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REPLY: We would like to thank Drs. Husák and Myslivecek for pointing out two errors in the radiation dosimetry tables in the Procedure Guideline for Radionuclide Cystography in Children (*1*). All members of the nuclear medicine community are encouraged to comment on all of the Society of Nuclear Medicine's (SNM) guidelines. These guidelines are updated biannually. Any comments received by the Guidelines and Communication Committee will be considered at the time that the guideline is scheduled to be updated.

The first error pointed out by Drs. Husák and Myslivecek was that the units for administered activity of radiopharmaceuticals for direct radionuclide cystography in children was given as "MBq/kg (mCi/kg)" when it should have been "MBq (mCi)." This point had already been noted and corrected in the revised guideline, which was approved by the House of Delegates in February 1999 (*2*).

The second point made by Drs. Husák and Myslivecek was that the column entitled "Effective Dose" should have been titled "Effective Dose Equivalent." This occurs in several other dosimetry tables in the *Procedure Guidelines Manual.*

TABLE 1
Comparison of Weighting Factors Used for Effective Dose and Effective Dose Equivalent

Organ	Weighting factor	
	Effective dose*	Effective dose equivalent†
Gonads	0.2	0.25
Bone marrow	0.12	0.12
Colon	0.12	
Lung	0.12	0.12
Stomach	0.12	
Bladder	0.05	
Breast	0.05	0.15
Liver	0.05	
Esophagus	0.05	
Thyroid	0.05	0.03
Skin	0.01	
Bone surface	0.01	0.03
Remainder	0.05	0.3

*Data from reference 5.
†Data from reference 4.

TABLE 2
Comparison of Effective Dose (ED) and Effective Dose Equivalent (EDE) for Selected Radiopharmaceuticals

Radiopharmaceutical	ED*	EDE†	ED/EDE
^{99m}Tc-DTPA	5.20E-03	6.30E-03	0.83
^{99m}Tc-HSA	6.10E-03	7.90E-03	0.77
^{99m}Tc-RBCs	6.60E-03	8.50E-03	0.78
^{99m}Tc-DMSA	8.70E-03	1.60E-02	0.54
^{67}Ga-citrate	1.10E-01	1.20E-01	0.92
^{111}In-WBCs	3.60E-01	5.90E-01	0.61

*Data from reference 6.
†Data from reference 4.
DTPA = diethylenetriamine pentaacetic acid; HSA = human serum albumin; RBC = red blood cell; DMSA = dimercaptosuccinic acid; WBC = white blood cell.

Some comments about this second point are warranted. To provide a simple summary number that reflects the radiation risk from a nonuniform exposure, the concept of effective dose equivalent was developed by the International Commission on Radiological Protection (ICRP) in 1977 (*3*). The effective dose equivalent (and, more recently, effective dose) is calculated by multiplying each organ dose by a weighting factor that reflects the radiation sensitivity of that particular organ. These products are then summed to get the effective dose equivalent. A comprehensive listing of effective dose equivalents for adults and children can be found in ICRP publication 53 (*4*).

In 1991, the ICRP expanded the list of weighting factors and renamed the summed weighted organ dose as effective dose (*5*). For comparison, the weighting factors for effective dose and effective dose equivalent are shown in Table 1 (*4,5*). Unfortunately, the effective doses listed in ICRP publication 62 (*6*) are only for adults; therefore ICRP publication 53 is still used as a convenient source for pediatric doses. Organ doses generally are the same in ICRP publication 53 and 62, because the same biokinetic models are used to calculate the organ dose.

In general, the effective dose is smaller than the effective dose equivalent (Table 2) because of the differences in the weighting factors used. For the dosimetry tables found in the SNM guidelines, the more modern term effective dose was used as the column heading, even though effective dose equivalent was sometimes listed. In future versions of the guidelines, the Committee will attempt to better indicate precisely which weighting factors were used by more clearly differentiating between effective dose and effective dose equivalent. In the meantime, interested readers can determine whether effective dose or effective dose equivalent was used in a particular guideline by the source for the dosimetry cited in the tables. If the source is ICRP publication 53, the effective dose equivalent is listed; if the source is ICRP publication 62, the effective dose is listed.

In the remainder of their letter, the authors point out that different groups have calculated different bladder doses for direct radionuclide cystography. It would be wrong to give the impression that patient-specific dosimetry could be known to within ±50% on the basis of the application of standard dosimetry models. Factors such

as patient-specific bladder volume, bladder residence time and filling and emptying rates can easily account for a factor of two difference in the dosimetry estimates. Furthermore, the calculated doses are being used as surrogates for risk. The uncertainty associated with these risk estimates (i.e., weighting factors) is at least as large as the uncertainty associated with the doses. Given all these uncertainties, small differences ($<\pm 50\%$) in estimates of dose are not very meaningful.

Despite the uncertainties, the Guidelines and Communications Committee listed effective dose or effective dose equivalent in dosimetry tables to provide a simple way to compare the magnitude of doses for a variety of nuclear medicine procedures. Important limitations of using these dose estimates as a surrogate for risk have been pointed out by the SNM's Medical Internal Radiation Dose committee (*7*) as well as the ICRP itself (*4*). For example, the weighting factors used are derived from age-weighted populations that have normal life expectancy. Application of these weighting factors to a specific age population that may not have a normal life expectancy may diminish the value of effective dose or effective dose equivalent as a simple surrogate for risk.

Any questions, comments or corrections to the SNM Procedure Guidelines should be directed to the SNM Guidelines and Communications Committee.

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Photodegraded Nifedipine Augmented Tumor Cell Uptake of Gallium

TO THE EDITOR: The recent article by Luttropp et al. (*1*) on the use of photodegraded nifedipine to promote the uptake of gallium into tumor cells is interesting and opens up several possibilities. The authors mention that the greatly augmented transferrin-independent gallium uptake into cultured tumor cells "may offer a way to improve the use of ^{67}Ga for tumor imaging." The 1000-fold increase in the transferrin-independent gallium uptake pathway made this 50-fold greater than in the transferrin-dependent pathway. As well as raising the possibility of usefulness in diagnostic imaging, this immediately raises the possibility of radiotherapy with gallium. In 1953, Andrews et al. (*2*) used ^{72}Ga to treat bone tumors but were unsuccessful because of the unfavorable radiation dosimetry. The use of photodegraded nifedipine may revive that method of therapy, especially in such tumors as lymphomas, which already often show good transferrin-dependent gallium uptake.

The other possibilities raised include strongly influencing uptake at various sites in the body for other radiopharmaceuticals, both in physiologic processes and in pathology. There may be many modifiers other than photodegraded nifedipine that can accomplish this. There have already been reports on such use with less dramatic results than with photodegraded nifedipine. Retinoic acid has been used to increase radioiodine uptake by causing redifferentiation in some dedifferentiated thyroid cancers (*3*). Accumulation of damaging ^{131}I in salivary glands during therapy for thyroid cancer has been reduced using amifostine (*4*). Such techniques would be ideally suited for nuclear medicine because of the inherent biochemical nature of nuclear medicine diagnosis and therapy.

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Variability of Quantitative Scintigraphic Salivary Indices in Healthy Subjects

TO THE EDITOR: Salivary glands are assuming greater significance in recent days. Multiple and varied roles have been attributed to salivary contents and secretions. Apart from the widely known role in bolus formation, secretion of digestive enzymes and maintenance of oral hygiene, the reduction in the buffering capacity of saliva is being increasingly implicated in occurrence of gastroesophageal reflux disease and esophagitis. Absence of neutralizing capacity of salivary bicarbonates and other bases potentiates the acid reflux-based esophageal damage, as has been recently reported (*1*). Apart from the secretion of salivary immunoglobulins such as IgG, IgA and IgM, it has been speculated that the salivary glands may have a role in neuroimmunomodulation. In laboratory rodents, factors extracted from salivary gland have been shown to stimulate lymphocyte proliferation, to affect the weight of the thymus, spleen and lymph nodes, and also to induce immunosuppression in several in vivo animal models. The endocrine functions of the salivary gland include production and secretion of epidermal growth factor, nerve growth factor and vasoactive intestinal peptides, among others. In this context, the ability to quantify salivary function assumes greater importance.