

## Please read this bit first

The HPCSA and the Med Tech Society have confirmed that this clinical case study, plus your routine review of your EQA reports from Thistle QA, should be documented as a “Journal Club” activity. This means that you must record those attending for CEU purposes. Thistle will **not** issue a certificate to cover these activities, nor send out “correct” answers to the CEU questions at the end of this case study.

The Thistle QA CEU No is: **MT00025**.

Each attendee should claim **THREE** CEU points for completing this Quality Control Journal Club exercise, and retain a copy of the relevant Thistle QA Participation Certificate as proof of registration on a Thistle QA EQA.

## Cycle 22 Organism 3:

### **Streptococcus pyogenes**

Beta-haemolytic, bacitracin-susceptible, PYR-positive, large colony-forming streptococci with Lancefield's Group A antigen are included in the species *Streptococcus pyogenes*. *S. pyogenes* is fermentative, catalase negative, facultative anaerobic, and requires enriched medium containing blood in order to grow. They exhibit beta-haemolysis on blood agar.

The numerous virulence factors of *S. pyogenes* (M protein, encoded by the *emm* genes; pyrogenic exotoxins, encoded by the *spe* genes; hyaluronic acid capsule; haemolysins; and other factors) allow it to cause a wide array of serious infections including pharyngitis, respiratory infections, skin (impetigo and erysipelas) and soft tissue infections, endocarditis, meningitis, puerperal sepsis, and arthritis. Infection with toxin-producing strains can result in scarlet fever or more or more serious toxic shock-like symptoms.

*S. pyogenes* pharyngitis is characterized by pharyngeal pain, swelling, and erythema accompanied by fever and anterior cervical adenopathy. Suppurative sequelae of streptococcal pharyngitis may ensue from spread of infection to contiguous tissue or by bacteraemic dissemination. Nonsuppurative sequelae include rheumatic fever and acute glomerulonephritis. Either of these conditions may follow pharyngitis.

Penicillin is still effective in the treatment of *S. pyogenes* infections. It is important to identify and treat these infections in order to prevent sequelae. Other beta-lactam antibiotics can be used as well as the macrolides. An increase in erythromycin resistance in *S. pyogenes* was noted in the 1990s in numerous locations worldwide. High rates of resistance (20 to 40% of isolates tested) have been documented in various geographical locations. Penicillin treatment failures have been ascribed to tolerance. Another possible explanation for treatment failures, especially in pharyngitis, is the presence of beta-lactamase-producing bacteria at the site of infection, or poor patient compliance with dosing regimens.

## **Questions**

1. How will you identify a *S. pyogenes*?
2. What types of infections are caused by *S. pyogenes*?
3. Why is it important to treat *S. pyogenes* infections?