

# AMIKACIN ACCUMULATION IN PATIENTS WITH NORMAL RENAL FUNCTION AND ONCE-DAILY DOSING BASED ON ACCEPTED TROUGH TARGETS

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### BACKGROUND

In patients with normal renal function (NRF) amikacin is commonly prescribed at standard doses of 15-20 mg/Kg/day assuming there is no drug accumulation. NRF is defined by glomerular filtration rate (GFR)  $\geq 60$  mL/min. Optimal amikacin trough serum levels (ATSL) should be  $\leq 1$  mg/L.

### PURPOSE

The aim of this study is to evaluate if the amikacin standard dosing of 15-20 mg/Kg/day is appropriate to achieve the serum level trough target for preventing drug accumulation, in patients with NRF.

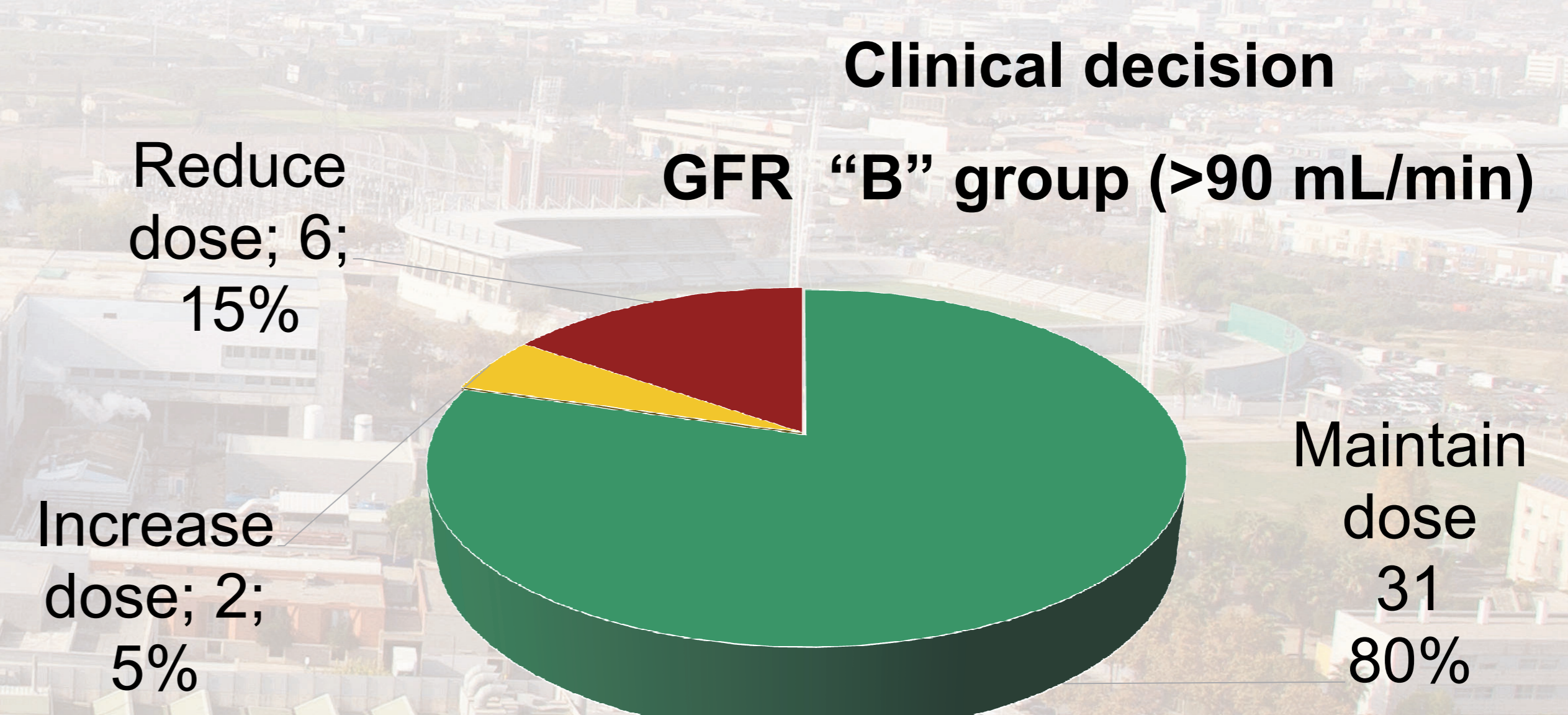
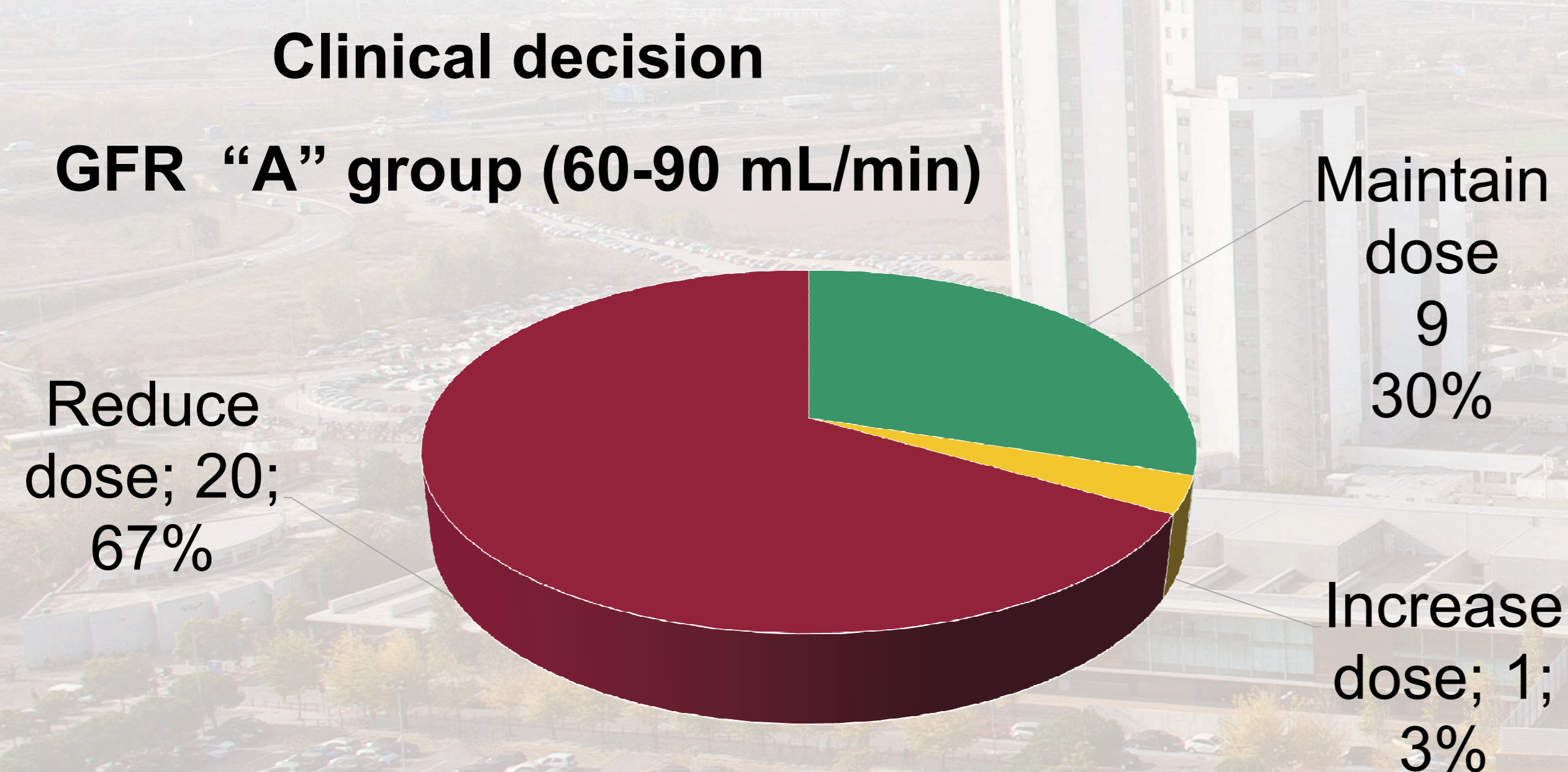
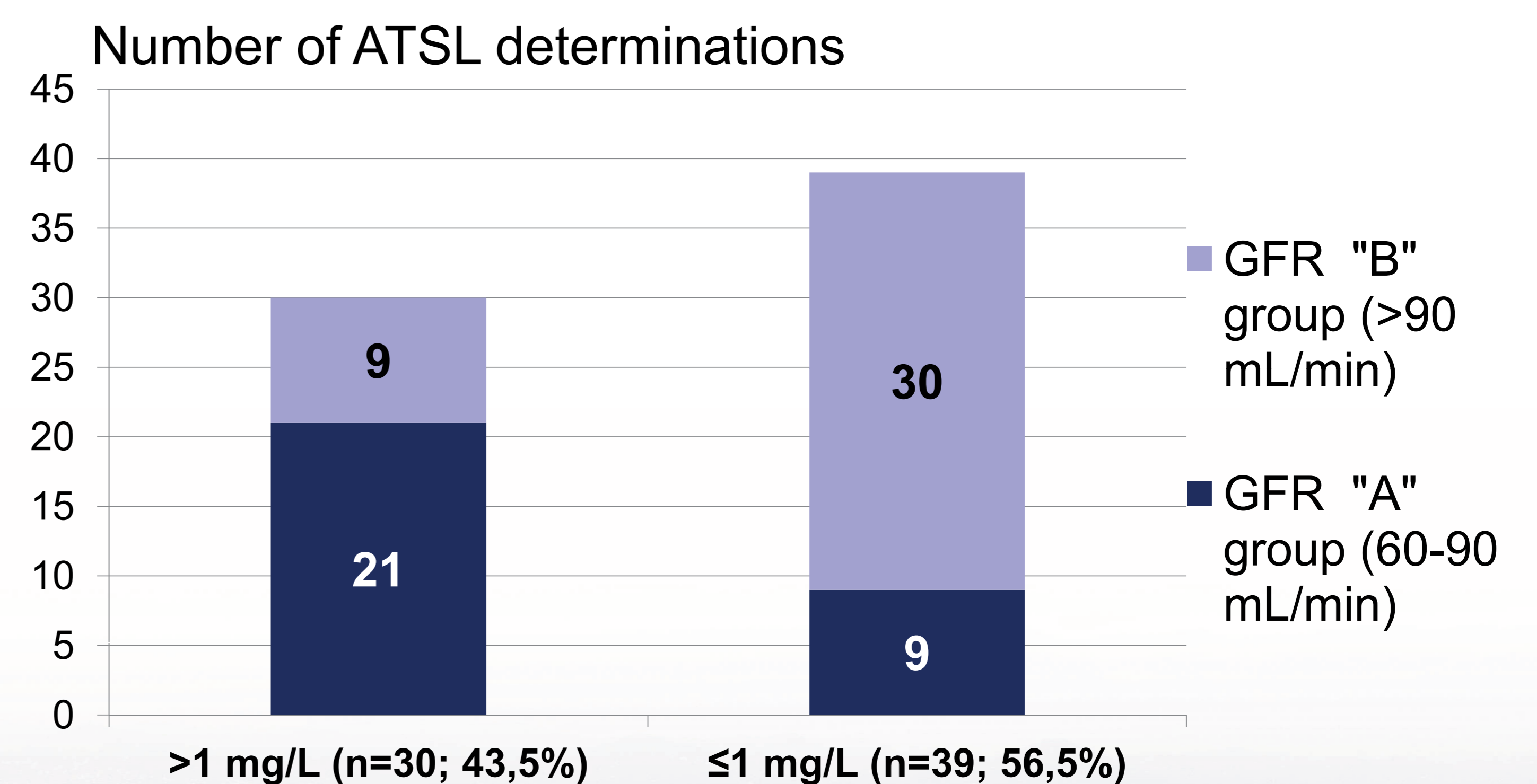
### RESULTS

53 patients (40 men) with 69 ATSL determinations. Median age: 71 years (28 to 86). Median BSA: 1,83 m<sup>2</sup> (1,4 to 2,3).

	Median	Max	Min	P25	P75
<b>GFR "A" group (60-90 mL/min) (n= 30; 43,5%)</b>					
GFR (mL/min)	83	89	60	72	87
Dose (mg/Kg/day)	15,3	20	7,6	13,0	16,3
ATSL (mg/L)	1,7	10	<0,3	0,8	2,4
<b>GFR "B" group (&gt;90 mL/min) (n= 39; 56,5%)</b>					
GFR (mL/min)	104	155	90	96	117
Dose (mg/Kg/day)	15,2	22,6	10,2	13,9	17,7
ATSL (mg/L)	0,5	1,8	<0,3	<0,3	0,9

### MATERIAL AND METHODS

Retrospective observational study of adult hospitalized patients treated with amikacin and GFR  $\geq 60$  mL/min selected from our therapeutic drug monitoring (TDM) database from January 2007 to June 2015. GFR values were estimated by the formula of Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI). Critically ill patients and hemodialysis patients were excluded. Variables collected: age, sex, GFR, weight, height, body surface area (BSA), dose regimen and ATSL. ATSL were considered suprathreshold if  $>1$  mg/L. Patients were also divided in two groups according to GFR values: 60-90 mL/min ("A") and  $>90$  mL/min ("B").



Globally, amikacin dose was reduced in 26 of 30 (87%) ATSL  $>1$  mg/L, while maintained in four cases with ATSL closer to the target (between 1,1 and 1,2 mg/L). According to GFR amikacin dose was reduced in 20 of 30 (67%) cases in the GFR "A" group, while only 15% of cases (6 of 39) in the GFR "B" group.

### CONCLUSION

In adult patients with NRF amikacin once-daily dosing may cause drug accumulation in basis on accepted trough targets especially in patients with GFR between 60-90 mL/min. TDM of amikacin should be performed despite NRF to avoid drug accumulation.