

Patient related factors influencing the quality of paediatric chest radiographs

**Author:**Eben A. Strasheim¹**Affiliation:**¹Department of Diagnostic Radiology, University of the Witwatersrand, South Africa**Corresponding author:**Eben Strasheim,
ebenstrasheim@gmail.com**How to cite this article:**Strasheim EA. Patient related factors influencing the quality of paediatric chest radiographs. S Afr J Rad. 2017;21(1), a1161. <https://doi.org/10.4102/sajr.v21i1.1161>**Copyright:**© 2017. The Authors.
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Background: The chest X-ray is the most common radiographic examination performed worldwide due to its versatility. By improving the quality of chest radiographs and avoiding repeat X-rays, the collective radiation dose to children can be decreased.

Aim: To identify patient related factors that influence the quality of paediatric chest radiographs by assessing the quality of chest radiographs and to compare the quality of chest radiographs in 'radiologically' sick patients to those of 'radiologically' normal patients.

Method: A retrospective study was performed to determine the quality of paediatric chest radiographs forming part of an existing database. The sample size of 280 radiographs, included radiographs of children aged 3 days to 13 years. Radiographic errors were captured on an electronic tick-sheet, consisting of 12 specific radiographic errors commonly made in practice and included the presence or absence of respiratory pathology. Data was extracted with regards to each of the 12 errors, patient demographics and presence of respiratory pathology to identify associations.

Results: There was a statistically significant, low correlation present between the radiographic error count and the presence of respiratory pathology ($p < 0.001$). There was a statistically significant difference in the quality of chest radiographs of children aged 0 months – 18 months and those aged 37 months – 156 months ($p < 0.05$).

Conclusions: The results of this study have demonstrated that there is a correlation between the presence of respiratory disease on a paediatric chest radiograph and the quality of the chest radiograph. The number of errors detected were higher in patients with respiratory pathology on the chest radiograph.

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Note: A selection of conference abstracts: RSSA/SASPI Paediatric Imaging Congress, 03–06 November 2016, Spier Estate, Stellenbosch, South Africa. Faculty collaborators: Professor Kassa Darge (Body Imaging, University of Pennsylvania, Philadelphia, USA), Professor Edward Lee (Thoracic Imaging, Harvard University, USA), Professor Beverley Newman (Cardiac Imaging, Stanford University, California, USA), Professor Kimberly Applegate (Image Gently and Body Imaging, Emory University, Atlanta, USA) and Professor Savvas Andronikou (Thoracic Imaging, University of Bristol, UK) supported by South African Paediatric Radiologists, co-ordinated by Dr Jaishree Naidoo, President of the African Society of Paediatric Imaging and Head of Division of Paediatric Radiology, Charlotte Maxeke Johannesburg Academic Hospital.