TABLE 1
Approximate Dead-Time and Prompt Coincidence CR Limits with <10% Activity Bias

PET scanner model	Dead-time correction factor (dead-time %)	Prompt CR (kcps)	Maximum recommended dose (MBq/kg)	
			Phantom-scan–predicted	Patient-scan–revised
Discovery 690 (GE Healthcare)	1.5 (33%)	5,000	11.4	9
Discovery 600 (GE Healthcare)	2.1 (52%)	4,000	6.5	7.5
Scintron 3D (Medical Imaging Electronics)	1.6 (38%)	1,500	2.7	6
Gemini/Ingenuity TF (Philips Healthcare)	TBD	2,000?	4.6	?

TBD = to be determined.

obtain higher CRs in larger patients, the correlation did not reach statistical significance because of limited sample size. This is in sharp contrast to the normalized CR per activity (kcps/MBq), which shows a significant negative correlation with patient weight (Fig. 1D) and is associated with higher CRs and DTF (and possible inaccuracy) in smaller patients when injected with a standard activity (e.g., 740 MBq), which is the current practice in many centers.

The patient scan–revised versus phantom scan–predicted doses from the original paper are summarized in Table 1 with the limited available data for the Gemini/Ingenuity TF scanners. The phantom-predicted and patient-revised values were quite similar for the first 2 scanners listed, whereas the phantom-predicted dose was substantially underestimated compared with the patient-revised value in the third scanner. This highlights the need to validate the final weight-based dosing using patient scans acquired on any given scanner. If the phantom peak CR of 2,000 kcps reported by van Dijk et al. represents the accuracy limit on the Ingenuity TF scanner, then indeed their patient data would suggest that the clinical dose should be reduced below 4.6 MBq/kg. Their scanner appears to have very high CR capability (>9,500 kcps); we recommend that they determine the dynamic range of CRs and weight-based doses that will maintain quantitative accuracy in their patients' scans.

REFERENCE

1. Renaud JM, Yip K, Guimond J, et al. Characterization of 3-dimensional PET systems for accurate quantification of myocardial blood flow. *J Nucl Med.* 2017;58:103–109.

Jennifer M. Renaud
Jonathan B. Moody
Robert A. deKemp*
**University of Ottawa Heart Institute,*
40 Ruskin St.
Ottawa, ON K1Y 4W7, Canada
E-mail: radekemp@ottawaheart.ca

Published online Jan. 26, 2017.
DOI: 10.2967/jnumed.116.188086

Regarding "Subjecting Radiologic Imaging to the Linear No-Threshold Hypothesis: A Non Sequitur of Non-Trivial Proportion"

TO THE EDITOR: Kudos to *The Journal of Nuclear Medicine* for publishing "Subjecting Radiologic Imaging to the Linear No-Threshold Hypothesis: A Non Sequitur of Non-Trivial Proportion" (*1*). In this important paper, Siegel, Pennington, and Sacks clearly dissect the flaws behind the linear no-threshold hypothesis (LNTH), the model that has been the backbone of radiation safety policy throughout the world for more than 50 y. Most significantly, they clearly show the harm done by overzealous application of this flawed, inaccurate, and nonscientific model. A vigilant, rigorous, and relentless effort to reeducate the medical, scientific, and regulatory communities on the flawed science behind the LNTH; on the scientific evidence supporting the absence of radiation carcinogenesis at low doses (less than several 10s of Gy); and on the potential medical benefits of low-dose radiation due to its hormetic effects is needed, and publishing papers such as the one by Siegel et al. is a good step in that direction.

REFERENCE

1. Siegel JA, Pennington CW, Sacks B. Subjecting radiologic imaging to the linear no-threshold hypothesis: a non sequitur of non-trivial proportion. *J Nucl Med.* 2017;58:1–6.

Alan Fellman, PhD, CHP
Dade Moeller, an NV5 Company
438 North Frederick Ave., Suite 220
Gaithersburg, MD 20878
E-mail: Alan.fellman@dademoeller.com

Published online Jan. 26, 2017.
DOI: 10.2967/jnumed.117.189787

TO THE EDITOR: I applaud the authors' article on the non-validity of the linear no-threshold hypothesis (LNTH) and the ongoing folly of its continued reliance for guiding radiation safety and diagnostic imaging dose policies (*1*). I too have been convinced for some time that the "emperor has no clothes."