

# Trend toward a stabilization in antibiotic consumption in French hospitals: good news from the nationwide network "ATB-RAISIN", 2008-2011?

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## Background

- Promotion of surveillance of antibiotic consumption in hospitals to assess the impact of measures recommended by the French programme for prudent use of antibiotics
- Yearly nationwide surveys on antibiotic use since 2008 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 monitor antibiotic use in hospitals and assess trends in a cohort of hospitals providing data each year
- To provide a tool for benchmarking
- To identify areas for improvement at national and hospital levels

## Methods

- National surveillance network ATB-RAISIN methodology (auto-questionnaire)
- Retrospective surveys in voluntary hospitals collecting 2008, 2009, 2010 and 2011 data
- Administrative data : hospital status, number of beds and number of patients-days (PD) each year
- Antibiotic consumption collected from pharmacy dispensing data for inpatients
  - all AB for systemic use: class J01 of WHO Anatomical Therapeutic Chemical classification, ATC-DDD system + rifampicin and oral imidazole derivatives
  - expressed in number of defined daily doses (DDD) per 1000 PD

## Results

### Increasing participation of hospitals

- Increase in the coverage of ATB-RAISIN network (table 1)
- A cohort of 614 hospitals provided data each year (23% of French hospitals)

### Trends in total antibiotic use in the cohort of 614 hospitals, 2008 - 2011

- Overall increase in number of DDD/1000 PD: +6.4% (figure 1)
  - Stabilization between 2010 and 2011 in all types of hospitals except long term care and local hospitals (figure 2).
- No change in the number of antibiotic DDD: 15 855 508 in 2008 and 15 599 258 in 2011, i.e. -1.6% (figure 3)
  - Reporting hospital antibiotic consumption requires the use of relevant hospital activity indicators as a denominator.

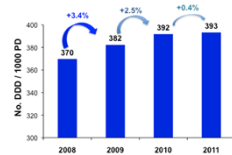


Figure 1: Antibiotic use in number of DDD/1000 PD, 2008-2011, N = 614.

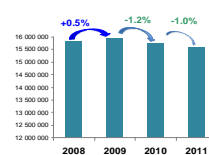


Figure 3: Antibiotic use in number of DDD, 2008-2011, N = 614.

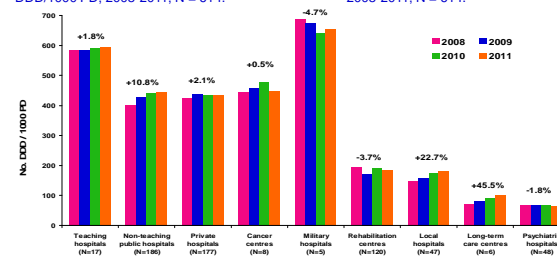


Figure 2: Trends in antibiotic use according to hospital status, in number of DDD/1000PD, 2008-2011, N = 614.

Table 1: Participation and antibiotic use in number of DDD/1000PD, ATB-RAISIN surveys, 2008 - 2011

	2008	2009	2010	2011
No. participating hospitals	861	997	1115	1262
Coverage (/ No. PD at national level)	44%	51%	52%	60%
Coverage (/ No. beds at national level)	42%	50%	52%	60%
Total antibiotic use (No. DDD/1000 PD)	369	379	374	372

No. = number of

### Changes in antibiotic use in 614 hospitals, 2008 - 2011

- Major increase in the use of piperacillin/tazobactam; ceftriaxone; carbapenems and imidazole derivatives (figure 4)
- Increased use of beta-lactamase resistant penicillins (J01CF) (from 9.5 to 10.5 DDD/1000 PD, i.e. +10.5%) and also of other anti staphylococcal agents (figure 5) despite decreasing meticillin-resistant *Staphylococcus aureus* rates in France [BMR-RAISIN 2011 report at [www.invs.sante.fr/raisin/](http://www.invs.sante.fr/raisin/)]
- Decrease in the use of fluoroquinolones: -4.4%, despite an increase in levofloxacin use: +16.9% between 2008 and 2010 and +1.5% in 2011
- Trend toward stabilization in the use of carbapenems: + 3% between 2010 and 2011 against 12% and 18% during the previous years

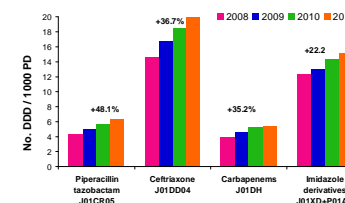


Figure 4: Antibiotic use in number of DDD/1000 PD in 614 hospitals, 2008-2011 (year change between 2008 and 2011).

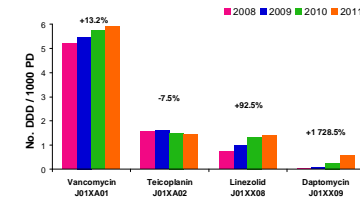


Figure 5: Changes in anti staphylococcal agents use in number of DDD/1000 PD, in 614 hospitals, 2008-2011.

## Conclusions

- Assessment of trends in antibiotic use in a large number of hospitals provides useful information to steer national strategy
- Participation in the network allows benchmarking and helps hospitals to analyse results and to implement improvements
- Trend toward a stabilisation in the use of carbapenems in French hospitals in 2011, consistent with Danish data (+3.5% between 2010 and 2011 after a period of high increase [DANMAP 2011])
- Continuous increase in the consumption of ceftriaxone: worrisome in the context of increasing ESBL-producing Enterobacteriaceae rates
- Antibiotic surveillance through ATB-RAISIN network: 1) a sustainable stabilisation or decrease would suggest the effectiveness of the French strategy to better control AB use in general and carbapenem and fluoroquinolone use, antibiotics targeted by national and regional actions in hospitals; 2) as hospital length of stay tend to decline, collecting the number of admissions as a denominator for antibiotic consumption will help to better understand variations over time; 3) tailored analysis and tools could help to explore and control antibiotic use in long-term care and local hospitals
- The continuous increase in the consumption of ceftriaxone calls for urgent action. Implementing stringent measures such as restrictive dispensation, medical education and development of practice audits requires political commitment and would benefit from the continuing action of the National Committee for prudent use of antibiotics.

Increasing participation in ATB-RAISIN

Contrasting trends

Perspectives