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# PET/CT features of extrapulmonary tuberculosis at first clinical presentation: a cross-sectional observational $^{18}$F-FDG imaging study across six countries

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**$^{18}$F-FDG PET/CT can localise EPTB disease sites not clinically detected. It may serve a useful tool for research studies defining pathogenetic mechanisms and cure, relapse and recurrence.** http://bit.ly/2CKSH9a

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ABSTRACT

**Background:** A large proportion of the huge global burden of extrapulmonary tuberculosis (EPTB) cases are treated empirically without accurate definition of disease sites and extent of multi-organ disease involvement. Positron emission tomography (PET) imaging using 2-deoxy-2-(fluorine-18) fluoro-D-glucose ($^{18}$F-FDG) in tuberculosis could be a useful imaging technique for localising disease sites and extent of disease.

**Methods:** We conducted a study of HIV-negative adult patients with a new clinical diagnosis of EPTB across eight centres located in six countries: India, Pakistan, Thailand, South Africa, Serbia and

Bangladesh, to assess the extent of disease and common sites involved at first presentation. $^{18}$F-FDG PET/computed tomography (CT) scans were performed within 2 weeks of presentation.

**Findings:** 358 patients with EPTB (189 females; 169 males) were recruited over 45 months, with an age range of 18–83 years (females median 30 years; males median 38 years). 350 (98%) out of 358 patients (183 female, 167 male) had positive scans. 118 (33.7%) out of 350 had a single extrapulmonary site and 232 (66.3%) out of 350 had more than one site (organ) affected. Lymph nodes, skeleton, pleura and brain were common sites. 100 (28%) out of 358 EPTB patients had $^{18}$F-FDG PET/CT-positive sites in the lung. 110 patients were $^{18}$F-FDG PET/CT-positive in more body sites than were noted clinically at first presentation and 160 patients had the same number of positive body sites.

**Interpretation:** $^{18}$F-FDG PET/CT scan has potential for further elucidating the spectrum of disease, pathogenesis of EPTB and monitoring the effects of treatment on active lesions over time, and requires longitudinal cohort studies, twinned with biopsy and molecular studies.