THE GRAM STAIN LEARNING THE BASICS

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Radiology Model

Clinician visits radiology to see and "feel" the x-ray

Surgical Pathology Model

Surgeon visits surgical pathology to review the diagnosis and discuss therapeutic options

Cytology Model

Pap smears are screened and a specified group are reviewed

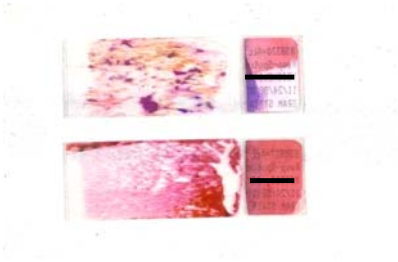
Microbiology Model

Should the Gram stain procedure be standardized?
Should important Gram stain results be reviewed?
Should important Gram stain results be viewed by the clinician?

GRAM STAIN PROCEDURAL HIGHLIGHTS

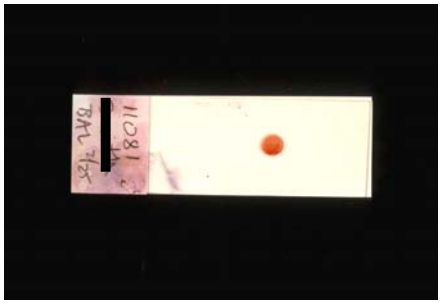
- Selecting a portion of the specimen
- Preparing the smear
- Low power (10X) examination
- High power (100X) examination
- Quantitation of cells and microorganisms
- Interpretation of morphotypes
- Minimum competency
- Slides for review

GRAM STAIN PROCEDURAL HIGHLIGHTS



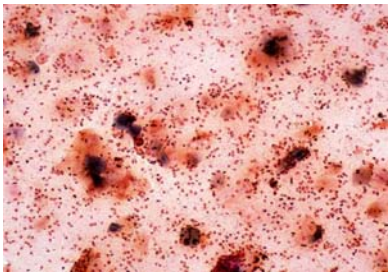
PREPARING THE SMEAR
Make a monolayer of cells

GRAM STAIN PROCEDURAL HIGHLIGHTS



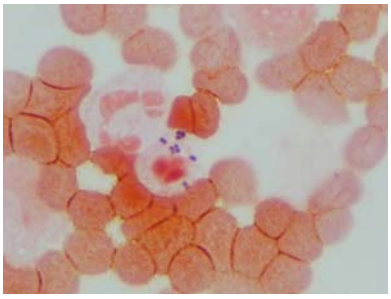
PREPARING THE SMEAR
Concentrating fluids using a cytospin

GRAM STAIN PROCEDURAL HIGHLIGHTS



LOW POWER (10X) EXAMINATION
10-20 fields, quantitate cells
select area for high power examination

GRAM STAIN PROCEDURAL HIGHLIGHTS

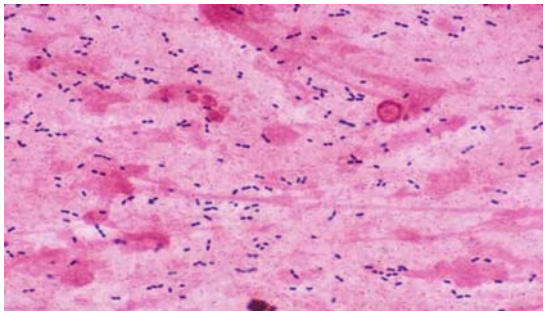


HIGH POWER (100X) EXAMINATION
20-40 fields, quantitate microorganisms

GRAM STAIN QUANTITIES

- Rare (1+)
  - Less than 10 in all fields examined
- Moderate (2+)
  - More than 10 in all fields but less than 25/field
- Many (3+)
  - More than 25 in one field

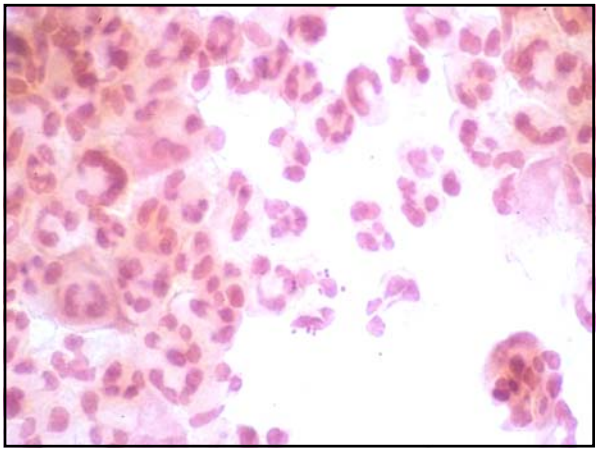
GRAM STAIN PROCEDURAL HIGHLIGHTS

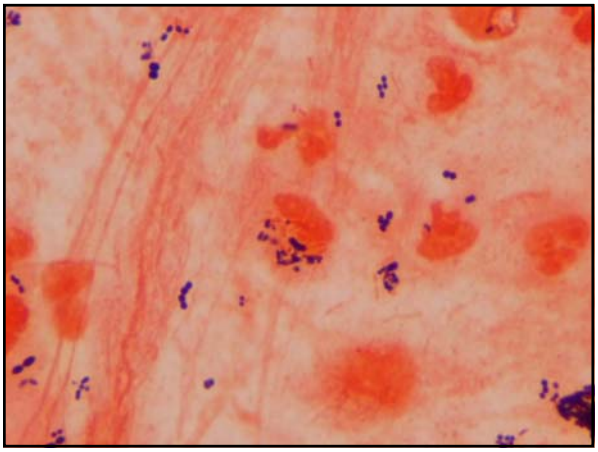


INTERPRETATION
Bacterial morphologies, interpretation based on specimen source

INTERPRET GRAM STAIN BASED ON SPECIMEN SOURCE

- **Sterile specimen source (presumed)**
  - Report PMN's
  - Report microorganisms
  - > 3 morphologically typical shapes before reporting
- **Non-Sterile specimen source**
  - Report PMN's
  - Name microorganisms only if potential pathogen
  - Quantitate and report normal flora





GRAM STAIN PROCEDURAL HIGHLIGHTS

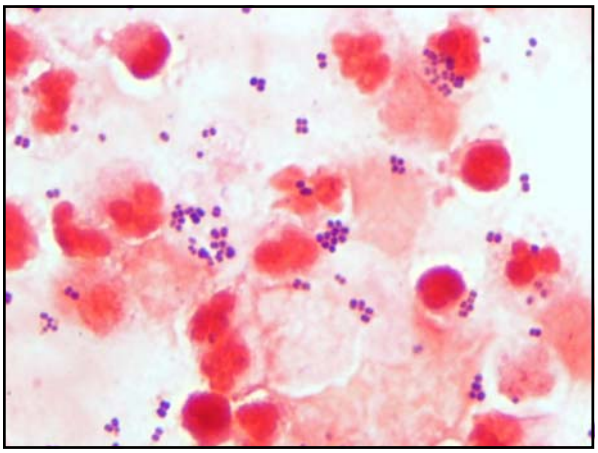
SLIDES FOR REVIEW
Requested review (technologist initiated)
Automatic review (director initiated)

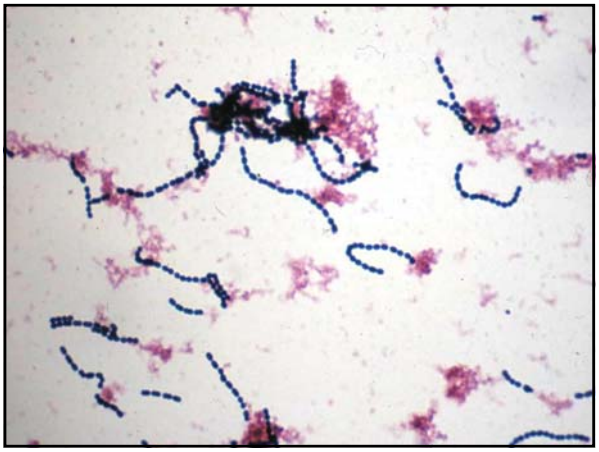
GRAM STAIN
SLIDES FOR REVIEW

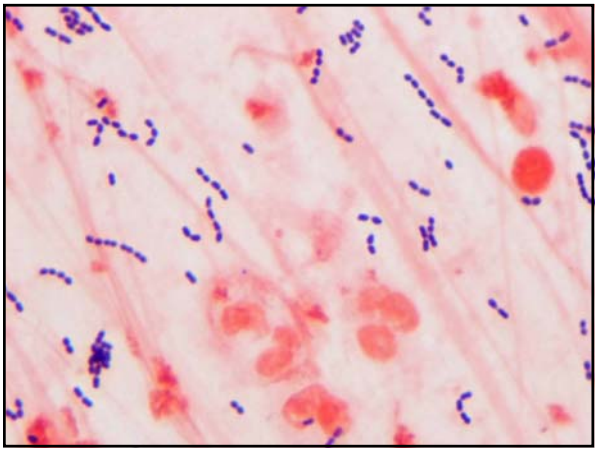
- Automatic Review (director requested)
  - Sterile source
    - Microorganism reported
    - 3-4 + PMN's with no bacteria seen
  - Non-sterile source
    - Report is diagnostic
- Requested Review (technologist requested)
  - Unsure of finding

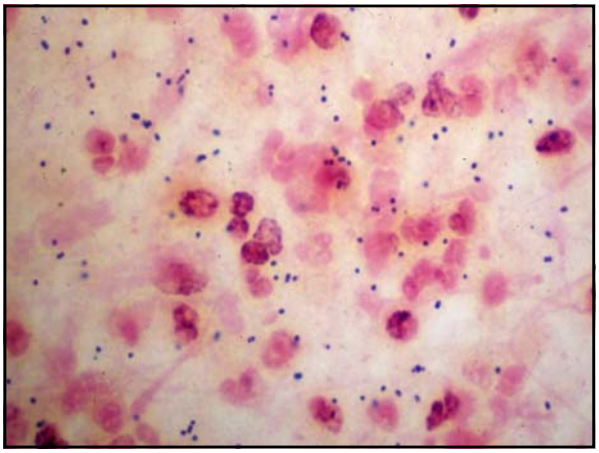
BACTERIAL MORPHOLOGIES
MINIMUM AND ADVANCED COMPETENCY

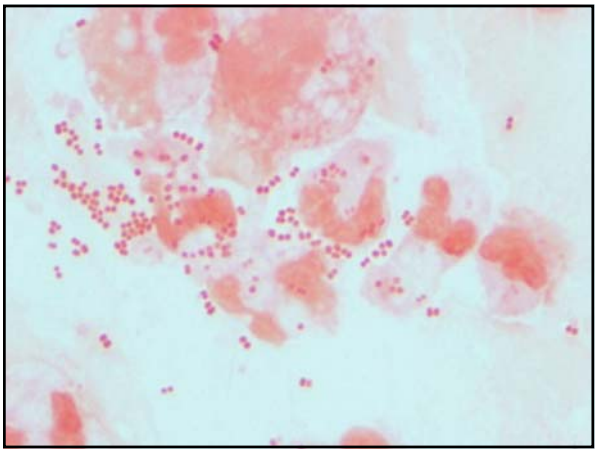
- Gram-positive cocci clusters
- Gram-positive coccci pairs/chains
- Gram-positive diplococci
- Gram-positive cocci
- Gram-negative diplococci
- Gram-negative coccobacilli
- **Gram-negative cocci tiny**
- Gram-negative rod
- **Gram-negative rod thick**
- **Gram-negative rod thin**
- **Gram-negative diplobacilli**
- **Gram-negative rod fusiform**
- Gram-positive rod
- **Gram-positive rod diphtheroid**
- **Gram-positive rod boxcar**
- **Gram-positive rod with endospores**
- Gram-positive rod filamentous/branching
- Yeast cells
- Yeast cells with pseudohyphae
- **Hyphae septate**
- **Hyphae nonseptate**

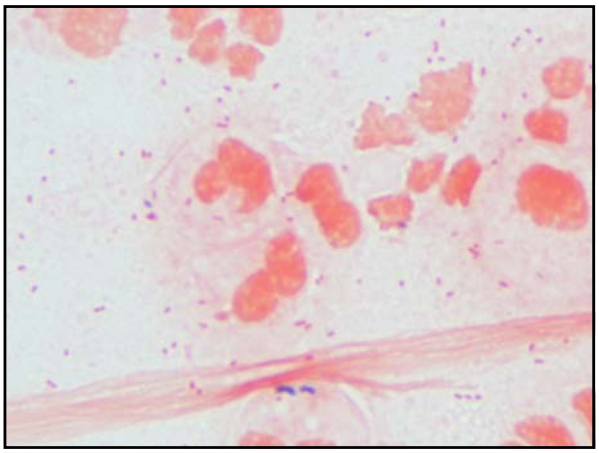


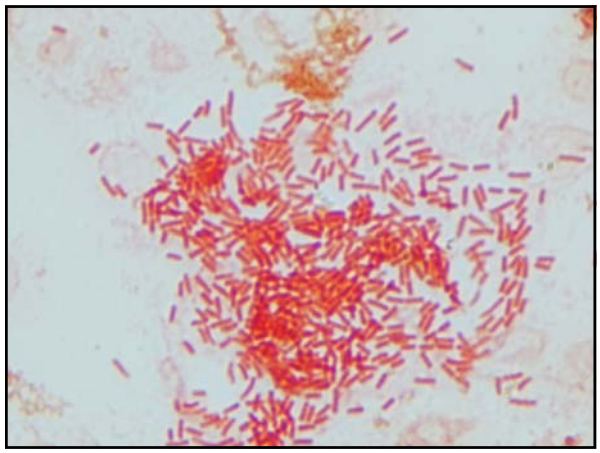


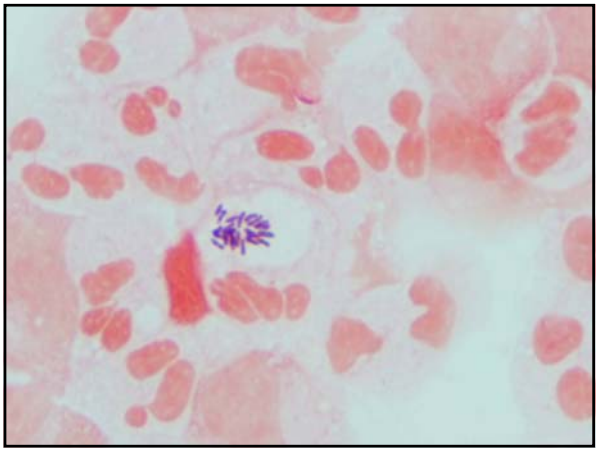


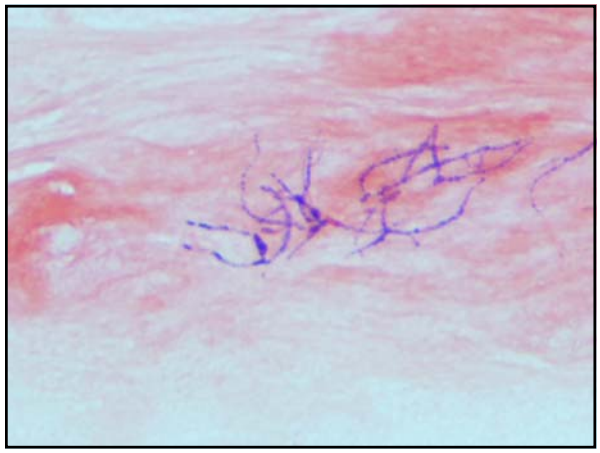


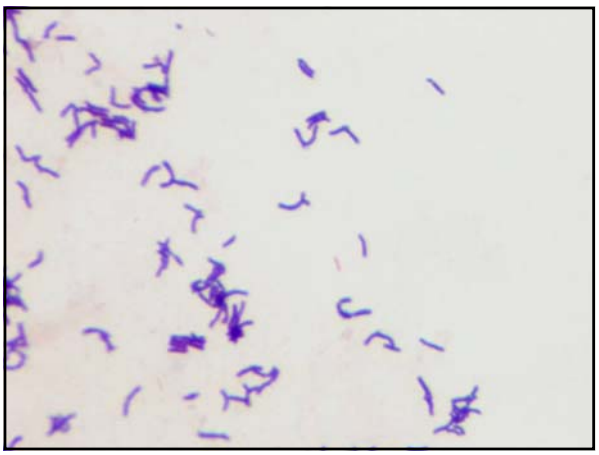


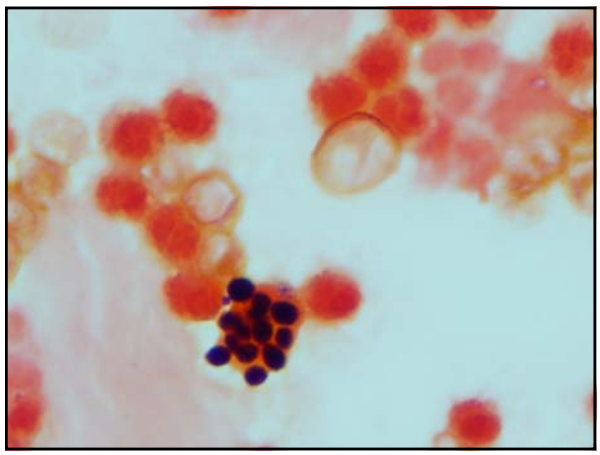


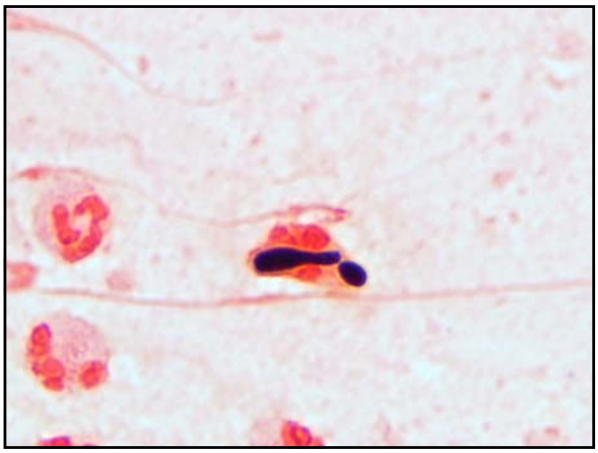












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