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ePoster Session

Reducing inappropriate antibiotic use is a priority

An analysis of recent antibiotic use in in acute care hospitals in Germany - persistently intense use of cephalosporins

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Introduction

Continuous hospital-wide antibiotic use surveillance has only recently been established in Germany (2007). Participating hospitals contribute on a voluntary basis ("ADKA-if-RKI" project; www.antiinfektiva-surveillance.de). Electronically delivered quarterly consumption data are transformed into defined daily doses (ATC/DDD-Index, WHO) and "recommended" (hospital-adapted) daily doses (RDD). Use density values are calculated per 100 patient-days per hospital, per department/service and per normal versus intensive care wards. Following new legislation (8/2011) requiring that antimicrobial consumption reports be produced and interpreted by each hospital, participation in the surveillance programme increased substantially. We here describe the most recent analysis with data from acute care hospitals that delivered complete data for at least four quarters in 2012/13. The aim of this analysis was to provide benchmark reports for hospitals of similar size (<400 beds, 400-800 beds, >800 beds) and to assess trends by comparing the results with those of earlier analyses, in particular regarding the dominant use of cephalosporins.

Methods

Complete data were available for 109 hospitals of which 50 had <400 beds, 34 had 400-800 beds, and 25 had >800 beds (11 of these were university hospitals). Analyses were done for different specialty services (excluding pediatrics and psychiatry) and for normal ward versus intensive care (ICU) areas. Antibiotic classes included narrow-spectrum (NSPen) and broad-spectrum (BSPen) penicillins, aminopenicillin-ß-lactamase inhibitor combinations (AmpßLI), 1°+2° versus 3°generation cephalosporins, carbapenems, quinolones (FQ), aminoglycosides, tetracyclines (incl. tigecycline), macrolides/clindamycin (ML/clinda), glycopeptides (incl. daptomycin), cotrimoxazole (TSX-TMP) and others (mainly metronidazole).

Results

The overall antibiotic use density was 64.8 DDD/100 or 44.2 RDD/100 (weighted means). The median (and IQR) values were 64.4 (53-72) DDD/100 or 43.5 (36-48) RDD/100. Similar to previous results, cephalosporins (27% of all RDD) dominated over penicillins (26%) (Figure). Cefuroxime was the single most frequently prescribed antibiotic and, interestingly, was given as oral drug in >50% of the (RDD) doses – again similar to results in 2004, 2008 and 2011. There were no significant differences in overall use between hospitals of different sizes, only university hospitals showed higher levels (Table). Major differences were seen for normal ward versus ICU areas both in surgical and non-surgical services (Table). Across hospital size strata, specialties and normal versus ICUs, important findings were increased use of 3°generation cephalosporins and minimal use of glycopeptides in non-surgical ICUs of small hospitals, and much higher uses of carbapenems, flouroquinolones and glycopeptides in non-surgical university hospital normal wards – in part associated with hematology-oncology.

Conclusions

Reference values are now available for acute care hospitals in Germany, and stratified analysis needs to include university affiliation. Based on the current data, the 50-percentile of overall use density in non-university hospitals is 60-62 DDD/100 or 40-42 RDD/100 which may be used as benchmark for the coming years. Shorter treatments and using penicillins rather than cephalosporins should be encouraged.

Table: Overall antibiotic use densities (median values and IQR) according to hospital size (number of beds) and university affiliation expressed as DDD/100 and RDD/100.

	<400 beds	400-800 beds	>800 beds non-university	>800 beds university
All services/wards	61 (51-72)	62 (51-68)	60 (53-68)	78.5 (71-83)
	40 (35-48)	42 (35-45)	42 (37-47)	55 (47-58)
Surgical services				
Normal wards	57 (43-68)	57 (49-66)	62 (53-84)	67 (61-80)
	37 (29-44)	39 (32-45)	43 (34-53)	43 (39-52)
ICU	122 (99-142)	124 (99-150)	111 (92-138)	123 (113-128)
	85 (72-101)	90 (75-108)	90 (68-107)	88 (81-96)
Non-surgical services				
Normal wards	61 (47-71)	56 (47-65)	51 (49-54)	72 (70-83)
	41 (32-49)	41 (33-45)	38 (35-40)	54 (50-61)
ICU	136 (96-173)	99 (92-133)	113 (91-124)	142 (131-215)
	103 (97-112)	78 (62-96)	80 (68-88)	96 (82-135)

Figure: Overall and antibiotic class use densities in 109 acute care hospitals

RDD/100

Legend: ■ 3°Ceph ■ 1°2°Ceph ■ BSPen ■ AmpßLI ■ NSPen ■ FQ □ Total