INTRODUCTION

- Flucloxacillin, benzylpenicillin and piperacillin-tazobactam have relatively short half-lives with dosing every 4 and 8 hours (depending on infection) to meet their PK/PD target parameters. This can limit their use in OPAT.
- Buffered continuous infusions delivered via ambulatory elastomeric devices have enabled OPAT services to treat a broader range of infections, improve home-visits utilisation and support antimicrobial stewardship through providing narrow-spectrum alternatives.
- Elastomeric devices are disposable and designed to administer the total daily dose over a 24-hour period then be replaced with a new, full device.
- There are anecdotal reports of devices, not fully emptying after 24 hours.
- Here we report the results of a national survey to help establish the extent of this problem, attributed causes and solutions employed.

RESULTS

- 39 individual responses were obtained. Table 1 presents the experience of each drug/device combination.
- Piperacillin-tazobactam appeared to be most frequently associated with a residual volume after 24 hours in use (Fig. 1).
- Residual volume remaining were most commonly attributed to the line (54%) or incorrect use of the device (33%) (Table 2).
- The most common remedial action was staff or patient education (58%).
- Overall, 17% of respondents who reported seeing residual volumes at changeover considered the reduced amount infused to be clinically significant, 17% indicated this at least some of the time, while 33% reported it clinically insignificant. 33% of respondents were unsure or the issue was still under review.

DISCUSSION

- This survey highlights the potential patient safety issue of incomplete dosing from continuous infusion elastomeric pumps and the importance of correct use.
- Beta-lactam antibiotics exhibit time-dependent killing, which is more achievable with prolonged or continuous infusion.1,2
- Continuous infusion may mitigate the effects of small residual volumes and therefore explain why some respondents reported that the reductions in total dose infused were not considered clinically significant.

CONCLUSIONS

- Incomplete beta-lactam 24 hour infusions via elastomeric pumps are recognised amongst UK OPAT practitioners and are generally attributed to suboptimal use of the elastomeric device or line-related issues.
- OPAT teams must be alert to this and consider early infusion device review to ensure optimal delivery of prescribed therapy.

REFERENCES