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Title: Utility of serial sputum examinations to discontinue respiratory isolation among inpatients with suspicion of tuberculosis

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Body: Background: Three negative sputum examinations are recommended before discontinuing respiratory isolation for inpatients with suspected pulmonary tuberculosis (PTB); however two sputum examinations could achieve similar efficacy. Objectives: To determine the cumulative sensitivity of one, two and three sputum examinations to identify PTB. Methods: All inpatients with PTB diagnosed at Washington Hospital Center, DC from January 2000 to August 2009 and Albert Einstein Medical Center at Philadelphia from January 2000 to December 2011 were identified by reviewing the records from the infection control department. Charts were reviewed to determine the number of sputum exams needed to establish the diagnosis. Clinical and radiographic factors were also obtained. The number of extra-cases diagnosed by a third sputum exam and the cumulative sensitivities were estimated Results: 182 patients with active pulmonary TB were identified as inpatients during the study period. 140 were diagnosed using serial sputum examinations, 35 using bronchoscopy and 7 with lung biopsy. Out of the 140 patients diagnosed with sputum examinations, 7 were excluded. 133 patients were included. 98 patients were smear positive TB. Out of these, 85 were identified using 1 sputum sample, 11 extra patients were identified with a second sputum sample and 2 extra patient were identified with a third sputum sample. Cumulative sensitivities for serial sputum examinations were: first sputum 85/133 (63.9%), second sputum 96/133 (72.2%), third sputum 98/133 (73.7%) Conclusion: The yield of a third sputum exam is very low; only two extra cases were diagnosed in a 10 year period.