

## 2024 UPDATE OF THE NORTH AMERICAN CONSENSUS GUIDELINES FOR PEDIATRIC ADMINISTERED RADIOPHARMACEUTICAL ACTIVITIES

*These are a replacement for the 2016 Guidelines.<sup>1</sup>*

*Please also see the notes at the end of this guideline (\*)*

Radiopharmaceutical	Notes	Administered Activity/kg	Minimum Administered Activity	Maximum Administered Activity
<sup>123</sup> I-MIBG		5.2 MBq/kg (0.14 mCi/kg)	37 MBq (1.0 mCi)	370 MBq (10.0 mCi)
<sup>99m</sup> Tc-MDP		9.3 MBq/kg (0.25 mCi/kg)	37 MBq (1.0 mCi)	740 MBq (20 mCi)
<sup>18</sup> F-FDG	A	Body, 2.96-5.2 MBq/kg (0.08-0.14 mCi/kg)	26 MBq (0.7 mCi)	370 MBq (10 mCi)
		Brain, 1.85-3.7 MBq/kg (0.05 -0.10 mCi/kg)	14 MBq (0.37 mCi)	<u>148 MBq</u> <u>(4 mCi)</u>
<sup>18</sup> F-FDOPA		2.96-5.92 MBq/kg (0.08-0.16 mCi/kg)	29.6 MBq (0.8 mCi)	222 MBq (6 mCi)
<sup>99m</sup> Tc-DMSA		1.85 MBq/kg (0.05 mCi/kg)	18.5 MBq (0.5 mCi)	100 MBq (2.7 mCi)
<sup>99m</sup> Tc-MAG3	B	Without flow study, 3.7 MBq/kg (0.10 mCi/kg)	37 MBq (1.0 mCi)	148 MBq (4.0 mCi)
		With flow study, 5.55 MBq/kg (0.15 mCi/kg)	37 MBq (1.0 mCi)	148 MBq (4.0 mCi)
<sup>99m</sup> Tc-IDA		1.85 MBq/kg (0.05 mCi/kg)	18.5 MBq (0.5 mCi)	
<sup>99m</sup> Tc-MAA		With ventilation using <sup>99m</sup> Tc agent, 2.59 MBq/kg (0.07 mCi/kg)		
		Without ventilation using <sup>99m</sup> Tc agent, 1.11 MBq/kg (0.03 mCi/kg)	14.8 MBq (0.4 mCi)	
<sup>99m</sup> Tc-pertechnetate (Meckel diverticulum imaging)		1.85 MBq/kg (0.05 mCi/kg)	9.25 MBq (0.25 mCi)	296 MBq (8 mCi)
<sup>18</sup> F-sodium fluoride		1.85 MBq/kg (0.05 mCi/kg)	18.5 MBq (0.5 mCi)	148 MBq (4 mCi)
<sup>99m</sup> Tc (for cystography)	C	No weight-based dose		No more than 37 MBq (1.0 mCi) for each bladder filling cycle

<sup>99m</sup> Tc-sulfur colloid (for oral liquid gastric emptying)	D	No weight-based dose	18.5 MBq (0.5 mCi)	37 MBq (1.0 mCi)
<sup>99m</sup> Tc-sulfur colloid (for solid gastric emptying)	D	No weight-based dose	9.25 MBq (0.25 mCi)	18.5 MBq (0.5 mCi)
<sup>99m</sup> Tc- HMPAO (Ceretek)/ <sup>99m</sup> Tc-ECD (Neurolite) for brain perfusion		11.1 MBq/kg (0.3 mCi/kg)	185 MBq (5 mCi)	740 MBq (20 mCi)
<sup>99m</sup> Tc-sestamibi (Cardiolite)/ <sup>99m</sup> Tc-tetrofosmin (Myoview) for myocardial perfusion (single scan or first of 2 scans, same day)		5.55 MBq/kg (0.15 mCi/kg)	185 MBq (5 mCi)	370 MBq (10 mCi)
<sup>99m</sup> Tc-sestamibi (Cardiolite)/ <sup>99m</sup> Tc-tetrofosmin (Myoview) for myocardial perfusion (second of 2 scans, same day)		16.7 MBq/kg (0.45 mCi/kg)	185 MBq (5 mCi)	1110 MBq (30 mCi)
<sup>13</sup> NH <sub>3</sub> for cardiac imaging		10.4 MBq/kg (0.28 mCi/kg)	74 MBq (2 mCi)	
<sup>82</sup> Rb for cardiac imaging		7.4 MBq/kg (0.2 mCi/kg)	370 MBq (10 mCi)	
Na <sup>123</sup> I for thyroid imaging		0.28 MBq/kg (0.0075 mCi)	1 MBq (0.027 mCi)	11 MBq (0.3 mCi)
Na <sup>123</sup> I for thyroid cancer imaging		3.7 MBq/kg (0.10 mCi/kg)	74 MBq (2 mCi)	148 MBq (4 mCi)
<sup>99m</sup> Tc-pertechnetate for thyroid imaging		1.1 MBq/kg (0.03 mCi/kg)	7 MBq (0.19 mCi)	93 MBq (2.5 mCi)
<sup>99m</sup> Tc-RBC for blood pool imaging		11.8 MBq/kg (0.32 mCi/kg)	74 MBq (2 mCi)	740 MBq (20 mCi)
<sup>99m</sup> Tc-WBC for infection imaging		7.4 MBq/kg (0.2 mCi/kg)	74 MBq (2 mCi)	555 MBq (15 mCi)
<sup>68</sup> Ga-DOTATATE		2.0 MBq/kg (0.054 mCi/kg)	14 MBq (0.38 mCi)	200 MBq (5.4 mCi)
<sup>68</sup> Ga-DOTATOC		1.59 MBq/kg (0.043 mCi/kg)	11.1 MBq (0.30 mCi)	111 MBq (3 mCi)

(\*) This information is intended as a guideline only. Local practice may vary depending on patient population and equipment considerations, including choice of collimator, software, and the specific requirements of clinical protocols. For example, those PET scanners with digital PET detectors or extended fields of view, embedded with artificial intelligence or advanced iterative reconstruction to enable high-resolution scans could consider dosing at the lower portion of the range. Administered activity may be adjusted when appropriate by the nuclear medicine practitioner's order.

For patients who weigh more than 70 kg, it is recommended that the maximum administered activity not exceed the product of the patient's weight (kg) and the recommended weight-based administered activity. If not specified in the table, some practitioners may choose to set a fixed maximum administered activity according to the package insert for adults or equal to 70 times the recommended weight-based administered activity, for example, approximately 17.5 mCi (648 MBq) for <sup>99m</sup>Tc- MDP. The administered activities assume

the use of a low energy high-resolution collimator for  $^{99m}\text{Tc}$ - radiopharmaceuticals or a medium energy collimator for  $^{123}\text{I}$ -MIBG.

Individual practitioners may use lower administered activities if their equipment or software permits them. Higher administered activities may also be required in selected patients. No recommended dose is given for  $^{67}\text{Ga}$ -citrate. Intravenous  $^{67}\text{Ga}$ -citrate should be used very infrequently and only in low doses.

[A] The low end of the dose range should be considered for smaller patients. Administered activity may consider patient mass and time available on the PET scanner.

[B] The administered activities assume that image data are reframed at 1 min/image. The administered activity may be reduced if image data are reframed at a longer time per image

[C]  $^{99m}\text{Tc}$ -sulfur colloid,  $^{99m}\text{Tc}$ -pertechnetate,  $^{99m}\text{Tc}$ -DTPA, or possibly other  $^{99m}\text{Tc}$  radiopharmaceuticals may be used. There is a wide variety of acceptable administration and imaging techniques for  $^{99m}\text{Tc}$  cystography, many of which will work well with lower administered activities.

[D] The administered activity will depend on the age of the child, the volume to be fed to the child, and the time per frame used for imaging.

<sup>1</sup>Treves ST, Gelfand MJ, Fahey HF, Parisi MT. 2016 Update of the North American Consensus Guidelines for Pediatric Administered Radiopharmaceutical Activities. J Nucl Med. 2016 57:15N-18N.