the General Practitioners.

Inpatient costs

Table 1 details the direct costs for 24 hour inpatient stay in the areas that would have needed to provide care for the patients treated under the OHPiT scheme within this time period. The calculation of a 24 hour period is completed through adding up all the costs associated directly with the ward over a year's period and then dividing that cost by the number of days beds were occupied. The costs incorporate all elements of running a ward (overheads) such as:

- staffing
- floor space
- maintenance
- catering
- Cleaning

Though as explained earlier, does not include the cost for Consultant time. These costs were provided by the Trusts Person Identifiable Data (PIDs) department, based on the previous year's expenditure.

Table 1. 24 hour inpatient costs

Ward	Inpatient cost	Days avoided	Total cost
Coronary Care	£374	108	£40,392
Respiratory Medicine	£210	129	£27,090
General Medicine	£174	561	£97,614
Orthopaedic	£247	874	£215,878
General Surgical	£331	48	£15,888
	Total = £396,862		

OHPiT costs

The OHPiT service is available 7 days a week 8am – 6pm, and released **1720** bed days for antimicrobial treatment within the 12 month highlighted time frame, plus delivered **262** non-antimicrobial infusions within the clinic (these can vary anywhere between 1 – 8 hours in administration time).

To sustain this level of activity, the OHPiT service requires a team of:

- 1 WTE band 7 Lead nurse
- 3 WTE band 6 OHPiT nurse
- 1 WTE band 3 Healthcare assistant
- 0.2 WTE Antimicrobial Pharmacist

The cost of this, plus the additional cost of the daily running of the service (figures broken down in the same way as the ward costs) is = **£255,508.30**, but not inclusive of Antimicrobial Pharmacist time. These costs were also obtained from the Trusts PIDs department, based on the same time frame as costs for the wards.

There are additional costs that the OHPiT service attracts which are additional when compared to inpatient care, such as the use of the hospital pool car service and Microbiology Consultant time. Also the floor space usage (Water & Sewage, Electricity, Gas) which is based on the hospitals total usage divided by floor area was not included in the costs provided along with drug costs usage.

The OHPiT service uses the pool car service averaging 500 miles per month and with a cost of 35p per mile (petrol, maintenance, etc) the total 12 month cost is = **£2,100**.

The floor space costs were calculated at £22.75 per m² and with the OHPiT infusion clinic, office and clean utility room measuring 69.42m², this equates to a yearly cost of = **£1,579.31**.

The drug costs were obtained from the Pharmacy department and equated to: **£20,546** per year.

As the Consultant time is not calculated in the costs provided by PIDs for the ward expenditure, this also has not been included in the calculations for the OHPiT service to provide a fair comparison. Table 2 details the costs associated with annual running of the OHPiT service.

Table 2 Cost of running the OHPiT service

	Cost	Daily cost calculation
Yearly service cost	£255,508.30	Total = £290,502.61 Divided by 1720 = £168.90 per 24 hours
Antimicrobial Pharmacist	£10,769	
Floor space usage	£1,579.31	
Pool car service	£2,100	
Drug costs	£20,546	

Indirect costs

As detailed, the costs for Consultant time has not been included, as the comparison with inpatient cost would not have been a true reflection. But it needs to be noted that although the day-to-day running of the OHPiT service is run by the core nursing structure highlighted earlier, but a proportion of Consultant Microbiologist time needs to be included. Also to ensure 24 hour access to clinical advice, the NHS 111 system is used by patients if required along with the District nursing service. The District nurses sometimes administer the antibiotics in the community if activity increases beyond the capacity of OHPiT nurse availability, but this treatment is built into their service level agreement. So is already funded.

Conclusion

If the OHPiT service continues to deliver at the activity level achieved in 2014/2015, plus with the additional benefits detailed earlier and with the additional infusion service activity that has not been incorporated into the costs, this indicates a very cost effective alternative to the usual inpatient care delivery. With 24 hour inpatient costs averaging **£267.20** for the five areas detailed in table 1, and **£168.90** for the same time equivalent whilst under OHPiT, this displays a significantly cost effective alternative. Through the utilisation of the OHPiT service (**£106,359.39 saving for 1720 bed days**), the Trust can create capacity within the hospital to see more complex / critical patients.

Quotes from patients who wanted to comment on the OHPiT care delivery:

- *Very happy with service – kept up to date personally – everything explained simply and effectively*
- *I was able to rest at home and be supported by my husband, to help look after my baby. There was less emotional upset as I didn't have to leave my husband which was required whilst staying in hospital*
- *It meant I could go home from hospital which made a great deal of difference to my physical and mental well being – an excellent service*
- *It got me out of hospital where I was increasingly mentally uncomfortable despite the super nursing. It provided a superb home service. Overall – Excellent*
- *As a patient I found the service excellent!*
- *The service is excellent – always in time – the attitude of the staff is excellent*
- *I was able to leave the hospital ward and recover at home with daily visits to the OHPiT clinic; this not only enabled me to recover physically but avoided the mental health problems that a long hospital stay can induce. I felt human and valued throughout my treatment and felt the OHPiT team are a quality, valuable and necessary service*
- *Without this service I would have had to stay in hospital for the last 6 weeks*
- *It speeded up my recovery process and helped to ease the pain, which made me sleep better too*
- *It enabled me to recuperate quicker at home and enjoy the comfort and peace of my own bed and home. I was able to spend my birthday at home also!*

- *If you are unwell and feeling low, it's so much better to be in your own home. I'm sure it speeds recovery. The care we have received from the nurses has been excellent. We can't praise them enough. Many thanks*
- *Very friendly and helpful staff. Thank you*
- *We found everything quite excellent*

*This case study was completed by **Gary Whitwam** in **October 2015**. At the start of the process Gary was Nurse Specialist for OHPIT at St Marys Hospital, Newport, Isle of Wight*

Gary successfully completed a collaborative learning programme designed to empower nurses to understand, generate and use economic evidence to continuously transform care. The programme was delivered by the Royal College of Nursing and the Office for Public Management, funded by the Burdett Trust for Nursing and endorsed by the Institute of Leadership and Management.

Gary is currently Night Clinical Coordinator at the Princess Elizabeth Hospital in Guernsey. You can contact Gary by telephone on 01481 725241 Ext – 4874 or by email gwhitwam@hssd.gov.gg