



Increased Sodium Hydroxide Concentration and it's Potential Impact on TB Recovery

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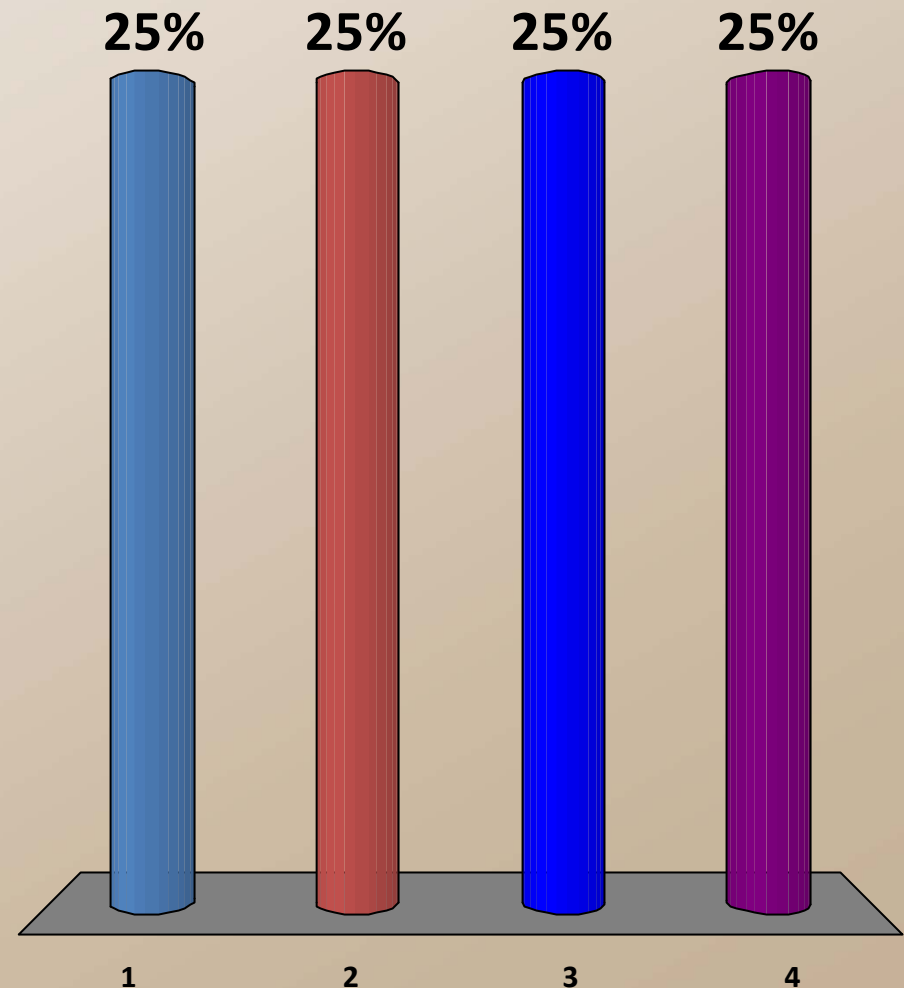
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AFB culture contamination rates should be kept between?

1. 1-2%
2. 2-5%
3. 5-10%
4. 10-15%





TB Case Overview

- Patient X
 - First AFB culture sent to the State Hygienic Laboratory (SHL) from **Hospital A** on 2/4 was negative for acid fast bacillus after three weeks
 - Two TBNAATs sent to the State Hygienic Laboratory (SHL) from **Hospital B** on 2/7 (smear negative) and 2/8 (smear positive 2+) and 2/11 (smear negative)
 - 2/7 NAAT = MTB Not Detected
 - 2/8 NAAT = MTB Detected/Rifampin Resistance Not Detected
 - 2/11 NAAT = MTB Detected/Rifampin Resistance Not Detected



TB Case Overview

- Hospital B
 - SHL received a call from doctor at Hospital B asking if they could recollect samples and send to SHL for culture (No growth on NAAT cultures)
 - Culture collected on 4/29, 4/30 and 5/1 then sent to SHL
 - All three cultures end up as “No Acid Fast Bacillus Detected”
 - None of the three cultures from Hospital B (NAAT cultures) ever grow

Investigation

- Cross-Contamination?
 - Referred Processed Sputums (processed at submitting facility)
 - Not potential for cross-contamination at SHL

Worksheet | Run Information | Comment | Completed: -- :

Well #	Lab #	Name	Status	Test & Method	Specimen Type	SPC	M.Tb Complex DI
1	[REDACTED]	[REDACTED]	Released	tbnaat1, naa	Bronchial Alveolar Lavage	Pass	Not Detected
2	[REDACTED]	[REDACTED]	Released	tbnaat1, naa	Sputum	Pass	Detected
3	[REDACTED]	[REDACTED]	Released	tbnaat1, naa	Sputum	Pass	Detected
4	[REDACTED]	[REDACTED]	Released	tbnaat1, naa	Sputum	Pass	Not Detected

Edit Multiple



Investigation

- Interfering Substances?
 - Per the package insert
 - Lidocaine
 - Mucin
 - Ethambutol
 - Guaifenesin
 - Phenylphrine
 - Tea Tree Oil
 - *Mycobacterium scrofulaceum*



Investigation

- Contacted Hospital B
- Cross-Contamination – no other positive samples processed with NAAT samples
- Decontamination Method
- Original NAAT submissions had been collected before the patient started antibiotic therapy



Resolution

- Hospital B reveals they recently increased their concentration of NaOH to 8%
- Why?
 - Dealing with an increase in contamination rate
 - Hospital B has a large cystic fibrosis patient population



CLSI Recommendations

- Specimen Contamination Rate
 - Goal is b/n 2% and 5%
- Hospital B Specimen Contamination Rate
- 1% and 2%

Amount of NaOH in 100 mL water when reagent added to equal volume	% NaOH	%NaOH when added to equal volume Na citrate	Final concentration NaOH specimen
4 g	4%	2%	1%
5 g	5%	2.5%	1.25%
6 g	6%	3%	1.5%
8 g	8%	4%	2%*



CLSI Recommendations

- Important Note
 - 2% NaOH (final concentration) can be lethal to mycobacteria
 - Especially in smear negative samples
- Laboratories strongly encouraged to examine and correct problems in clinical and laboratory operations first



Laboratory Operations

- Lack of appropriate collection instructions for patients
- Lack of timely refrigeration during hold-times and transport
- Prelaboratory processing
- SHL practices
 - We consistently struggle with 10% liquid culture contamination rates
 - SHL splits samples if they require decontamination and are over 10 ml
 - New process – data pending



Cystic Fibrosis Specimen Recovery

- *Pseudomonas aeruginosa*
- Goal is highest possible recovery of NTM
- NALC-NaOH-oxalic method
- Chlorhexidine decontamination method
- Other Methods that have worked
- Benzalkonium, chloride-trisodium phosphate, oxalic acid and cetylpyridinium chloride

