# Change of the PET image in the case of substitute transmission scans

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**Abstract**

Generally a pet study takes much time (approximately 2 hours). We considered whether it would be possible to substitute phantom transmission for patient transmission so that we could shorten the time and undertake more pet studies. Pet images are obtained by inputting transmission data, emission data, normalized data and blank data into the equation: emis/tran * blan/norm. We replaced patient transmission data with phantom transmission data to put the "tran" part of the equation and reconstructed the pet images of a $CO_2$ case and a CBF case. Comparing the image based on the phantom transmission data with the image based on the patient transmission data, paranasal sinuses were not shown in the former image. Comparing counts in ROI, the ones based on the phantom data were higher than the ones based on the patient transmission data; 1.24 times higher in the $CO_2$ case and 1.99 times higher in the CBF case.