

## **The purpose of this study was to resolve the issue of whether various generations of CR Bard peripheral vascular access ports and catheters are prone to retain PET radiopharmaceuticals” Gossman et al (2017).**

### Abstract:

**PURPOSE:** The purpose of this study was to resolve the issue of whether various generations of CR Bard peripheral vascular access ports and catheters are prone to retain PET radiopharmaceuticals. The study evaluates the residual radioactivity remaining following injection for two PET radiopharmaceuticals currently used extensively in the clinic, FDG and Na18 F.

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**METHODS:** FDG was purchased from a local cyclotron facility and Na18 F was prepared in-house. Three generations of currently marketed vascular access ports were tested. A total of five (n = 5) of each model was tested. Radiopharmaceutical of 2-3 mCi of each was injected into each port and flushed with 10, 30, 60, and 120 ml of saline. MicroPET scans were performed after each flush to detect the residual radioactivity on each port. A dose calibrator was used to detect the retention of radioactivity after each flush.

**RESULTS:** Radioactivity retention for all vascular port models measured by microPET imaging was similar for both FDG and Na18 F, with less than 1% residual activity following a 10 ml saline flush. Based on the microPET images, all the subsequent flushes of 30, 60, and 120 ml were also considered. Dose calibrator activity measurements validated microPET measurements as negligible for all the ports, even with the first 10 ml flush.

**CONCLUSIONS:** MicroPET imaging was more sensitive than the dose calibrator in determining the radioactivity retention of the vascular access ports from CR Bard. These ports may be used for the injection of FDG and Na18 F to track glucose metabolism and bone uptake with PET imaging. It is recommended to apply at least a 10 ml flush after radiopharmaceutical administration, to reduce residual activity to baseline levels.

Reference:

Gossman, M.S., Zheng, H., Evans, J.G., Li, J. and Ng, C.K. (2017) Assessment of radiopharmaceutical retention for vascular access ports using positron emission tomography imaging. Journal of Applied Clinical Medical Physics. October 5th. .

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