Evaluation of Health-Related Quality of Life (HRQoL) in Patients Receiving Outpatient Parenteral Antimicrobial Therapy (OPAT)

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Introduction

Published studies evaluating the benefits of outpatient parenteral antibiotic therapy (OPAT) have primarily focused on clinical outcomes and cost savings, with less attention given to patient-centred factors, including patients' experiences and perspectives on OPAT, as well as their quality of life.

This study aims to examine the health-related quality of life (HRQoL) in patients who received OPAT care at the University Hospitals of Derby and Burton (UHDB) NHS Foundation Trust, Derbyshire, England, UK.

Methods

We conducted a single-centre prospective cohort study involving all adult patients referred to the OPAT service between October 2022 and September 2023.

Eligibility Criteria: age ≥ 18 years; no previous OPAT therapy; capable of giving informed consent; and planned to receive a course IV therapy lasting > 1 week.

HRQoL Instrument: The 3-level version of EQ-5D (EQ-5D-3L) was used to assess participants' HRQoL. EQ-5D is a standardised and validated tool for measuring health status. The EQ-5D-3L consists of two components: (1) a descriptive system that assesses health across 5 dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression); and (2) a visual analogue scale (EQ VAS) that records patients' overall assessment of their health on a scale ranging from 0 (worse imaginable health) to 100 (best imaginable health) (Figure 1).

Data Collection*:* Before initiating OPAT (at baseline), consenting patients were asked to complete an EQ-5D-3L questionnaire. A second (follow-up) questionnaire was administered at the conclusion of OPAT treatment or 30 days after commencing OPAT (whichever occurred first). Using the UK-specific value set, each participant's health profile was converted into a singular summary number, known as index score, which ranged from less than 0 (where 0 signified a health state equivalent to death; negative values are considered worse than death) to 1 (prefect health). The mean health state index and EQ VAS scores for the UK general population have previously been reported to be 0.86 and 82.48, respectively (Janssen 2019).

The study was approved by the North West – Greater Manchester South Research Ethics Committee (REC Reference number 22/NW/0299).

Results

Out of the **303** patients (**392** OPAT episodes) who received OPAT over the one-year study period, **150** met the eligibility criteria and completed the paired EQ-5D questionnaires.

The mean EQ-5D VAS (58.45 vs. 82.48) and index value (0.51 vs. 0.86) scores at baseline were significantly lower than the UK population average ($p < 0.001$).

The median increase in the health state index score was **0.13** ($Z = 5.64$; $p < 0.001$), while the median gain in VAS score was **10** ($Z = 3.62$; $p < 0.001$).

There were significant increases in the proportion of patients who had no problems walking about (**10.7%**; $p = 0.003$); no problems with self-care (**13.3%**; $p = 0.002$); no problems performing daily activities (**18.0%**; $p < 0.001$); and no pain/discomfort (**18.0%**; $p < 0.001$). However, there was a small but insignificant increase in the proportion of patients with no anxiety/depression (**2.0%**; $p = 0.668$).

Out of the 34 patients who were employed before their illness, **41.2%** (14/34) were able to return to work while receiving OPAT. In additional, **two** patients were students, both of whom were able to continue their studies while on OPAT.

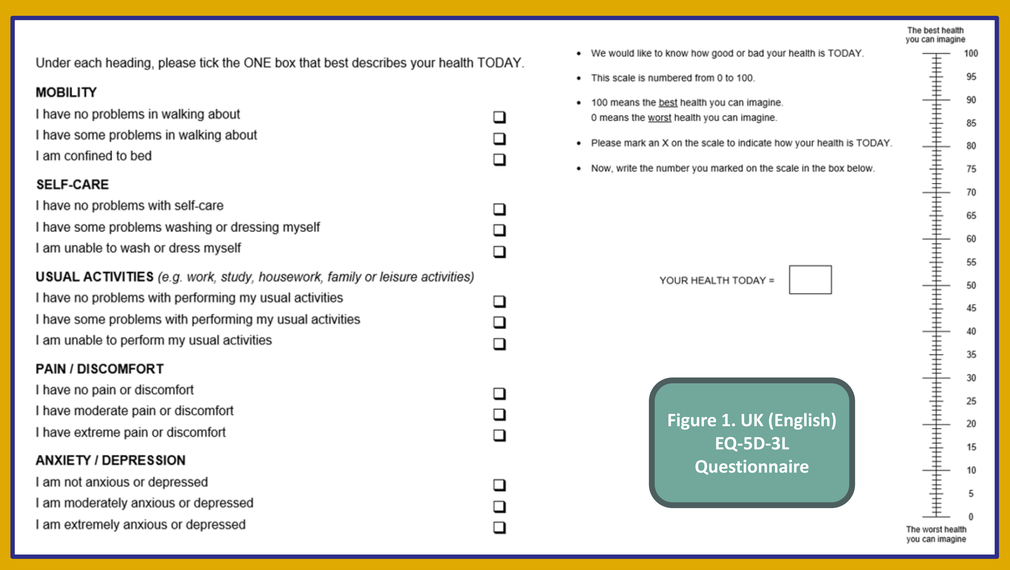

Figure 1. UK (English) EQ-5D-3L Questionnaire

Characteristic	n (%)
Age (years), median (IQR)	68 (54 - 75)
Male sex	90 (60)
Charlson comorbidity index score, median (IQR)	2 (0-3)
Clinical frailty score, median (IQR)	3 (3-4)
Mode of antimicrobial (OPAT) delivery	
Visiting nurse	91 (61)
Self/carer administration	52 (35)
Daily attendance	7 (5)
Total bed days saved	2941
Duration of OPAT (days), median (IQR)	12 (7 - 27)
Complications during OPAT	
Antimicrobial-related adverse events	13 (9)
Vascular access related adverse events	9 (6)
Infection Outcomes	
Cure/Improved	123 (82)
Failure	27 (18)

	Baseline assessment	Final assessment	Change in scores/proportions		
			Difference	95% CI	*p*-value
EQ-5D frequencies reported by dimension and level					
Mobility [n (%)]					
No problem (level 1)	48 (32.0)	64 (42.7)	10.7%	3.72 – 17.62	0.003
Some problems (levels 2 + 3)	102 (68.0)	86 (57.3)			
Self-care [n (%)]					
No problem (level 1)	85 (56.7)	105 (70.0)	13.3%	5.35 - 21.32	0.002
Some problems (levels 2 + 3)	65 (43.3)	45 (30.0)			
Usual activities [n (%)]					
No problem (level 1)	23 (15.3)	50 (33.3)	18.0%	10.14 – 25.86	< 0.001
Some problems (levels 2 + 3)	127 (84.7)	100 (66.7)			
Pain/discomfort [n (%)]					
No problem (level 1)	56 (37.3)	83 (55.3)	18.0%	9.12 – 26.88	< 0.001
Some problems (levels 2 + 3)	94 (62.7)	67 (44.7)			
Anxiety/depression [n (%)]					
No problem (level 1)	87 (58.0)	90 (60.0)	2.0%	-7.14 - 11.14	0.668
Some problems (levels 2 + 3)	51 (42.0)	60 (40.0)			
EQ-5D VAS and index scores					
Median EQ VAS score (IQR)	60 (45 - 75)	70 (50 - 80)	10	-	< 0.001
Median EQ-5D index value (IQR)	0.60 (0.26 - 0.76)	0.73 (0.62 - 0.85)	0.13	-	< 0.001

CI, confidence interval; IQR, interquartile range; VAS, visual analogue scale

Conclusions

- **OPAT patients generally have a lower quality of life compared to the general population. This can be attributable not only to the need for OPAT but also to the presence of underlying comorbidities.**
- **OPAT is associated with improvements in patient-reported quality of life measures and facilitates an early return to work or school. Consequently, it can contribute to financial stability, job security, and prevent interruptions in career advancement and educational attainment.**
- **Patient-reported outcomes, such as HRQoL, should be included in the evaluation of OPAT programmes. These data can be used to calculate quality-affected life years (QALYs) for cost-effectiveness studies, where one QALY is equivalent to one year of life in perfect health.**

References

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