OUTCOMES OF AN INTERVENTION TO IMPROVE HOSPITAL ANTIBIOTIC PRESCRIBING: INTERRUPTED TIME SERIES ANALYSIS WITH SEGMENTED REGRESSION


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**OBJECTIVES:** To evaluate an intervention to reduce inappropriate use of key antibiotics. **METHODS:** The intervention was a policy for appropriate use of Alert Antibiotics (carbapenems, glycopeptides, amphotericin, ciprofloxacin, linezolid, piperacillin tazobactam and third generation cephalosporins) implemented through concurrent, patient specific feedback by clinical pharmacists in a tertiary university hospital. Statistical significance and effect size were calculated by segmented regression analysis of interrupted time series of drug use and cost for two years before and after the intervention started. **RESULTS:** Use of Alert Antibiotics increased before the intervention started but decreased steadily thereafter. The changes in slope of the time series were 0.27 Defined Daily Doses/100bed days per month (95% CI 0.19–0.34 P < 0.0001) and £1908 per month (95% CI £1238–£2578 P < 0.0001). The cost of development, dissemination and implementation of the intervention (£20,133) was well below the most conservative estimate of the reduction in cost (£133,296), which is the lower 95% CI of effect size assuming that cost would not have continued to increase without the intervention. However, if use had continued to increase, the difference between predicted and actual cost of Alert Antibiotics was £572,448 (95% CI £435,696–£709,176 P < 0.0001) over the 24 months after the intervention started. **CONCLUSIONS:** Segmented regression analysis of pharmacy stock data is a simple, practical and robust method for measuring the impact of interventions to change prescribing. The Alert Antibiotic monitoring programme was associated with significant decreases in total use and cost in the two years after the programme. In our hospital the value of the data far exceeded the cost of processing and analysis.