



THERAPEUTIC DRUG MONITORING OF GENTAMICIN IN NEONATES

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BACKGROUND AND IMPORTANCE

Peak (maximum plasma concentration)/MIC > 8-15 is pharmacokinetic (PK)/pharmacodynamic (PD) parameter that best correlates with effectiveness of aminoglycosides. A peak between 8-15 mg/L is necessary to achieve it. In neonates, doses between 3-5 mg/kg/day the first week and 7,5 mg/kg/day from the second to the fourth week of life, are recommended.

AIM AND OBJECTIVES

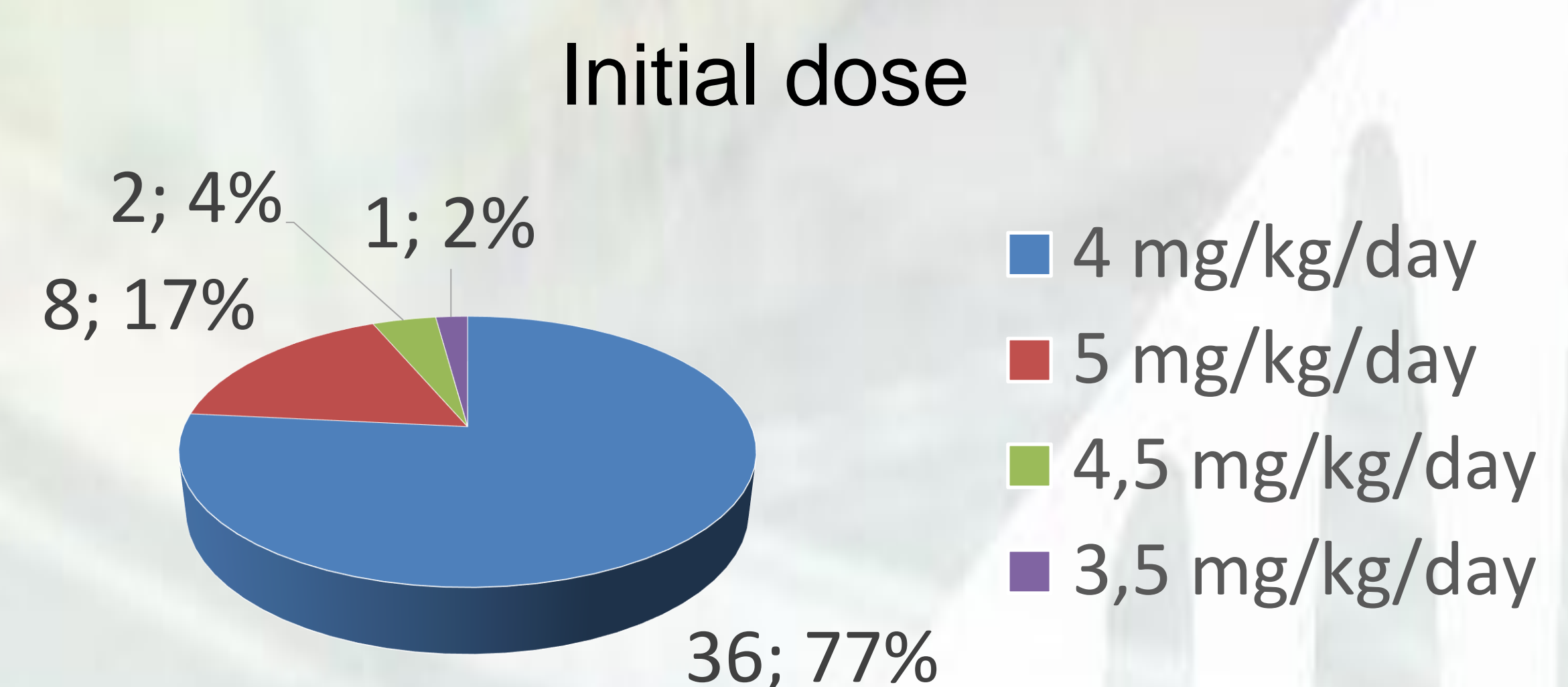
Evaluate the degree of adequacy of the initial dose with current recommendations and whether therapeutic drug monitoring (TDM) allows optimization of treatments.

MATERIALS AND METHODS

Retrospective study from 1-1-2016 to 02-29-2020, in a general university hospital. Patients 0-35 days old treated with gentamicin and with plasma concentrations (Cp) were reviewed. The descriptive analysis was performed with SPSSv.24 program.

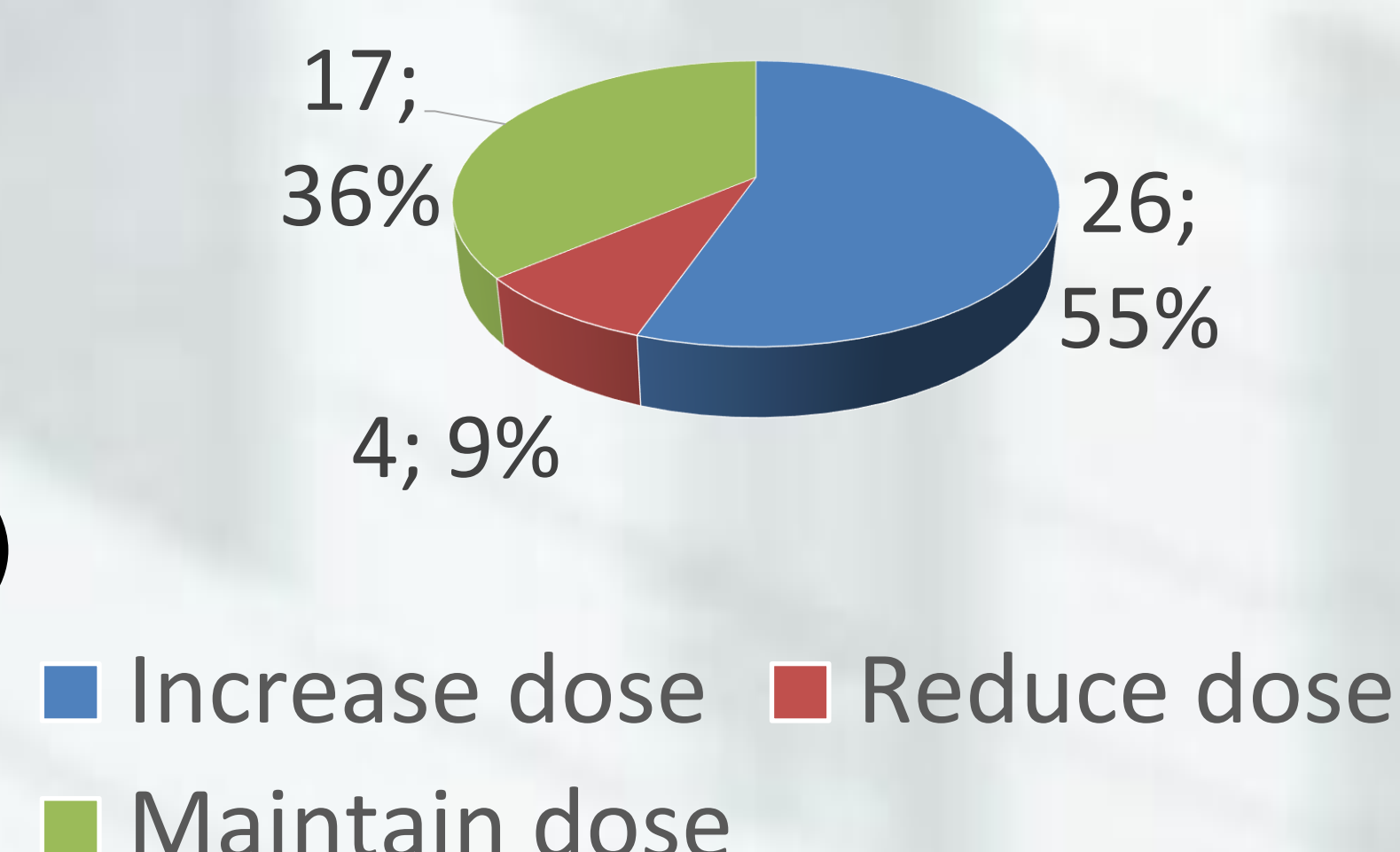
RESULTS

TDM	47 neonates	
Age	3 (0-33) days	26 (55,3%) < 7 days old
Gender	33 (70%) men	
Type of infection	Neonatal sepsis	35 (72,3%)
	Urinary infection	7 (14,9%)
Ampicilin	45 (95,7%)	
Empiric	34 (72,3%)	
Duration of treatment	6 (2-9) days	



First recommendation (TDM in 47 neonates):

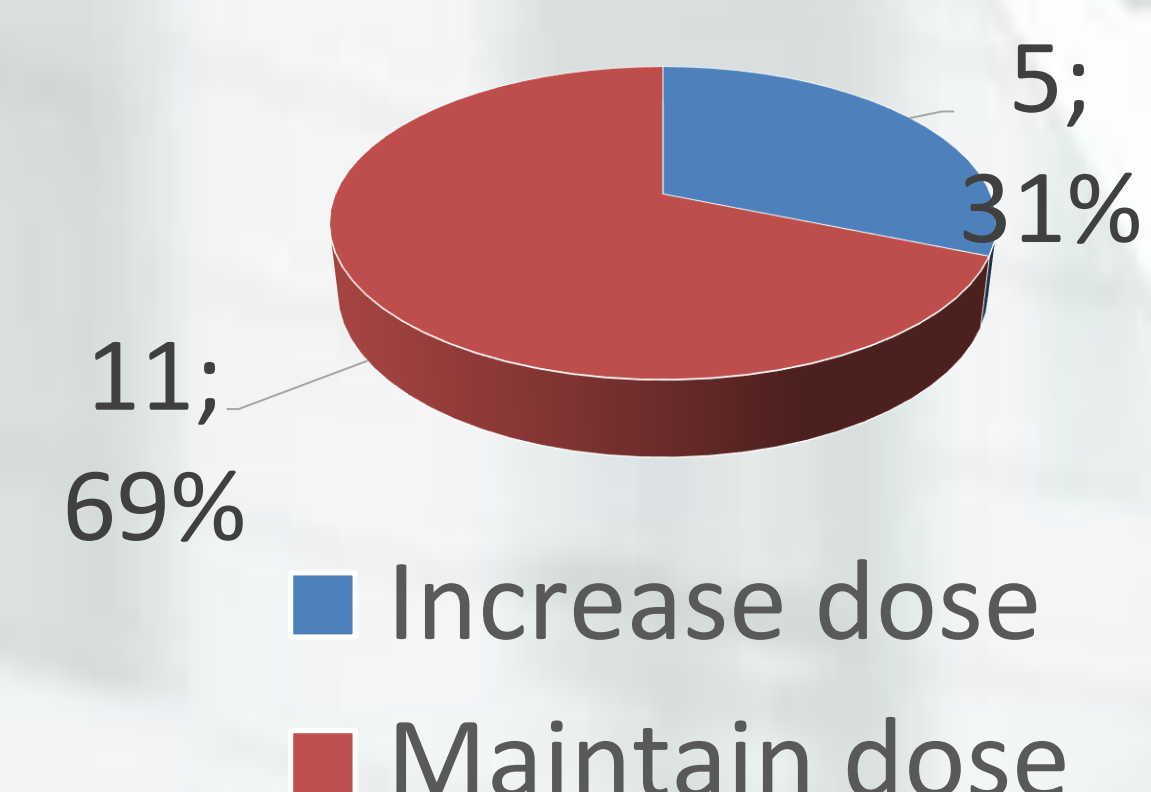
Cp were extracted with a median of 2 days (1-4) after start, the median of peak was 7,5 mg/L (3,5-21,6), 29 (62%) had a peak < 8 mg/L. The trough was < 0,2 mg/L in 26 patients and of those that was quantified, the median was 0,4 mg/L (0,2-1,3), being higher than 1 mg/L only in a case.



90% of acceptance

Second recommendation (TDM in 16 neonates):

Median peak of 9 mg/L (6-12) and trough always less than 0,5 mg/L



94% of acceptance

CONCLUSION AND RELEVANCE

The dose prescribed has been lower than recommended in neonates > 1 week old. Cp let to detect and correct deviations from the recommended peak or trough in 64% of cases, mainly due to low peak, with a high acceptance of TDM. Plasma determination and TDM of gentamicin continues to be an essential tool to achieve the recommended PK/PD.

REFERENCES

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- Bijleveld YA, van Den Heuvel ME, Hodiamont CJ, et al. Population pharmacokinetics and dosing considerations for gentamicin in newborns with suspected or proven sepsis caused by Gram-negative bacteria. Antimicrob. Agents Chemother 2016; 61(1): e01304–e01316.