

daily exposure to radiation should not be underestimated as its cumulative effects could take decades to be evaluated. Because of the poly-aetiological nature of some pathologies (e.g. neoplasms), it may be impossible to link final health effects of radiation on medical personnel to exposure sustained by those personnel many years previously.

During a procedure, there are three to six individuals in the room. Any radiation dose received is dependent on an individual's distance from the radiation source, but continuous work in high volume centres results in accumulated exposure. Some of these professionals might be of reproductive age. Is it ethically acceptable to irradiate a number of young individuals daily and repeatedly for treatment of patients who are usually older and burdened with significant comorbidities?

This is a question that will raise the eyebrows of colleagues ready to cite the Hippocratic Oath. Yet, the situation described is not similar to putting a medical professional's health in jeopardy under extraordinary circumstances, e.g. intensive care unit specialists fighting COVID-19 or trauma surgeons operating in a war zone. The systematic exposure of young professionals to a silent hazard like radiation is the daily working environment of thousands. What happens when these individuals get sick or give birth to children with catastrophic genetic disorders? What are the social and long term financial burdens? Further research is required to find answers to these questions.

If we wish to discuss the details of the "Elephant in the Operating Room", we must also discuss the ethics of working with "Elephants".

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Response to "Re The Elephant in the Operating Room"

We thank Dr Patelis for his thought provoking letter. The risk of working with radiation is evident but still largely

uncertain. There is no "radiation free" option for most specialists, certainly not for residents who are young and require great exposure in a short period of time, but also for nurses and anaesthetists. In short, we are compelled to put ourselves in harm's way to do our job. With the endovascular revolution, our practice now takes place in a dangerous environment, a fact that must be acknowledged.

This is one big mammoth we can hardly control, let alone ignore.

One cannot rely solely on ethics for radiation safety, we should strive for stricter regulation to protect professionals. This entails substantial investment in safety and monitoring equipment, improved risk assessment, enforcement of risk reduction measures, and obligatory (re)certification in radiation management. Administrators and physicians who do not comply need to be liable. Scientific societies and other professional associations, political stakeholders, and scientific publications like that of Massiot *et al.*¹ all play a role.

This elephant is not leaving the room. We must learn to tame it.

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Ethics in Occupational Exposure Needs a Green New Deal

We would like to thank Dr Patelis for his relevant comments regarding the worrying issue of long term occupational exposure.¹ We definitely agree that it is the real question lying behind all the recent literature regarding radiation. By law in France, staff are supposed to be trained, monitored, and adequately equipped against radiation. This is the institution's responsibility. On an individual basis, every operator has the moral responsibility of justification and optimisation.