

Short Communication

Impact of directly observed sputum collection on sputum culture contamination rates

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Background

TB sputum culture contamination is relatively common despite strong lab decontamination procedures. The sources of sputum contamination include: normal flora, level of oral hygiene, lab methodology and techniques of sputum collection. The techniques of sputum collection may include but not limited to specific instructions by health workers to patients about collecting sputum^{2, 3}. Whether the patients understand and put the instructions in practice may not always be followed. In previous studies done on site at the mulago TB project clinic, contamination rates have gone as high as 30%. In one study: impact of mouth rinsing on sputum culture contamination rates¹, the contamination rates were reduced from as high as 22% to as low as 7% with the intervention of mouth rising. It was then reported that patients sometimes carry sputum from home using unsterile containers which sputum is then transferred to the clinic containers without the knowledge of the clinic staff. The feeling was that this could be another source of contamination. It was hypothesized that by directly observing sputum collection, we can further reduce the sputum culture contamination rates.

Objective

To determine the effect of directly observed sputum collection on sputum culture contamination rates.

Methods

With standardized lab decontamination procedures and sputum collection techniques, we collected 6000 baseline and non-baseline sputum samples over a period of 46 months. The initial twenty four months had no directly observed sputum collection but patients were given standardized instructions on how to collect sputum. Sputum cultures were done on MGIT and 7H10. The subsequent 22 months had the intervention procedure in which patients were directly observed while collecting sputum following the standardized instructions².

Results

For all samples collected in the initial twenty four months in which there was no directly observed sputum collection: the median positivity rate was 17.55% for baseline and 26.7 % for non-baseline samples. The median contamination rate for both media combined was 4.2% for baseline and 9.02% for non-baseline where as for the interventional arm: Median positivity rates were 98.85% for baseline and 31.45% for non-baseline. Median contamination rates were: 0% for baseline (p -value=0.0005) and 14.15% for non-baseline (p =0.8419). Overall for baseline and non-baseline combined on both media, the pre-intervention median contamination rate was 7.4% where as the interventional contamination rate was 6.0 % (p =0.68).

Conclusion

Directly observed sputum collection under standardized instructions significantly reduces the

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culture contamination rates for baseline (diagnostic) samples but does not significantly reduce rates of sputum culture contamination for non-baseline(follow up) samples.

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References

1. Muzanye G, Karen M, Mayanja H, John J et al: Impact of mouth rinsing on sputum culture contamination rates. *Afr Health Sci.* 2009 Sep; 9 (3):200 - 205

2. Alisjahbana B, van Crevel R, Danusantoso H, Gartinah T, Soemantri E S, Nelwan RH, et al. Better patient instruction for sputum sampling can improve microscopic tuberculosis diagnosis. *Int J Tuberc Lung Dis* 2005; 9:814-817.

3. Khan MS, Dar O, Sismanidis C, Shah K, Godfrey-Faussett P. Improvement of tuberculosis case detection and reduction of discrepancies between men and women by simple sputum-submission instructions: a pragmatic randomized controlled trial. *Lancet* 2007; 369:1955-1960.