# Radiation Exposure Among Cath Lab Staff

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**Summary By:** **Debabrata Mukherjee, MD, FACC**

Study Questions:

What is the impact of an accessory lead shield on radiation exposure among staff members during cardiac catheterization?

Methods:

The investigators prospectively collected real-time radiation exposure data among nurses and technologists during 764 consecutive catheterizations. The study had two phases: in phase I (n = 401), standard radiation protection measures were used, and in phase II (n = 363), standard radiation protection measures were combined with an accessory lead shield placed between the staff member and patient. Radiation exposure was reported as the effective dose normalized to dose-area product ($E_{DAP}$). Multivariate linear regression modeling with backward selection was performed to identify procedural variables independently associated with log of $E_{DAP}$.

Results:

Use of an accessory lead shield in phase II was associated with a 62.5% lower $E_{DAP}$ per case among technologists (phase I: 2.4 [4.3] μSv/[mGy x $cm^2$] x $10^{-5}$; phase II: 0.9 [2.8] μSv/[mGy x $cm^2$] x $10^{-5}$; $p < 0.001$) and a 63.6% lower $E_{DAP}$ per case among nurses (phase I: 1.1 [3.1] μSv/[mGy x $cm^2$] x $10^{-5}$; phase II: 0.4 [1.8] μSv/[mGy x $cm^2$] x $10^{-5}$; $p < 0.001$). By multivariate analysis, accessory shielding remained independently associated with a lower $E_{DAP}$ among both technologists (34.2% reduction; 95% confidence interval, 20.1-45.8%; $p < 0.001$) and nurses (36.4% reduction; 95% confidence interval, 19.7-49.6%; $p < 0.001$).

Conclusions:

The authors concluded that a relatively simple approach of using accessory lead shields was associated with a nearly two-thirds reduction in radiation exposure among nurses and technologists.

Perspective:

This study reports that a simple and relatively inexpensive approach of providing staff members with a dedicated accessory lead shield during cardiac catheterization was associated with a nearly two-thirds reduction in radiation exposure among both nurses and technologists. Since, unlike physicians, who typically control the amount of radiation administered during a case, nurses and technologists may have no control over radiation use, use of accessory shields may have important implications for occupational safety in the cardiac catheterization or interventional radiology laboratory.



**Clinical Topics:** Prevention

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