

# Therapeutic Drug Monitoring for glycopeptides and aminoglycosides: actual situation and perspectives in a French University Hospital

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## Background

Optimising glycopeptides and aminoglycosides therapy with Therapeutic Drug Monitoring is recommended. Under-dosing can lead in resistance and ineffective treatment while over-dosing is associated with toxicity.

## Purpose

The aim of the study is to evaluate the current practices of monitoring aminoglycosides and glycopeptides in a French university hospital: dosages (trough and peak concentrations) and percentage of optimal concentrations based on our inner antibiotics guide.

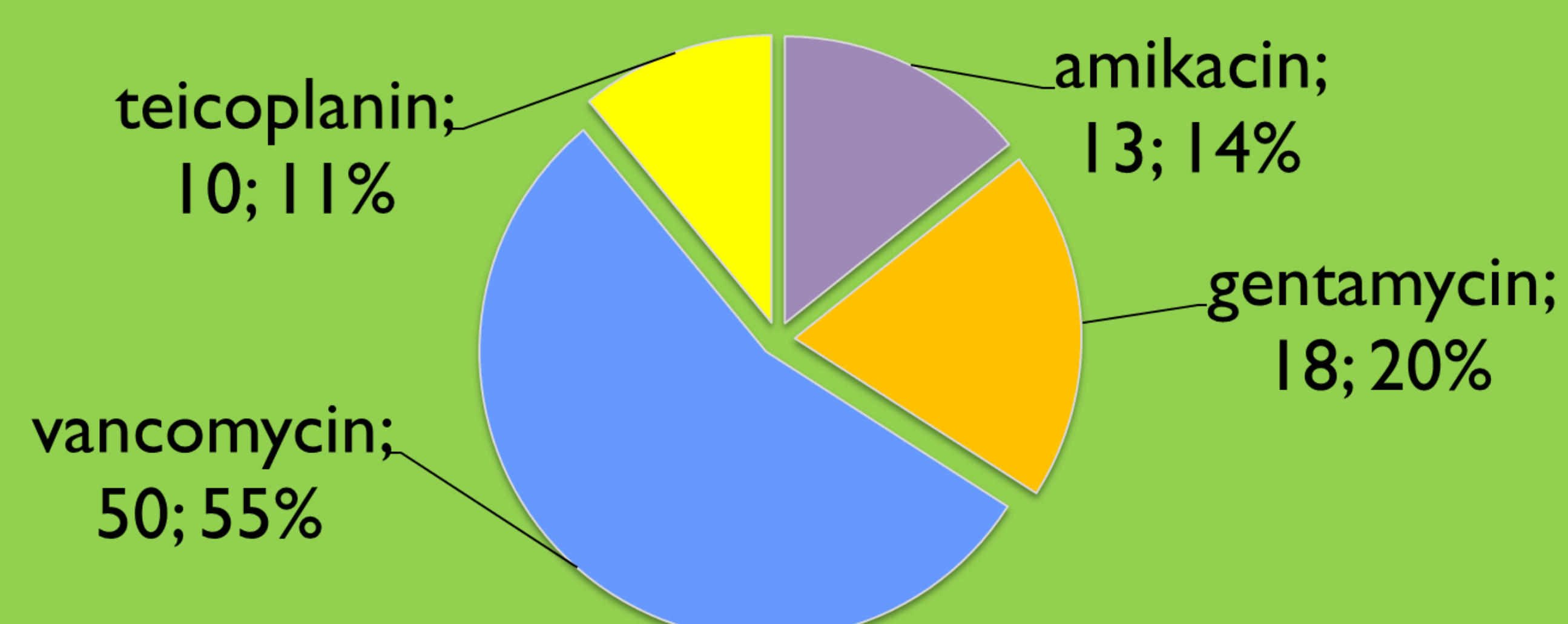
## Materials and method

The Prescriptions of glycopeptides and /or aminoglycosides, for which at least one dosage has been realized, have been reviewed during one month (february 9th – march 15th 2012). Our data pool contains: patients' characteristics, infection and antibiotherapy background, serum concentration. We compared the serum concentrations we found in our hospital with the local guidelines (antibiotics guide) and other ones.

## Results

We noticed that a large range of official optimal target serum concentrations are mentioned in the literature (Consensus Review of the American Society of Health-System Pharmacists, French Pharmacology and Therapeutic Society 2011, inner guidelines...) and the figures can be very discordant.

**91 Prescriptions** (31 aminoglycosides, 60 glycopeptides) **have been analysed**: the largest percentage is represented by vancomycin (55%) with 80% of continuous infusion.



### AMINOGLYCOSIDS

- 50% of aminoglycosides **trough concentrations** were superior to values of inner guidelines
- **target peak concentrations** were not reached
  - **amikacin**: 67 % under 60mg/L ([60-80mg/L])
  - **gentamycin**: 90% under 30mg/L ([30-40mg/L])

### VANCOMYCIN

	Continuous infusion regimens	Intermittent infusion regimens
<b>Optimal vancomycin concentrations [20-30] mg/L</b>	<b>42%</b>	<b>27%</b>
<b>Subtherapeutic vancomycin concentrations &lt;20 mg/L</b>	<b>33%</b>	<b>54%</b>
<b>Subtherapeutic vancomycin concentrations &lt;10 mg/L</b>	<b>8%</b>	<b>27%</b>

➔ **Serum vancomycin concentration are optimised by using continuous regimens**

For these two regimens, 10% of trough vancomycin serum concentrations were below 10 mg/L, exposing to **subtherapeutic doses** and a **higher risk for selecting resistant microorganisms**.

### TEICOPLANIN

10 prescriptions of teicoplanin have been reviewed. 70% of trough serum concentration was below 20 mg/L and 30% below 10 mg/L (inner guidelines: optimal trough concentrations = [20-30mg/L])

## Conclusion

Most aminoglycosides and glycopeptid concentrations didn't achieve the therapeutic aim during this study. Consensus guidelines should be proposed to avoid bacterial resistance and guide clinical practices. Considering our results, a prospective study is under investigation in order to evaluate the practicing inside the medical units: when are the samples taken, how do the physicians adapt the doses to the results... ?