Published in final edited form as:

Eur J Clin Microbiol Infect Dis. 2013 November ; 32(11): 1465–1470. doi:10.1007/s10096-013-1899-4.

Outpatient parenteral antimicrobial therapy (OPAT) in the republic of Ireland: results of a national survey

E. G. Muldoon,

Division of Geographic Medicine and Infectious Diseases, Tufts Medical Center, 800 Washington Street, Box 238, Boston, MA 02111, USA

G. M. Allison,

Division of Geographic Medicine and Infectious Diseases, Tufts Medical Center, 800 Washington Street, Box 238, Boston, MA 02111, USA

D. Gallagher,

Acute Medicine Unit, University Hospital Galway, Galway, Ireland

D. R. Snydman, and

Division of Geographic Medicine and Infectious Diseases, Tufts Medical Center, 800 Washington Street, Box 238, Boston, MA 02111, USA

C. Bergin

Department of Genitourinary Medicine and Infectious Diseases, St. James's Hospital, Dublin 8, Ireland

E. G. Muldoon: eavan@esatclear.ie

Abstract

Outpatient parenteral antimicrobial therapy (OPAT) services are not well developed in the Republic of Ireland. A national programme is being instituted to standardise care. This survey aims to assess the current use of outpatient intravenous antibiotics and to quantify the needs that physicians identify in the development of a national programme. General medical consultant physicians and clinical microbiology consultants were contacted through the Royal College of Physicians of Ireland (RCPI) from April to June 2012. Data were analysed using SPSS version 20. A total of 512 physicians were contacted, of which 55 (10.7 %) responded. The majority, 38/55 (69 %), practice general internal medicine in combination with a medical specialty, 2 (4 %) general internal medicine alone, 8 (15 %) clinical microbiology and 7 (13 %) a medical specialty alone. Of those practising a medical specialty, 12 (27 %) practice infectious diseases. Seventy-four percent reported having discharged patients with intravenous antibiotics; however, 47 % did not have a designated service available. Of those with no service, 100 % identified a need for these resources. Of those responsible for an OPAT service, 56 % had not audited their service. The most common indications were skin and soft tissue infections, osteomyelitis and respiratory tract infection. Flucloxacillin was the most commonly reported antibiotic. Eleven percent responded that they never monitor laboratory studies for patients discharged with intravenous antibiotics.

© Springer-Verlag Berlin Heidelberg 2013

Correspondence to: E. G. Muldoon, eavan@esatclear.ie.

Author contributions E.G.M.: survey development, data analysis and wrote the paper.

G.M.A.: survey development, document review and editing.

D.G.: survey development, document review and editing.

D.R.S.: document review and editing.

C.B.: survey development, document review and editing.

Conflict of interest The authors declare that they have no conflict of interest.

While OPAT services in Ireland are not well developed, patients are being discharged with intravenous antibiotics. This survey underscores the need to develop the national programme to standardise care and ensure patients receive safe and efficient therapy.

Keywords

OPAT; Ireland; Home Intravenous Antibiotics; Outpatient Parenteral Antimicrobial Therapy; OPAT Programme

Introduction

Outpatient parenteral antimicrobial therapy (OPAT), the delivery of intravenous antibiotics in the patient's home or in an infusion centre, was initially described in 1974 and has now become standard medical practice in many developed countries. It is estimated that a quarter of a million patients receive OPAT every year in the United States alone [1]. OPAT offers a number of advantages to both patients and healthcare delivery systems; it has been shown to be safe, effective and cost-saving to the healthcare system [2–5]. Patients' psychological and physical recovery has been shown to be hastened when they are discharged to their home environment [6] and OPAT has been consistently reported to be associated with high patient satisfaction [3, 7, 8].

Internationally, significant heterogeneity has been shown to exist in the management and delivery of OPAT services [9]. The delivery of OPAT programmes may be influenced by many factors, including, but not limited to, local health delivery systems, geography and available specialist services. In the USA, a 2004 survey of infectious diseases physicians demonstrated a wide variation in the provision of OPAT care and the methods used for the monitoring and follow up of OPAT patients [1].

There is a paucity of data available on the current provision of OPAT care in the Republic of Ireland. A survey of hospital pharmacists in 2006 revealed that OPAT was in use in 28 % of acute hospitals surveyed [10]. In the only published report on an established OPAT programme in Ireland, outcomes were in accordance with published international data and patient satisfaction was reported to be high [10]. Published guidelines recommend that physicians with training in infectious diseases or knowledge of OPAT be involved in the evaluation of candidates for discharge with OPAT [11, 12]. There are currently only six adult medicine infectious diseases centres in the Republic of Ireland, with only 14 adult infectious diseases consultant physicians (two of whom practice primarily in acute medicine) and two paediatric infectious diseases physicians practising in the country.

In response to the need for the development of safe and effective care in Ireland, practice guidelines were published by the Infectious Diseases Society of Ireland (IDSI) in 2010 [13]. The Irish Health Services Executive (HSE) is responsible for the provision of healthcare and services in the Republic of Ireland. As part of the HSE's National Clinical Programmes, a national OPAT programme has been developed to ensure that no patient receiving intravenous antimicrobials, who could be treated out of hospital, remains an inpatient and to develop defined models of care, including standardised care pathways and guidelines to ensure patient safety. The OPAT programme will initially be piloted at four sites, with plans to roll out nationally in 2013, in partnership with the National Acute Medicine Programme and with partners in primary care.

The aim of this study was to survey consultant physicians who are currently practising in the Republic of Ireland to assess their current use of OPAT, to assess the needs they identify in

the development of a national OPAT programme, and to guide further OPAT service development and research in Ireland.

Methods

The survey was designed and administered using REDCap (Research Electronic Data Capture), a secure web application for creating and managing online databases and surveys [14]. The survey was piloted to Specialist Registrars currently training in infectious diseases in Ireland, to ascertain if there were issues with the questions, syntax or branching logic. Any identified problems were addressed.

Surveys were distributed electronically to all internal medicine consultants who are members of the Royal College of Physicians of Ireland (RCPI). The RCPI is Ireland's largest postgraduate medical institution. The RCPI and its faculties and institute are recognised as training bodies by the Irish Medical Council for 25 specialties. No physicians in training (Specialist Registrars) were contacted. All data were downloaded directly from REDCap to SPSS version 20 for statistical analysis. All percentages were calculated on the available responses for each survey question, and hence, the denominator changes with each survey question. The survey tool is available as an appendix.

Results

Demographics

Seven hundred and eighteen emails were sent, among which 512 were successfully delivered. There were 55/512 responses, giving a total survey response rate of 10.7 %. Three-quarters (42/55) practice in an urban location, 6 (11 %) in a suburban location and 7 (13 %) in a rural location. The majority of respondents, 38/55 (69 %), practice general internal medicine in combination with a medical specialty, 2 (4 %) general internal medicine alone, 7 (13 %) a medical specialty alone and 8 (15 %) clinical microbiology. The medical specialties which respondents practice are shown in Table 1. The majority of respondents practice in County Dublin 25/55 (46 %). Most respondents, 36/54 (67 %), have been practising as a consultant physician for more than 10 years, 7/54 (13 %) have been practising 5–10 years and 11/54 (20 %) less than 5 years.

Use and need of/for OPAT services

Seventy-four percent (41/55) reported that they had discharged patients with intravenous antibiotics, yet, 26/55 (47 %) did not have a designated OPAT service available to them. Of those who responded that they did not have a designated OPAT service, 100 % felt that there was a need for a local OPAT service. Six of 26 respondents (23 %) thought that a new OPAT service should be incorporated into current services, 11 (42 %) thought that it should be run by a newly appointed infection specialist and 3 (12 %) thought that it should be run by local GPs, while 6 (23 %) responded "other".

Current OPAT services

Of those who responded that they did have access to a structured OPAT service, for 12/28 (43 %), OPAT services are run by the discharging physician with input from clinical microbiology, 7 (25 %) by local infectious diseases services, 5 (18 %) by the discharging physician alone and 4 (14 %) by a GP. Only 1/19 (3 %) respondents obtain written consent prior to the initiation of OPAT. In the majority of cases, 16/19 (58 %), OPAT is administered in the patient's home, 2/19 (7 %) responded that it is administered in a rehabilitation or nursing home facility and 1/19 (3 %) did not specify. Forty-two percent (8/19) monitor laboratory studies at least once a week, a further 1 (5 %) twice a week, while

5 (26 %) base the frequency of monitoring on the antibiotic choice. Five consultants (27 %) responded that they monitor laboratory studies every 2 weeks or less frequently. The majority, 13/19 (68 %), reported that laboratory studies are done at the patient's outpatient visit or in an infusion centre.

The most commonly reported indications for OPAT are presented in Table 2, while the most commonly prescribed antibiotics are presented in Table 3. Peripherally inserted central catheters (PICCs) were the most commonly utilised vascular access, 11/19 (58 %), followed by peripheral catheters, 6/19 (32 %). In responding to their use of potentially more toxic antimicrobials, 6/29 (21 %) reported having ever used aminoglycosides, 4/29 (14 %) amphotericin and 4/29 (14 %) ganciclovir. Only 1/29 (11 %) respondents obtains written consent prior to the use of these more toxic antimicrobials. The majority, 10/18 (56 %), estimates that the average duration a patient receives outpatient intravenous antibiotics is between 1 and 3 weeks.

Sixty-three percent of respondents (12/19) reported that they had experienced difficulty obtaining funding for outpatient intravenous antibiotics, 10/12 (83 %) reported this occurred in the public system, while 2/12 (17 %) reported it had occurred in both the public and private systems.

With regard to audit, only 8/18 (44 %) responded they had audited their OPAT services, 50 % of those who had audited their services practice infectious diseases. Of those who had performed an audit, three reported that minor changes were required, while the remaining five reported that no changes were needed. 13/18 (45 %) reported they thought that >75 % of their patients were satisfied with OPAT services, only 1 (6 %) reported they felt that less than 50 % of patients were satisfied with their OPAT services. 11/18 (61 %) estimate the 30-day readmission rate for OPAT programme patients as being less than 10 %, while 7 (39 %) estimate it as being between 10 and 25 %.

Discussion

Despite the lack of formal OPAT programmes in the Republic of Ireland, patients are being discharged with intravenous antibiotics, and this survey highlights some of the current practice in managing these patients. The survey had a variety of respondents from a number of general medical specialties, representing physicians providing care to diverse patient populations across Ireland. The advantage of surveying all general medical specialties was to get an overview of how OPAT services are currently being provided in the Republic of Ireland; if only infectious diseases practitioners were contacted, an inaccurate picture of current OPAT care may have been obtained. Unfortunately, there was a low response rate to the survey, and infectious diseases physicians were, perhaps not surprisingly, overrepresented (Table 1). This may reflect a selection bias, as those interested or participating in OPAT may have been more likely to respond. It is unclear why the response rate was low, although survey fatigue and clinical workload may have also been contributing factors. Despite the limitations of the study, there are a number of useful findings which highlight and underscore the need for a national OPAT programme.

Available services/need for OPAT services

Only half of the respondents reported that they had a dedicated OPAT service available to them. This is despite the fact that three-quarters of respondents reported having discharged patients with OPAT. Given that patients discharged with OPAT are often discharged with complex infections, this lack of availability of dedicated systems for the follow up of OPAT patients is worrying. Formal programmes provide the structure in which patients can be monitored and allow for quality improvement measures to be instituted. Of those who did

not have a dedicated OPAT service available, all of them felt that there was a need for a local service. This highlights the recognition by physicians that local specialised services are required to ensure that patients receive optimum care and that physicians are practising within the scope of their training and expertise. There is also a recognition that newly appointed infection specialists would be the most appropriate physicians to run such services, which is in accordance with international guidelines [11].

Current OPAT services

In the case where respondents reported that they had access to a dedicated OPAT service, 43 % of services were run by the discharging physician with input from local clinical microbiology services. While it is reassuring that there is input from infection specialists into the care of these OPAT patients, it does not clarify if someone with infectious diseases or OPAT expertise is involved in the selection of patients prior to discharge with OPAT, as recommended in international guidelines and Irish national guidelines published by the IDSI [11–13]. In the USA, infectious diseases consultation prior to the initiation of OPAT has been shown to obviate the need for OPAT in up to 40 % of cases [15]. Similarly, in the UK, 34 % of patients who were receiving intravenous antibiotics prior to discharge were changed to oral antibiotics, avoiding the need for OPAT [16]. The involvement of infectious diseases specialists in the care of hospitalised patients can have other significant advantages; in the management of *Staphylococcus aureus* bacteremia, infectious diseases involvement has been shown to increase adherence to standards of care, decrease the use of inappropriate therapy [17] and improve patient outcomes [18]. In a recent US survey of infectious diseases physicians, 61 % of respondents indicated that infectious diseases consultation was not mandatory prior to discharge with OPAT; however, it was more likely to be mandatory in those centres where a formal OPAT programme was reported [19].

Patient monitoring

Adverse events are reported to occur in up to 24 % of patients discharged with OPAT [20] and the most commonly reported events among patients are antibiotic reactions, haematological complications, diarrhoea, line complications and readmission [1, 3, 21–24], highlighting the need for close patient monitoring. In this survey, it is concerning that 2 (10 %) respondents reported that they never monitor laboratory results, which is contrary to national and international guidelines. This underscores the need to develop a national programme to ensure systematic follow up and monitoring of patients prescribed outpatient intravenous antibiotics. This compares unfavourably with the US, where only 0.4 % of infectious diseases physicians reported “rarely” monitoring safety laboratory results [19]. Additionally, a significant percentage of respondents reported having used potentially toxic medications in patients discharged with OPAT, yet, only one respondent reported obtaining written consent prior to OPAT. The Infectious Diseases Society of America (IDSA) guidelines advocate for written consent prior to the initiation of OPAT [11]. Given that patients are being discharged with care that would otherwise be administered in a hospital setting, serious consideration should be given to obtaining written consent for patients being discharged with intravenous antibiotics.

The majority of respondents estimated that their 30-day readmission rate was less than 10 %; however, published series report readmission rates of between 6 and 20 % [3, 5, 20, 21, 24, 25]. In the only published series of Irish OPAT data, the readmission rate was 8.9 % [10]. Given that 56 % of respondents have never audited their OPAT services, these estimates of readmission rates must be taken as just that—estimates. In a recent survey of US infectious diseases practitioners on their OPAT practices, only 28 % of OPAT directors monitor readmissions as a quality measure in their programme (unpublished data). The development of OPAT services requires structured quality improvement measures and

periodic audit to ensure that patients are receiving safe and effective care. In many healthcare settings, 30-day readmission rates are being targeted in order to reduce healthcare costs. However, that data are limited on the care transitions of OPAT patients. This is an area that requires further study and should be monitored by all those involved in providing OPAT services.

The national OPAT programme which is being rolled out by the HSE in the Republic of Ireland should address the deficiencies in service provision identified in this paper. OPAT services will be provided through four centres nationally in Dublin, Cork and Galway. These regional hubs will be led by infectious diseases consultants who will oversee the provision of OPAT services. This programme will define the model of OPAT care in the Republic of Ireland, and put into place standardised care pathways and guidelines to ensure that patients discharged with OPAT are receiving optimal safety monitoring and follow up. The programme will also establish a national OPAT registry for ongoing research and audit.

Conclusions

Outpatient parenteral antimicrobial therapy (OPAT) is a mainstay of current medical therapy, and there is an anticipated rise in OPAT usage given economic pressures faced by most healthcare systems. OPAT offers patients the opportunity to return to usual life more rapidly than if they remained an inpatient for the duration of their intravenous therapy. However, OPAT is not without risk. The development of the national strategy to provide safe and effective OPAT care in the Republic of Ireland is timely and warranted. Quality improvement incorporating regular audit should be a critical component of all OPAT programmes. While it is inevitable that some variation of practice will occur due to geographical differences in practice location and institutional management, there is a need for quality OPAT research to guide OPAT care. This survey demonstrates that, whilst awaiting the implementation of the national OPAT programme, currently, patients are discharged from hospital with intravenous antibiotics in Ireland, often without the input of infection specialists and with infrequent monitoring. This underscores the need for the implementation of the national OPAT programme to ensure that Irish patients being discharged with OPAT are receiving optimum care.

Acknowledgments

Eavan G. Muldoon is the inaugural recipient of the Francis P. Tally endowed fellowship in infectious diseases, Tufts Medical Center. Dr. Geneve M. Allison was supported by the National Center for Research Resources Grant Number UL1RR025752, now the National Center for Advancing Translational Sciences, National Institutes of Health Grant Number UL1 TR000073 and the National Cancer Institute, Grant Number KM1 CA156726. The CTSI survey development project was supported by the National Center for Research Resources Grant Number UL1 RR025752 and the National Center for Advancing Translational Sciences, National Institutes of Health, Grant Number UL1 TR000073. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Chary A, Tice AD, Martinelli LP, Liedtke LA, Plantenga MS, Strausbaugh LJ. Infectious Diseases Society of America Emerging Infections Network. Experience of infectious diseases consultants with outpatient parenteral antimicrobial therapy: results of an emerging infections network survey. *Clin Infect Dis*. 2006; 43(10):1290–1295. [PubMed: 17051494]
2. Paladino JA, Poretz D. Outpatient parenteral antimicrobial therapy today. *Clin Infect Dis*. 2010; 51(Suppl 2):S198–S208. [PubMed: 20731577]
3. Chapman AL, Dixon S, Andrews D, Lillie PJ, Bazaz R, Patchett JD. Clinical efficacy and cost-effectiveness of outpatient parenteral antibiotic therapy (OPAT): a UK perspective. *J Antimicrob Chemother*. 2009; 64(6):1316–1324. [PubMed: 19767623]

4. Jarvis WR. Selected aspects of the socioeconomic impact of nosocomial infections: morbidity, mortality, cost, and prevention. *Infect Control Hosp Epidemiol.* 1996; 17(8):552–557. [PubMed: 8875302]
5. Cervera C, del Río A, García L, Sala M, Almela M, Moreno A, Falces C, Mestres CA, Marco F, Robau M, Gatell JM, Miró JM. Hospital Clinic Endocarditis Study Group. Efficacy and safety of outpatient parenteral antibiotic therapy for infective endocarditis: a ten-year prospective study. *Enferm Infecc Microbiol Clin.* 2011; 29(8):587–592. [PubMed: 21723004]
6. Goodfellow AF, Wai AO, Frighetto L, Marra CA, Ferreira BM, Chase ML, Nicol RE, Leong CA, Tomlinson S, Jewesson PJ. Quality-of-life assessment in an outpatient parenteral antibiotic program. *Ann Pharmacother.* 2002; 36(12):1851–1855. [PubMed: 12452743]
7. Slavik RS, Jewesson PJ. Selecting antibacterials for outpatient parenteral antimicrobial therapy: pharmacokinetic–pharmacodynamic considerations. *Clin Pharmacokinet.* 2003; 42(9):793–817. [PubMed: 12882587]
8. Marra CA, Frighetto L, Goodfellow AF, Wai AO, Chase ML, Nicol RE, Leong CA, Tomlinson S, Ferreira BM, Jewesson PJ. Willingness to pay to assess patient preferences for therapy in a Canadian setting. *BMC Health Serv Res.* 2005; 5:43. [PubMed: 15941474]
9. Esposito S, Noviello S, Leone S, Tice A, Seibold G, Nathwani D, Scaglione F. International OPAT Registry. Outpatient parenteral antibiotic therapy (OPAT) in different countries: a comparison. *Int J Antimicrob Agents.* 2004; 24(5):473–478. [PubMed: 15519480]
10. Kieran J, O'Reilly A, Parker J, Clarke S, Bergin C. Self-administered outpatient parenteral antimicrobial therapy: a report of three years experience in the Irish healthcare setting. *Eur J Clin Microbiol Infect Dis.* 2009; 28(11):1369–1374. [PubMed: 19697069]
11. Tice AD, Rehm SJ, Dalovisio JR, Bradley JS, Martinelli LP, Graham DR, Gainer RB, Kunkel MJ, Yancey RW, Williams DN. IDSA. Practice guidelines for outpatient parenteral antimicrobial therapy. IDSA guidelines. *Clin Infect Dis.* 2004; 38(12):1651–1672. [PubMed: 15227610]
12. Chapman AL, Seaton RA, Cooper MA, Hedderwick S, Goodall V, Reed C, Sanderson F, Nathwani D. BSAC/BIA OPAT Project Good Practice Recommendations Working Group. Good practice recommendations for outpatient parenteral antimicrobial therapy (OPAT) in adults in the UK: a consensus statement. *J Antimicrob Chemother.* 2012; 67(5):1053–1062. [PubMed: 22298347]
13. Gallagher, DP.; O'Reilly, A.; Fitzpatrick, F.; Slattery, DM.; Mallon, PW.; Fleming, C.; Horgan, M.; Grace-Parker, J.; Bergin, CJ. Out-patient parenteral antimicrobial therapy in Ireland: practice standards. 2010. Available online at: <http://www.idsociety.ie/wp-content/plugins/download-monitor/download.php?id=2>
14. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform.* 2009; 42(2):377–381. [PubMed: 18929686]
15. Sharma R, Loomis W, Brown RB. Impact of mandatory inpatient infectious disease consultation on outpatient parenteral antibiotic therapy. *Am J Med Sci.* 2005; 330(2):60–64. [PubMed: 16103785]
16. Dryden M, Saeed K, Townsend R, Winnard C, Bourne S, Parker N, Coia J, Jones B, Lawson W, Wade P, Howard P, Marshall S. Antibiotic stewardship and early discharge from hospital: impact of a structured approach to antimicrobial management. *J Antimicrob Chemother.* 2012; 67(9): 2289–2296. [PubMed: 22623629]
17. Jenkins TC, Price CS, Sabel AL, Mehler PS, Burman WJ. Impact of routine infectious diseases service consultation on the evaluation, management, and outcomes of *Staphylococcus aureus* bacteremia. *Clin Infect Dis.* 2008; 46(7):1000–1008. [PubMed: 18444816]
18. Fowler VG Jr, Sanders LL, Sexton DJ, Kong L, Marr KA, Gopal AK, Gottlieb G, McClelland RS, Corey GR. Outcome of *Staphylococcus aureus* bacteremia according to compliance with recommendations of infectious diseases specialists: experience with 244 patients. *Clin Infect Dis.* 1998; 27(3):478–486. [PubMed: 9770144]
19. Muldoon, E.; Switkowski, K.; Tice, A.; Snyderman, D.; Allison, G. A national survey of Outpatient Parenteral Anti-microbial Therapy (OPAT) practices in the United States—Focus on patient safety. IDWeek 2012; San Diego, California. October 2012; 2012. Available online at: <https://idsa.confex.com/idsa/2012/webprogram/Paper36507.html>

20. Matthews PC, Conlon CP, Berendt AR, Kayley J, Jefferies L, Atkins BL, Byren I. Outpatient parenteral antimicrobial therapy (OPAT): is it safe for selected patients to self-administer at home? A retrospective analysis of a large cohort over 13 years. *J Antimicrob Chemother.* 2007; 60(2): 356–362. [PubMed: 17566002]
21. McMahon JH, O’Keeffe JM, Grayson ML. Victorian HITH Outcomes Study Group. Is hospital-in-the-home (HITH) treatment of bacterial endocarditis safe and effective? *Scand J Infect Dis.* 2008; 40(1):40–43. [PubMed: 17852904]
22. Corwin P, Toop L, McGeoch G, Than M, Wynn-Thomas S, Wells JE, Dawson R, Abernethy P, Pithie A, Chambers S, Fletcher L, Richards D. Randomised controlled trial of intravenous antibiotic treatment for cellulitis at home compared with hospital. *BMJ.* 2005; 330(7483):129. [PubMed: 15604157]
23. Cox AM, Malani PN, Wiseman SW, Kauffman CA. Home intravenous antimicrobial infusion therapy: a viable option in older adults. *J Am Geriatr Soc.* 2007; 55(5):645–650. [PubMed: 17493182]
24. Ho J, Archuleta S, Sulaiman Z, Fisher D. Safe and successful treatment of intravenous drug users with a peripherally inserted central catheter in an outpatient parenteral antibiotic treatment service. *J Antimicrob Chemother.* 2010; 65(12):2641–2644. [PubMed: 20864497]
25. Duggal A, Barsoum W, Schmitt SK. Patients with prosthetic joint infection on IV antibiotics are at high risk for readmission. *Clin Orthop Relat Res.* 2009; 467(7):1727–1731. [PubMed: 19381747]

Table 1

Medical specialties of survey respondents who practice a medical specialty either alone or in combination with general internal medicine

Specialty	Number of respondents	Percent
Infectious diseases	12	27
Endocrinology	7	16
Cardiology	7	16
Geriatric medicine	7	16
Nephrology	4	9
Respiratory	3	7
Rheumatology	2	4
Gastroenterology	2	4
Haematology	1	2
Total	45	100

Table 2

Indications for outpatient intravenous antibiotics: each respondent was asked to choose the three most common indications of outpatient antibiotics

Indication	Frequency	Percent
SSTI	14	48
OM	13	45
Pneumonia/RTI	10	34
UTI	8	28
IE	6	21
Prosthetic joint infection	5	17
Central nervous system infection	1	3
Intra-abdominal infection	0	0
Lyme	0	0

SSTI=skin and soft tissue infection, OM=osteomyelitis, RTI= respiratory tract infection, UTI=urinary tract infection, IE=infective endocarditis

Table 3

The most commonly reported antibiotics prescribed in patients receiving outpatient intravenous antibiotics: each respondent was asked to choose their three most commonly prescribed antibiotics

Antibiotic	Frequency	Percent
Flucloxacillin	12	41
Piperacillin/tazobactam	10	34
Vancomycin	9	31
Amoxicillin/clavulanate	7	24