

**Is there a need for pediatric PET/CT camera?**

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## **TO THE EDITOR:**

Positron emission tomography (PET) imaging is commonly used in adult patients. Its use in pediatric patients is limited but indicated in certain cancers such as lymphoma, sarcoma, neuroblastoma and central nervous system tumors (1). The main limitation of PET imaging is its relatively limited spatial resolution in detecting small lesions which is mainly due to non-collinearity of the 511 keV annihilation photons, positron range, detector scatter, and parallax error (2-5). However, small-animal PET scanners have higher spatial resolution than standard human PET scanners (approximately 1 mm versus 4-6 mm) (2, 5, 6). Images taken in small-animal PET scanners are less effected by the non-collinearity of the 511 keV annihilation photons as compared to images taken at the standard human PET scanners due to their smaller ring diameter (2). Depending on the manufacturer, diameter of the ring is around 10-20 cm in small-animal PET scanners and around 70-90 cm in adult PET scanners. Building small-bore pediatric PET scanners may be beneficial for the pediatric patients as they may detect smaller lesions as compared to large-bore standard PET scanners. Alternative may be to build a dual-head PET (open PET) with a large field of view in axial direction (total body or half body) and moveable heads to adjust the distance to the patient (as in dual head gamma cameras) which can be used both in pediatric and adult patients, and in brain studies and also be more suitable for claustrophobic patients (7).

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