lower (by up to a factor of 3 at age 1–5 yr) than the ICRP values to produce the relatively high S factors. Whether low values are physiologically realistic is doubtful.

Further evidence in favor of the ICRP values is provided in Table 2, where the estimated bladder wall doses for different ages in the ICRP report are compared with our own exploratory estimates using the new MIRD bladder model (*6,7*). As in the ICRP report, the voiding interval was set at 3.5 hr for all ages, the first void taking place 3.5 hr after administration of [^{131}I]MIBG. Urine outputs at each age interval are those for a normal state of hydration and were obtained from standard tables (*10*). Although the new model is more realistic physiologically than the ICRP bladder model, its application in adults has shown that simpler models can provide reasonable dose estimates (within a factor of two) (*6,7*) for a variety of radiopharmaceuticals. The fact that the two dose estimates in Table 2, albeit for a variety of ages, are not markedly different would lend support for the ICRP S factors, in preference to those published by the NCRP. Our exploratory work in the new bladder model demonstrates the importance of adequate hydration and resultant urine flow in reducing radiation dose to the bladder wall, a feature that may be of increasing importance if dose escalation of [^{131}I]MIBG occurs, particularly in conjunction with chemotherapy or external beam irradiation.

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Use of Bleomycin in Radiochemotherapy

TO THE EDITOR: We would like to congratulate Even-Sapir et al. (*1*) for their article in which they demonstrated that the uptake of ^{57}Co-bleomycin predicts the outcome of patients with lung cancer. They showed that lung tumors with a high uptake of ^{57}Co-bleomycin late after injection responded poorly to chemotherapy and were associated with shorter survival than tumors showing lower uptake. DNA-bound bleomycin may correlate with the absolute activity detected by SPECT, and this agrees with the nature of the drug having major effects during the G2-phase (*2*). It is widely known that bleomycin has targeting abilities in lung cancer (*3*). Bleomycin can be used as a chemotherapeutic agent and complexes of radioactive bleomycin are also conceivable for therapy. In fact, we have studied a low-pH ^{111}In-bleomycin complex (BLMC) in head and neck cancers. We have found good sensitivity (93%) and specificity (100%) in the diagnostic staging of 13 head and neck cancer patients (*4*). The half-life of ^{111}In is approximately 2 hr in serum and urine. The tumor-to-serum ratio was highest at 3.6/1. We think that this BLMC has many advantages compared to other bleomycin compounds and is suitable for therapeutic use. It is obvious that the patients with a poor outcome presented by Even-Sapir et al. should be the first to receive BLMC.

The facts above demonstrate the importance of the observation by Even-Sapir et al. (*1*) and demonstrate an additional way to characterize lung cancer in vivo. Furthermore, Even-Sapir et al. introduced a method to select patients that would benefit from bleomycin therapy. Indium-111-BLMC has some additional advantages over ^{57}Co-labeled bleomycin: accumulation in bone marrow is limited and BMLC has a more convenient half-life. They have similar uptake in lung and kidney. Nevertheless, pulmonary toxicity, may be the limiting factor, although in patients with lung cancer it may provide an undeniable benefit.

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REPLY: We thank Kairemo and his colleagues for their kind words concerning our study. One should realize, however, that we did not use bleomycin labeled with ^{57}Co (Co-bleo) as an agent for diagnosing lung tumors. We also did not use it in the current study as a labeled chemotherapeutic agent for quantitation of targeting. Co-Bleo was used as an agent similar to thymidine or deoxyuridine to determine cell kinetics in vivo (*1*). The results of our study indicate that Co-Bleo uptake is related to response to

treatment and survival of patients with lung cancer. We believe that nuclear medicine, in general, can provide information to predict a tumor's response to treatment which is not provided by CT scan or MRI.

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