

Reducing inappropriate antibiotic use is a priority

Exploring increases in community antimicrobial use: temporal analysis at population and patient levels in Tayside, Scotland

C. Marwick^{1,2}, M. Neilly¹, V. Hernandez Santiago¹, B. Guthrie¹¹Ninewells Hospital & Medical School, Dundee, United Kingdom

Objective: To determine whether observed increases in antimicrobial use in World Health Organisation (WHO) defined daily doses (DDD) are due to changes in the proportion of the population receiving any antimicrobial; the number of prescriptions received per patient; or the quantity of antimicrobial in each prescription.

Methods: The NHS Tayside health board region of Scotland has a stable population of around 400,000. We used anonymised record linkage, at the Health Informatics Centre, University of Dundee, of data on all community antimicrobial prescriptions dispensed in 1995, 2000 and 2005-11 and population demographic data. The analysis was mainly description of trends over time and we used t-tests to compare means of prescriptions per patient and DDD prescription between study years.

Results: Total DDD prescribed per 1000 pop/year decreased slightly between 1995 and 2000, then increased annually to 3,169 by 2011, a 55.7% increase from 2000 to 2011. The total number of prescriptions per 1000 pop/year increased 20.7% from 2000 to 2011. Choice of antimicrobial class has changed over time (Figure). The mean number of prescriptions per patient has increased from 2.09 to 2.15 from 1995 to 2010 and the mean quantity of drug per prescription has increased from 6.72 to 9.40 DDD in the same time period (Table).

	Financial Year			
	1995	2000	2005	2010
Patients prescribed any antimicrobial	164,910	136,223	145,926	152,921
Mean prescriptions per patient (standard deviation)	2.09 (1.82)	2.02 (1.86)	2.06 (1.92)	2.15 (2.14)
Difference in mean compared to 1995 (95% confidence interval)	Reference year	-0.08 (0.09 to 0.07)	-0.04 (0.05 to 0.02)	+0.05 (0.04 to 0.07)
T-test p value	-	<0.001	<0.001	<0.001
Total prescriptions	316,012	264,583	293,995	326,272
Mean DDD per prescription (standard deviation)	6.72 (6.59)	7.69 (10.95)	8.36 (8.49)	9.40 (9.21)
Difference in mean compared to 1995 (95% confidence interval)	Reference year	+0.97 (0.92 to 1.02)	+1.64 (1.60 to 1.67)	+2.67 (2.63 to 2.71)
T-test p value	-	<0.001	<0.001	<0.001

Conclusions: From 2000, antimicrobial prescribing in Tayside has increased but analysing DDD alone does not tell the whole story; increases in the proportion of the population exposed are less dramatic and increasing mean DDD per prescription (some of which may represent guideline compliance) contributes significantly to the rising DDD. However, antimicrobial use in the community, by all measures, is still increasing and this must be halted to reduce antimicrobial resistance.