

A software for automatic calculation of radiation dose to patients from radiopharmaceuticals

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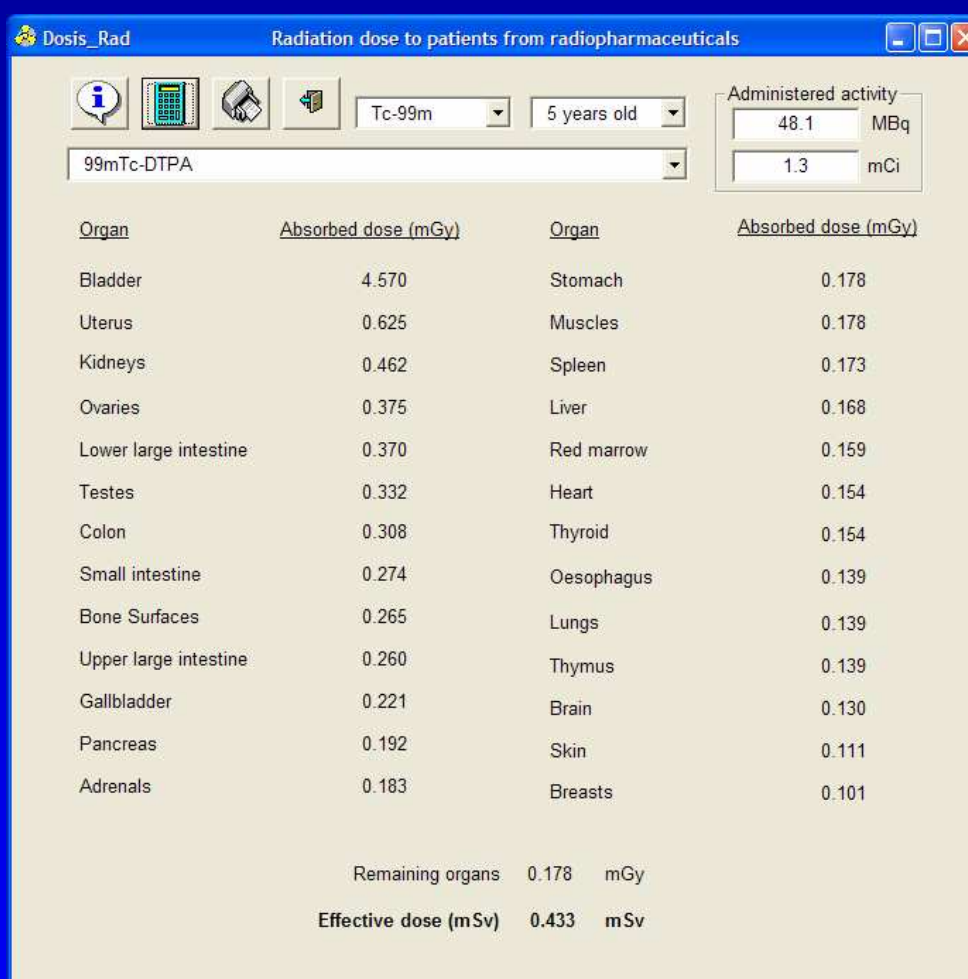
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OBJETIVE

The aim of this project is to develop a software to determine and report the radiation dosimetry of radiopharmaceuticals administered to patients.

MATERIALS AND METHODS

The computer application was developed in Visual Basic programming language, and dosimetric calculations are made based on the values given by the International Commission on Radiological Protection (ICRP).



The screenshot shows the 'Dosis_Rad' application window. The title bar reads 'Radiation dose to patients from radiopharmaceuticals'. The interface includes a toolbar with icons for help, calculation, and printing. Input fields are set to 'Tc-99m', '5 years old', and '99mTc-DTPA'. The 'Administered activity' section shows 48.1 MBq and 1.3 mCi. The main area displays a table of absorbed doses for various organs, sorted from highest to lowest. At the bottom, it shows the effective dose as 0.433 mSv.

Organ	Absorbed dose (mGy)	Organ	Absorbed dose (mGy)
Bladder	4.570	Stomach	0.178
Uterus	0.625	Muscles	0.178
Kidneys	0.462	Spleen	0.173
Ovaries	0.375	Liver	0.168
Lower large intestine	0.370	Red marrow	0.159
Testes	0.332	Heart	0.154
Colon	0.308	Thyroid	0.154
Small intestine	0.274	Oesophagus	0.139
Bone Surfaces	0.265	Lungs	0.139
Upper large intestine	0.260	Thymus	0.139
Gallbladder	0.221	Brain	0.130
Pancreas	0.192	Skin	0.111
Adrenals	0.183	Breasts	0.101
Remaining organs		0.178	mGy
Effective dose (mSv)		0.433	mSv

RESULTS

We have developed a computer program for automatic calculation of the radiation dosimetry of radiopharmaceuticals administered to patients, according to the patient's age, the type of radiopharmaceutical and the administered activity (in mCi or MBq). The resulting dosimetry is shown in a report that specifies the absorbed doses for each organ (in mGy), sorted from highest to lowest, and the effective dose (in mSv).

This application is available at www.radiofarmacia.org/dosisrad

CONCLUSION

DosisRad is a software easy to use that allows the automatic calculation of the radiation dosimetry of a radiopharmaceutical administered to a patient. It also issues of a dosimetric report that can be incorporated to the patient's medical record.