

# Impact of a CZT detector gamma camera on the <sup>99m</sup>Tc-tetrofosmin activity for myocardial perfusion imaging in nuclear cardiology

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## Background

With a scintillator-based gamma camera, the DRLs are not respected especially for high weights. After the acquisition of a CZT detector a reduction of 30 percent has been decided for the one-day protocol of myocardial perfusion imaging realized with <sup>99m</sup>Tc-tetrofosmin.

DRLs	
One-day protocol of myocardial perfusion imaging	
1st injection	300 MBq
2 <sup>nd</sup> injection	800 MBq

## Objectives

What is the consequence of a dose reduction of 30% on the DRLs ?

## Materials & Methods

	Dosage		
	Min	MBq/kg	Max
1st injection	185	2,8	259
2 <sup>nd</sup> injection	555	8,3	777

All patients injected with <sup>99m</sup>Tc-tetrofosmin the year following the acquisition of the new gamma camera with CZT detector were included in the study. As the activity is depending on weight, it has been decided to gather the patients according to their weight.

## Results

		Average Activity MBq	Reduction compared to DRLs (%)	Statistic Wilcoxon test
1st injection	<65Kg	198,6	30	p<10 <sup>-15</sup>
	65kg<x<94kg	222	25	p<10 <sup>-4</sup>
	>94kg	255	14	p<0,004
2 <sup>nd</sup> injection	<65Kg	632.3	18	p<10 <sup>-15</sup>
	65kg<x<94kg	695,4	12	p<0,0008
	>94kg	784,2	0	p<0,0004

## Discussion & Conclusions

The acquisition of the CZT gamma camera allowed to respect the DRLs for myocardial perfusion imaging regardless the weight. Our one-day protocol activity is below the recommended activity of the EANM's procedural guidelines for myocardial perfusion imaging in nuclear cardiology, which is 400–500 MBq for the 1st injection and 3 times more for the second injection in the one-day protocol. Finally, that improved patients and medical staff's radiation protection.