Case 1: School Sores

Microbiology Laboratory questions

the patient Stephanie O. Age: 6



the red sores around her nose and mouth are characteristic of a common bacterial skin infection: Impetigo

**Bullous Impetigo** 

2 clinical presentations

Non Bullous

(Impetigo Contagiosa)

the clinical presentation of the patient most closely resembles Impetigo Contagiosa

What samples are taken for

The physician may take a **swab** sample of the infected area

Swabbing at the center of the rash will prevent collection of

Samples of the pus can be collected through aspirations normal microflora on the skin / using a sterile syringe and needle

lab testing? Sow important is the

Microbiology Laboratory in the diagnosis of this disease?

Usually, a physical examination of the sores by the physician is enough to diagnose impetigo.

The lab results allow the selection of the most effective course of treatment by identifying the etiologic agent and its antibiotic susceptibility.  $\mathcal{M}$  hat are the most common bacterial pathogens associated with this infectious scenario?

## taphylococcus aureus

# Streptococcus pyogenes

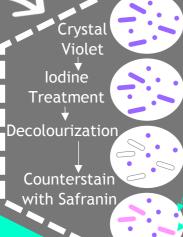


- facultative anaerobes

# Laboratory Tests & Expected Results



S. aureus: Gram+ cocci clusters S. pyogenes: Gram+ cocci chains



S. aureus: Coagulase (+) S. pyogenes: Coagulase (-

# Bacitracin Susceptibility

Test

A zone of inhibition around the bacitracin infused disc indicate

sensitivity

S. aureus: **PYR** (-) S. pyogenes:

**PYR** (+)

### Mannitol Salt Agar (MSA) Test

High salt (7.5% NaCl) concentration selects halotolerant organisms

Catalase Test Detects the presence of the enzyme catalase

rxn: H2O2->H2O+O2 (+)result: observe O2 bubbles

Coagulase Test Detects the presence

of the enzyme coagulase

(+)result: observe clumping

#### Test of

Agglutination Latex particles coated in IgG

will agglutinate with protein A if it is present on the cell S. aureus: (+)test

S. pyogenes: (-)test

# PYR Test

Detects the presence of the enzyme pyrrolidonyl arylamidase

(+)result: observe production of red colour

grow and ferment nannitol whicl changes the media colour to yellow

S. aureus:

Catalase (+) S. pyogenes: Catalase (-)

DNase Test Detects the presence of the enzyme DNase

The media contains DNA nolecules and methyl green, a cation that binds to the (-) charged DNA

### Lancefield Test

Lancefield group solutions are mixed with bacterial sample. Antigens present will agglutinate.

S. pyogenes: (+)test Agglutinate with A group

S. aureus: (-)test

#### Hemolysis Test

Observe the hemolysis pattern on blood agar

B-hemolysis (complete) α-hemolysis (partial) γ-hemolysis (no hemolytic activity)

S. aureus: **B-hemolysis** S. pyogenes: **B-hemolysis** 



If DNase is present, DNA is lysed and methyl green can no longer bind which results in colourless zones around the colonies.