
ESC Paper: Cardiologists Must Reduce Inappropriate Radiation Exposure



Radiation from cardiology procedures equals more than 50 chest X-rays per person each year

In a recent position paper published in the European Heart Journal the European Society of Cardiology (ESC) has urged cardiologists to reduce patient radiation exposure.

The paper outlines doses and risks of common cardiology examinations for the first time, and its lead author Dr Eugenio Picano, FESC, described cardiologists to be the 'true contemporary radiologists', as cardiology accounted for 40% of patient radiology exposure which equaled more than 50 chest X-rays per person per year.

Dr Picano urged the entire cardiology community to be proactive in minimising the 'radiological friendly fire' in imaging labs, and pointed out that regretfully, radiation risks were not widely known to all cardiologists and patients. This created a potential for unwanted damage that could appear as cancers decades down the line.

Computed tomography (CT), percutaneous coronary intervention (PCI), cardiac electrophysiology and nuclear cardiology deliver a dose equivalent to 750 chest X-rays (with wide variation from 100 to 2,000 chest X-rays) per procedure.

On a daily basis, these procedures are performed in all in- and out-patient cardiology departments, often with more than one procedure per admission. From congenital to heart failure, these are used for all forms of cardiac disease, however even more intensively and frequently for ischemic heart disease.

Amounting to almost 1 million procedures per year in Europe, PCI for dilation of coronary artery stenosis is the most common exam, with the additional lifetime risk of fatal and non-fatal cancer for one PCI ranging from 1 in 1000, to 1 in 100 for a healthy man aged 50 years. Risks are proportionally higher at 1.38 times in women and quadruple in children, whose risk is increased due to the fact that their cell division is faster and their longer life span potentially enabling cancer to develop. As per Dr Picano 30 to 50% of examinations were totally or partially inappropriate according to specialty recommendations, even in the best centres and even when the income of doctors was not related to the number of examinations performed.

He went on to explain that when examinations were appropriate, the dose was often not systematically audited and therefore not optimised, with values 2 to 10 times higher than the reference expected dose.

Further commenting on the paper, Dr Picano mentioned that half of the costly and risky advanced imaging examinations done were for inappropriate indications. In his opinion, politicians' top priority should be to audit and cut down on useless and dangerous examinations.

Best results would be achieved by working with industry, and many companies are now successfully fighting a 'dose war'. Dr Picano believes those companies who develop better ways of reducing doses will win future global competition, as radiological sustainability is becoming a competitive marketing advantage.

The paper recommends patients to be given the estimated dose before a procedure and the actual dose in writing afterwards should they request it. This could become a legal requirement through the European Directive Euratom law 97/43 but application of the law is being delayed by technical and practical difficulties.

In conclusion, Dr Picano pointed out that the paper would help to make cardiology wards and laboratories a safer place for patients and doctors through an increase of radiation awareness and knowledge.

According to the president of the European Association of Cardiovascular Imaging (EACVI) of the ESC, Professor Patrizio Lancellotti, FESC, the radiation issue was first brought to the attention of the international cardiology community by European cardiologists and subsequently, it was now right and fitting that the ESC delivered this paper.

Source: [European Society of Cardiology](#)

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