

**Lab Location:** GEC, SGMC & WOMC  
**Department:** Core Lab

**Date Distributed:** 6/4/2021  
**Due Date:** 6/30/2021

DESCRIPTION

**Purpose:**

This education update relates to a CAP failure for the Gram Stain survey D5-A 2021

**Description:**

Review the slide, our morphology result, CAP participant results and discussion concerning it.

Document your compliance with this training update by taking the quiz in the MTS system.

**D5-04 slide** – morphology was resulted as ‘Cocci in clusters’ by one of our labs

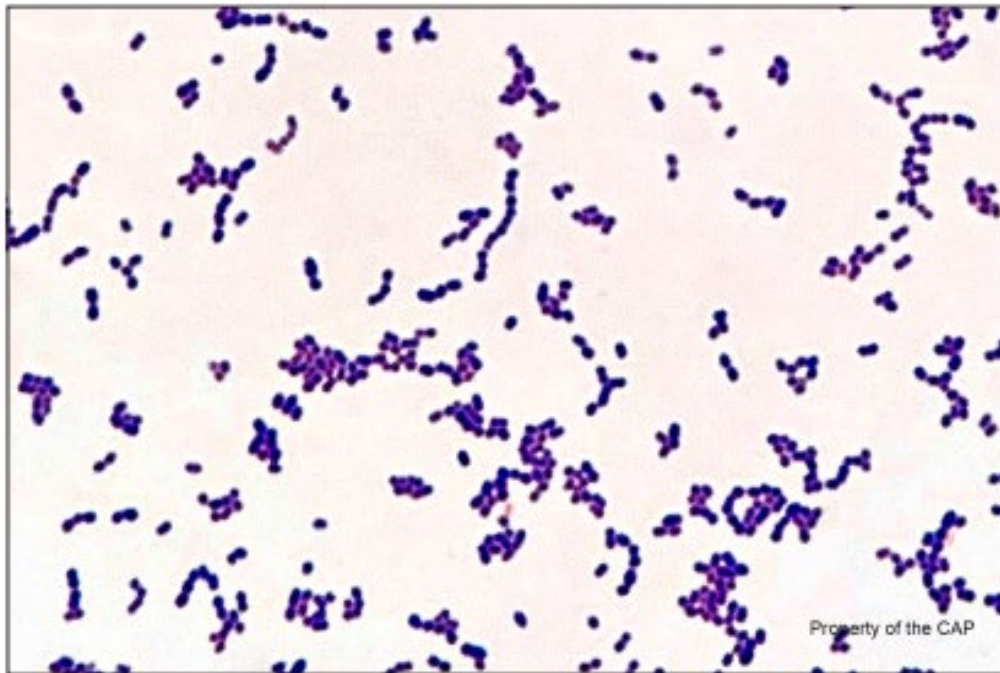


Figure 4

D5-04 contained *Streptococcus anginosus*, which stained as gram-positive cocci and cocci in chains. Both long and short chains are present in this figure as well as cluster-like arrangements. Polymorphonuclear leukocytes were absent.

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## CAP Participant Results and Discussion

### D5-04

**Discussion** - This was a simulated liver abscess specimen from a 68-year-old diabetic male with poor dentition presenting to the emergency department with fever and pain in the right upper quadrant. This slide contained *Streptococcus anginosus*, which stained as gram-positive cocci and cocci in chains, some of which clumped together due to the thickness of preparation and tendency of *S. anginosus* group to give the appearance of clusters. Consensus was not met for morphology among participants. This was a challenging specimen in which both chain and cluster arrangements were present, but the presence of clear chains with 4 or more cocci in addition to the specimen source and clinical history, should prompt a response of gram-positive cocci in chains or, more conservatively, gram-positive cocci without additional modifiers. Polymorphonuclear leukocytes were absent.

Stain Reaction	Referees LABS	93 %	Participants LABS	1986 %
Gram-negative	6	6.5	111	5.6
Gram-positive	87	93.5	1875	94.4
<b>Morphology</b>				
Cocci	45	48.4	811	40.9
Cocci in chains	34	36.6	740	37.3
Cocci in clusters	12	12.9	383	19.3
Coccobacilli	2	2.1	22	1.1
Diplococci	-	-	22	1.1
Bacilli	-	-	7	0.3
<b>Leukocytes</b>				
Absent	92	98.9	1930	98.5
Present	1	1.1	19	1.0
Not applicable	-	-	11	0.5

### Ron Master's assessment

Staphylococci never form chains, they only appear as single, pairs, tetrads and clusters (mostly clusters).

Streptococci may appear as singles, pairs, and chains. If there are many organisms (as in this slide), there may be some clumps or clusters, but as long as you see chains, it must GPC in chains. You never see chains with staphylococci. Simply, if you see chains, it is GPC in chains no matter what else you see.