An Analysis of Recent Antibiotic Use 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-FKI® project; see also: www.antinfektiv-surveillance.de).

We here describe the most recent analysis for acute care hospitals that delivered complete data for at least four quarters in 2012/13. The aim was to provide benchmarks for hospitals of similar size (<400 beds, 400-800 beds, >800 beds). Results were compared with those of earlier (2004) analyses*, in particular regarding the dominant use of cephalosporins (1/2°ceph and 3/4°ceph).

Methods
Electronically delivered quarterly consumption data are transformed into defined daily doses (ATC/DDD-Index, WHO) and into “recommended” (hospital-adapted) daily doses (RDD). Use density was calculated per 100 patient days per hospital, per department/specialty service and per normal versus intensive care wards (ICUs). Analyses excluded pediatrics and psychiatry departments.

Results I
Complete data were available for 109 hospitals (Table 1), corresponding to 14.4-47.298 patient days (6.4% of patient days country-wide). The overall antibiotic use density (median and IQR) was 64.4 (53-72) DDD/100 or 43.5 (36-48) RDD/100, respectively. (Table 1). Weighted means were similar: 64.8 DDD/100 and 44.2 RDD/100, respectively.

There were no significant differences in overall use between hospitals of different sizes, only university hospitals showed higher levels (Table 1). Major differences were seen for normal ward versus ICU areas both in surgical and non-surgical services (not shown).

Results II
Cephalosporins (27% of all RDD) dominated over penicillins (26%) (Figure, red and green areas, and Table 2).

Proportions (among all RDD per hospital) of 1/2°ceph varied between 5-37%, for 3/4°ceph and penicillins the ranges were ≤1-29% and 10-49%, respectively.

Other findings were:
- 1/2°ceph were more often prescribed in surgical vs non-surgical areas (9-13 vs 1.5-2.3 RDD/100)
- Increased use of 3/4°ceph and minimal use of glycopeptides were seen in non-surgical ICUs of small hospitals.
- Extensive use of carbapenems, fluoroquinolones and glycopeptides were seen in non-surgical university hospital normal wards – in part associated with hematology-oncology.

A comparison with 2004 data showed:
- An increased use density overall (Figure 2)
- Cefuroxime as the TOP substance (Table 3) in 2004 and 2012/13
- A higher proportion of ceftriaxone in the recent analysis (Table 3).

Conclusions
Reference values are now available for acute care hospitals in Germany. Shorter treatments and using penicillins rather than cephalosporins should be encouraged.

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*References


Table 1. Overall antibiotic use density (systemic antibiotics) in German acute care hospitals 2012/13 (w/o pediatrics & psychiatry) expressed in DDD per 100 patient days (and RDD/100).

Table 2. Use density for defined drug classes (expressed in RDD/100).

Table 3. TOP 5 single most prescribed substances 2004* and 2012/13 (according to RDD).

*References