

SPUTUM GRAM STAIN GRADING CRITERIA

Purpose: This procedure outlines the procedure for the evaluation of sputum and lower respiratory specimens utilized to determine specimen quality and suitability for culture.

Scope: This procedure is to be used with the M403 Microbiology Augmentation set.

Procedure:

1 Purulent portions of the specimen should be selected for Gram stain preparation.
2. The slide should be stained according to Gram stain SOP.
3. Using the low power objective (10X), evaluate the specimen for the presence of squamous epithelial cells and PMNs. The quality of the specimen is reported as “GOOD” or “UNSATISFACTORY” and is determined by estimating the average number of cells per LOW POWER FIELD only. The specimen is scored as follows: <div style="margin-left: 40px;"> 10-25 PMNs.....+1 Greater than 25 PMNs.....+2 *Mucous threads.....+ 1 *Add only if >25 PMNs 10-25 squamous epithelial cells.....-1 Greater than 25 squamous epithelial cells.....-2 </div>
4. A score of +1, +2 or +3 is adequate for culture. (Write “Good Specimen” on Gram stain report form.) A score of 0, -1 or -2 is inadequate. (Write “Unsatisfactory Specimen” on Gram stain report form.)
5. When a specimen is unsatisfactory, report immediately so the ward receives notification of the result and can resubmit a new specimen in a timely fashion.
6. NOTE: Certain lower respiratory tract specimens, those from patients who may be allergic, immunosuppressed or leukemic, and transtracheal or intralaryngeal aspirates, may be processed after Gram stain evaluation if few (<10/LPF) squamous epithelial cells are noted and few or no PMNs are observed.
7. When a specimen is good, the organisms present must be evaluated further using the following criteria for quantitation of cells and microorganisms using the oil immersion lens: <div style="margin-left: 40px;"> 0 (NONE).....0 per 15-20 fields examined Rare to occasional.....1 per 10-20 fields examined 1+.....1-5 per 5-10 fields examined 2+.....1-20 per nearly all fields examined 3+.....20-50 per nearly all fields examined 4+.....50 per nearly all fields examined </div>
Quantitate cells (PMNs, mononuclears, epithelial cells) as 1+, 2+, 3+, 4+

Quantitate bacteria (microorganisms) as 1+, 2+, 3+, 4+ only when associated with pulmonary material areas (PMNs, mucous) of the smear. Report predominant morphology present. If mixed flora is observed, report as "Mixed oral pharyngeal flora. No predominant organism associated with pulmonary material."

References:

Barlett, J.G., K.J. Ryan, T.F. Smith and W.R. Wilson. 1987. Cumitech 7A, Laboratory Diagnosis of Lower Respiratory Tract Infections. Coordinating editor J.A. Washington II. American Society for Microbiology, Washington, D.C.

Isenberg, H.D., ed. Clinical Microbiology Procedures Handbook. American Society for Microbiology. 1994. 1.3.1-1.3.6.