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The use of the Rampart Defender in the cath lab

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The Rampart Defender is a highly adaptable, mobile radiation shielding solution designed to provide robust, total-body protection for interventional teams, allowing them to safely perform procedures without the need for heavy lead aprons. Featuring 1mm lead-equivalent, lead-free acrylic shields with bismuth, the Defender delivers over 99% radiation attenuation while maintaining clear visibility of the patient and accommodating unlimited C-arm views and angles. The system is engineered for quick, two-minute set-up, offers multiple access points, and can be easily removed in emergency situations. Furthermore, the system provides enough protection for the interventional team to work without the use of lead aprons.

Clinical studies evaluating the real-world efficacy of the Rampart system further validate its protective capabilities. A large study of 1,712 consecutive endovascular procedures demonstrated that the system effectively mitigates occupational radiation exposure to levels comparable to those of historical under-lead measurements, with a median exposure of just 2-1µSv for the main operator and first assistant. By eliminating the physical burden of traditional lead aprons, the Rampart system also addresses the high rate of occupational orthopedic injuries reported by interventional operators, offering a comprehensive solution for a safer, lead-free procedure lab. Furthermore, during our education on the Rampart Defender system, we had a real-time radiation dosimeter in the lab which we used for our own internal study. The results showed significantly lower doses for the main operator and first assistant while using the Rampart Defender system instead of our usual set-up. The graph display below (**Figure 1**) shows operator and nurse doses for coronary angiography (CA) and percutaneous coronary intervention (PCI) in a lab with Rampart Defender in blue and operator and nurse doses for CA and PCI in a lab without Rampart Defender in red.

To conclude, the Rampart Defender system represents an innovative radiation protection by combining high-level attenuation with practical usability in the catheterization lab.[1] Median exposure to the main operator was recorded at just 2 µSv, effectively matching the safety profile of traditional under-lead protection without the physical weight. The system directly addresses the nearly 50% rate of orthopedic injuries reported by interventional cardiologists caused by long-term use of heavy lead aprons.

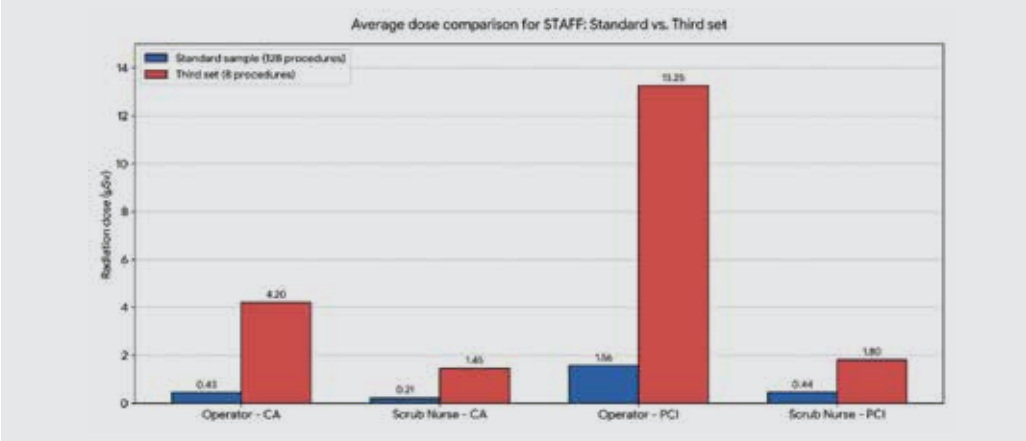

FIGURE 1. Average radiation dose comparison for staff with and without Rampart Defender.
CA - coronary angiography; PCI - percutaneous coronary intervention

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LITERATURE

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