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Antimicrobial consumption in the hospital

4 years experience of monitoring meropenem consumption in a UK hospital

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Background: Antimicrobial resistance is a major healthcare concern. Carbapenems are frequently the antibiotics of last resort, and there is recognition that their use should be carefully controlled. The UK government has published a 5 year strategy on antimicrobial resistance, and a yearly national survey of utilisation and resistance in England has been implemented, which demonstrates the increasing consumption of these agents (ESPAUR 2014). Recent guidance from the National Institute for Health & Care Excellence (NICE) recommends monitoring local antibiotic resistance and consumption trends. In hospitals with electronic prescribing, monitoring of consumption is relatively straightforward. However, the majority of English hospitals do not have electronic prescribing systems in place. We report on our systems for monitoring and minimising meropenem consumption in our hospitals, using a variety of electronic tools coupled with dedicated antimicrobial stewardship team reviews, which help to ensure the appropriateness of meropenem consumption and slow the development of resistance.

Material/methods: We used Crystal Reports to develop an automated system to alert our antimicrobial stewardship team within an hour of meropenem being dispensed from pharmacy. Patient records were reviewed to determine if the antibiotic had been recommended by an infection specialist. If not, these cases were subsequently reviewed by a member of the antimicrobial stewardship team to determine the suitability of the prescription, accounting for clinical and microbiological variables.

We created an MS Access database to record the indications for meropenem on an individual patient basis; these are reported to our trust Drugs & Therapeutics committee (D&TC) monthly. Using this information, we can determine the main reasons for using meropenem and monitor these on a regular basis. We also compared our meropenem consumption, using a system called Define, to the average consumption in regional hospitals (in the West Midlands, UK).

Results: Since 2011 we have monitored 2035 courses of meropenem in total. In 2015-16 to date, 43.7% of consumption has been driven by resistance, 19.4% by penicillin allergy, 17.1% by escalation of therapy, 16.2% for approved indications and 2.5% for unapproved indications. The use of meropenem for resistant organisms and approved indications has increased since data collection began in 2011. However, the use of meropenem in penicillin allergy, for escalation of therapy, and for unauthorised prescriptions has fallen. Comparison of our meropenem consumption data with that of other regional hospitals demonstrates that our consumption is consistently lower than average.

Conclusions: Using existing systems, we are able to provide detailed reports on meropenem usage, and justify this within our Trust governance structure to provide assurance to our commissioners that

we are undertaking appropriate stewardship of meropenem prescribing. We suggest that this approach may be a key reason for our lower consumption of meropenem compared to other local hospitals.