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Background

- Antifungal use could be improved by implementing antifungal stewardship programmes
- Analysis of antifungal use is a key activity to initiate and monitor these programmes, mainly in intensive care units (ICUs) where antifungal agents are frequently prescribed
- Nationwide surveys on antifungal use have been performed since 2012 through ATB-RAISIN hospital network, managed by the five regional centres for healthcare associated infections control (CCLIN) and the French institute for public health surveillance (InVS)

Objectives

- To assess trends in antifungal use in hospitals
- To describe trends and pattern of use in ICUs

Methods

- Retrospective surveys in voluntarily participating hospitals involved in ATB-RAISIN network
- Auto-questionnaire regarding 2012 and 2013 data for the whole hospital and for ICUs
 - Administrative data: hospital type, number of patient-days (PD)
 - Antimycotic consumption (J02, WHO Anatomical Therapeutic Chemical classification, ATC-DDD system, 2013)
 - pharmacy dispensing data for inpatients
 - expressed in number of defined daily doses (DDD) per 1000 PD

Results

Trends in antifungal use at hospital level

- Total use in 122 hospitals: 17 in 2012 and 16 DDD/1000 PD in 2013 (-5%)
 - Decrease in fluconazole use by 7.5%
 - Increase in posaconazole: +14% and in voriconazole: +6%
- Variations according to hospital type in the amount and pattern of use (fig. 1)
 - Total use in 2013 : from 3 DDD/1000 PD in non acute care hospitals (97% triazole derivatives) to 83 in cancer centres (63% triazole derivatives, 27% echinocandins)
 - Increase in
 - Amphotericin B and voriconazole in teaching hospitals (i.e. university + military) : 4.6 to 5.5 and 2.7 to 3.7 DDD/1000 PD respectively
 - Posaconazole in all except non teaching public hospitals
 - Micafungin in teaching and non teaching public hospitals

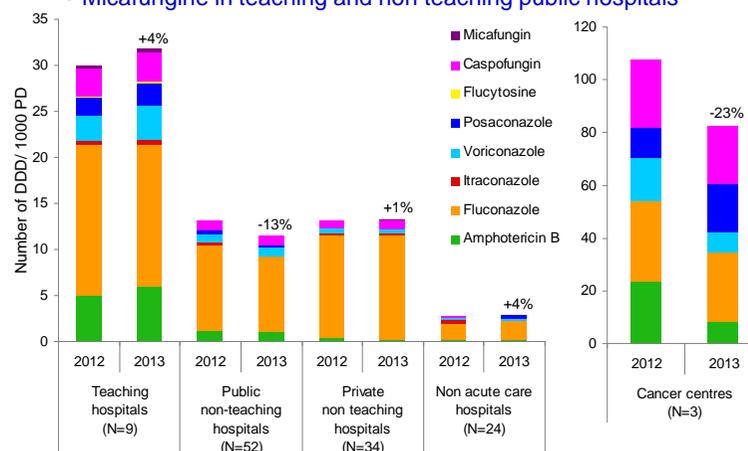


Figure 1: Changes in antifungal use according to hospital type, in number of DDD/1000PD, between 2012 and 2013, N = 122
NB: Different scale for cancer centres

Trends in antifungal use in ICUs

- Total use in 67 ICUs
 - 143 in 2012 and 145 DDD/1000 PD in 2013
 - 112 to 164 DDD/1000 PD according to hospital status

Table 1: Five most used antifungals in ICUs and change between 2012 and 2013, N=67

Antifungal agent	2012	2013	Change
Fluconazole	110.1	108.4	- 1.6%
Caspofungin	18.1	17.6	-2.9%
Amphotericin B*	7.4	11.3	+53.5%
Voriconazole	6.1	6.7	+9.8%
Micafungin	0.3	0.8	+202.3%

*86-89% liposomal

- Amphotericin B was mostly used in teaching hospitals-accounting for 15% of antifungal use vs 3 to 7% in others. Fluconazole accounted for 84% of antifungal use in ICUs in private non teaching versus 63 to 76% in others
- Increase in micafungin mainly driven by ICUs in non teaching hospitals; increase in voriconazole by university hospitals

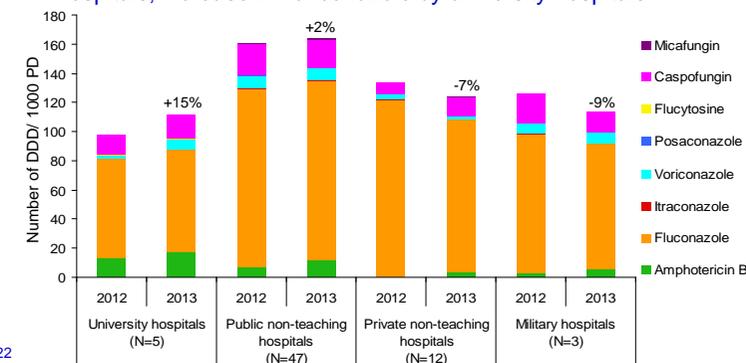


Figure 2: Antifungal use in ICUs according to hospital type, in number of DDD/1000PD, N=67

Conclusions

Trends in antifungal consumption

- First survey to provide trends in antifungal use at hospital level and in ICUs. Between 2012 and 2013, there was a trend towards a decrease in fluconazole consumption – that was still the most used antifungal agent in 2013 – and an increase in the use of new agents such as voriconazole, posaconazole, micafungin and liposomal amphotericin B. However, liposomal amphotericin B consumption is overestimated by the use of the WHO daily dose defined for the conventional formulation. Furthermore, shortages reported in 2012 may have influenced voriconazole use during the survey period.

Comparison with other countries

- In Dutch university hospitals, antifungal use increase between 2011 and 2012 from 83 to 93 DDD/1000 PD [Nethmap 2014]; it was higher in 2012 than in the teaching hospitals involved in our survey and compared more with antifungal use in cancer centres. In 66 German acute care hospitals in 2011, relative use of antifungal differed slightly, with a higher proportion of voriconazole (15%) [Germap 2012].

Perspectives

- Further analysis of antifungal use in relation to microbiological and activity data should help in targeting antifungal stewardship interventions, comprising updated guidelines and education to ensure rational prescribing of newer agents according to guidelines. Additional research is needed to investigate associations between antifungal usage and changes in antifungal ecology.

