P1220 A pilot study to determine if increasing antibacterial diversity is associated with increased *Clostridium difficile* infection (CDI) incidence?

The Leeds Teaching Hospitals **NHS**
NHS Trust

P. Howard* (philip.howard2@nhs.net), JATS. Sandoe, M. Wilcox

Background

Antibiotic diversity is recommended as an approach to decrease antimicrobial resistance. One strategy that contributed to an 80% reduction in CDI in England is to restrict the use of broad spectrum antibiotics such as cefalosporins, fluoroquinolones, and clindamycin from 2009. Amoxicillin-clavulanate replaced them, but may have led to large increases in *E.coli* resistance. This study explored whether antibiotic diversity (using two measures) increases CDI rates in a region of north England. The DU90 is a count of the different antibacterials that make up 90% of the prescribing, and the antibiotic heterogeneity index (AHI) quantifies the degree of antibiotic heterogeneity using a modified version of the Peterson homogeneity index [1]

Methods

Antibiotic benchmarking data were obtained for 14 hospitals in Yorkshire and Humber from Rx-Info Define software and compared with Public Health England CDI rates for hospitals over 4 years. The DU90 and Antibiotic Heterogeneity Index (AHI) were plotted against the CDI rate (cases/100,000 patient bed days per year) using regression analysis.

1. Sandiumenge, A., et al. (2006). "Impact of diversity of antibiotic use on the development of antimicrobial resistance." J Antimicrob Chemother 57(6): 1197-1204
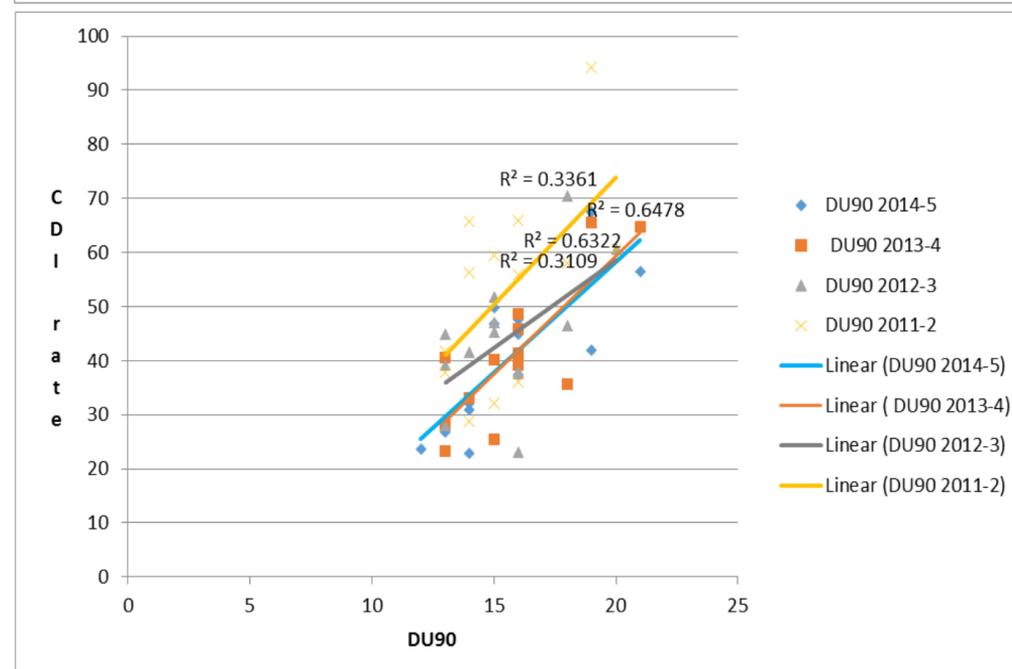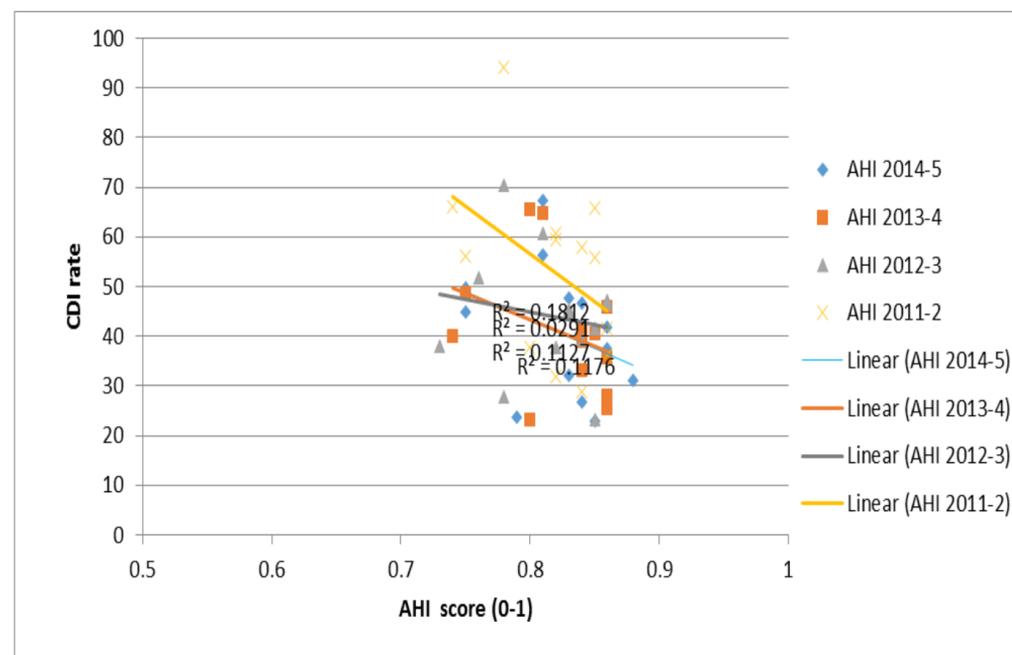
Results

The two different diversity scoring systems gave very different results. The DU90 scoring system showed no correlation with increase CDI rates as diversity increased for 2011-2 (r^2 = 0.3361) and 2012-3 (r^2 = 0.3109), but showed a weak correlation for 2013-4 (r^2= 0.6478) and 2014-5 (r^2 = 0.6322). The AHI showed no correlation whatsoever, with a non-significant trend for decreasing CDI rates as AHI increased towards 1 (full diversity): 2011-2 (r^2 = 0.1812) and 2012-3 (r^2 = 0.0291), 2013-4 (r^2= 0.1127) and 2014-5 (r^2 = 0.1175). The AHI remained constant each year at 0.82, but the DU90 increased slightly from 15.6 to 15.7 during the study period.

Conclusion

From both diversity scoring methods, it does not appear that there is a strong correlation between increasing antibiotic prescribing diversity and hospital associated CDI rates. Further work is required to know which is the optimal measure of diversity

Medicines Management and Pharmacy Services

UNIVERSITY OF LEEDS

Leeds Pathology