

Did an intervention to reduce *Clostridium difficile* infection have any unintended consequences on 30-day mortality?

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Background: In 2008, the Scottish Antimicrobial Prescribing Group issued national guidance on the restriction of antibiotics associated with higher risk of *Clostridium difficile* infection. This study aimed to determine if the implementation of this guidance in local antibiotic prescribing policies had any unintended consequences on 30-day mortality (from admission) in one NHS board in Scotland. **Methods:** A quasi experimental study design with interrupted time series analysis using segmented regression was used. Data were obtained from October 2006 to December 2009 and split into a pre-intervention and post-intervention period by the introduction of a restricted antibiotic policy in October 2008. Monthly data on antibiotic use, CDI incidence and mortality were used and adjusted for clinical activity using hospital admissions data. **Results:** Analysis was performed on patients admitted through the acute medical admissions unit (medicine) and patients admitted to any of six surgical wards (surgical). There were no changes in crude 30-day all cause mortality for patients in medicine and surgery. Subgroup analysis by Age and Charlson Co-morbidity Index (CCI) score revealed no changes following the intervention. A separate study at the same hospital showed that patients that had a blood culture taken were four times more likely to die within 30 days of admissions than those that did not and that most of the increased risk of death was attributable to sepsis. To ensure that an increase in deaths from sepsis was not masked by a decrease in deaths from other causes, 30-day mortality was analysed in patients that had blood cultures taken. Statistical analysis confirmed no significant abrupt or sustained change after the intervention in medicine or surgery and the direction of all changes was negative demonstrating a reduction in mortality post intervention. In the medicine cohort the change in slope was a reduction by 3 deaths per 1000 patients per month, $p=0.19$ (95%CI -4.5 to +1.5). Subgroup analysis by Age and CCI score did not show any evidence of increase in mortality. **Conclusion:** The study provides reassurance that introducing an antibiotic policy restricting the use of broad-spectrum antibiotics does not have any unintended consequences on 30-day mortality for patients with sepsis.

