

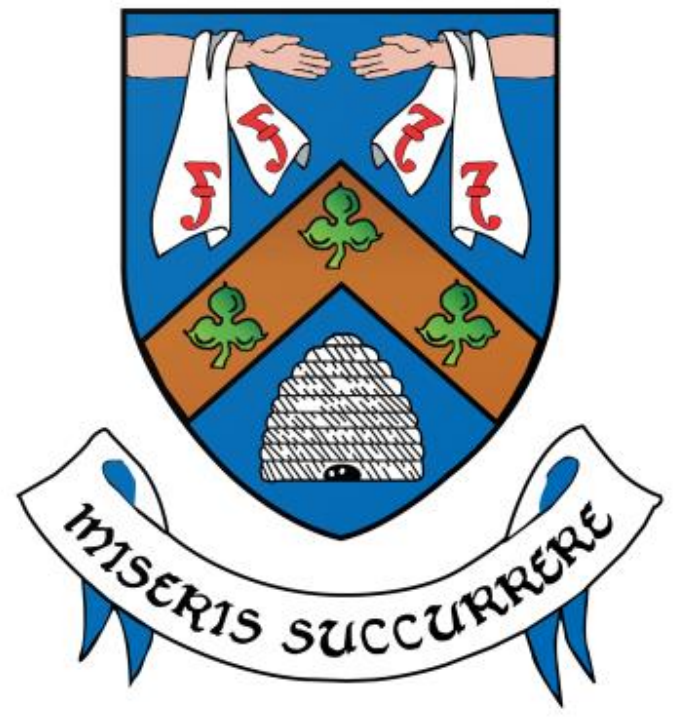
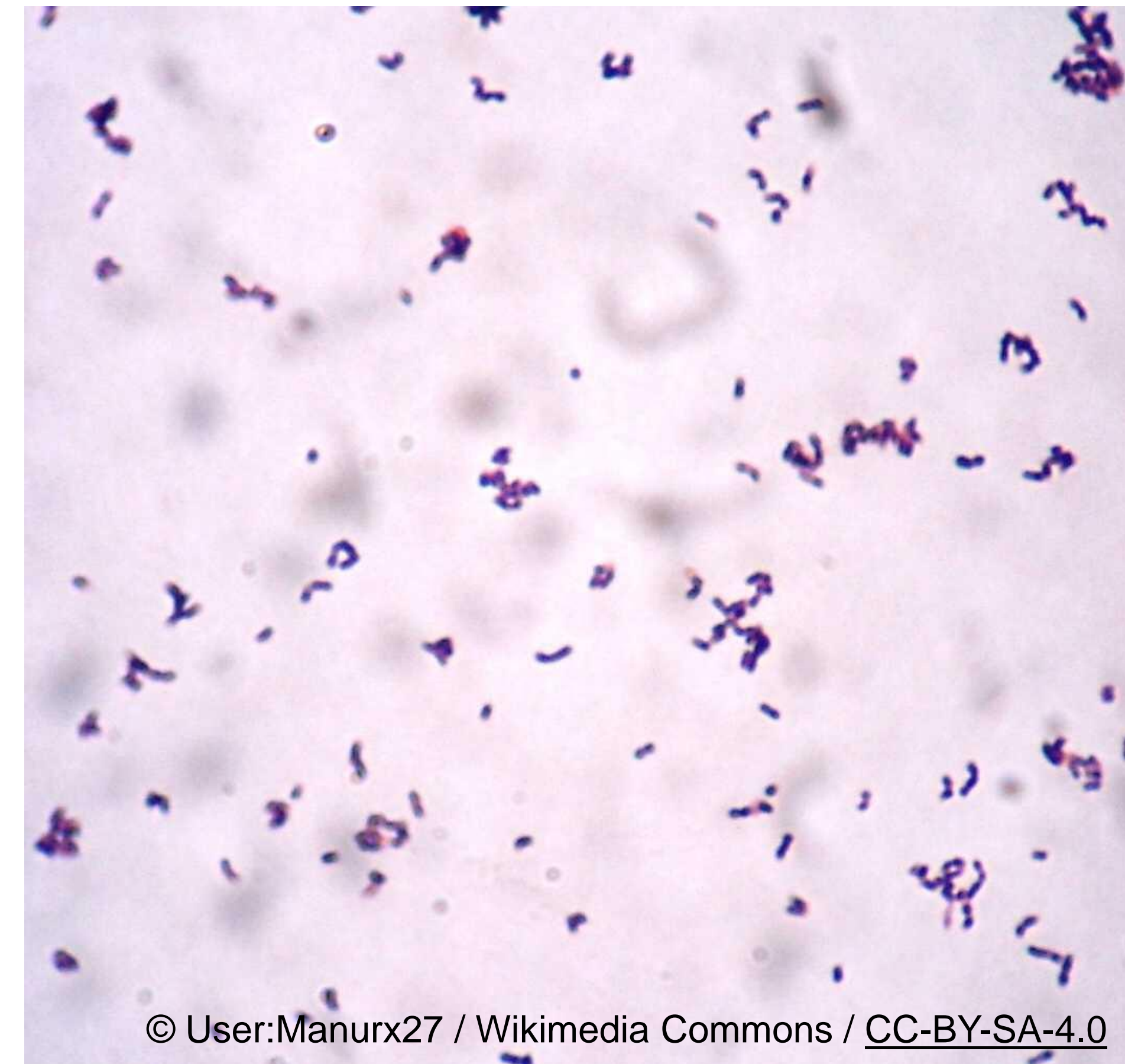
# *Actinotignum schaalii* bacteraemia in a young, immunocompetent male with a urological condition

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## Background

- *Actinotignum schaalii*, a Gram-positive coccoid rod, is an under-identified pathogen in humans, most commonly causing urinary tract infection (UTI)<sup>1,2</sup>
- It is underestimated in this context as it grows slowly (5 days) on enriched blood agar media in 5% carbon dioxide or anaerobic atmosphere, and cannot be identified using phenotypic methods such as Analytical profile index or standard biochemical assays<sup>1,2</sup>
- Identification using molecular methods, matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF) or 16s rDNA sequencing has increased rates of detection in recent years<sup>1</sup>



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Table 1: Investigations

Investigation	Result
Haemoglobin	14.4 g/dL
Platelets	294 10 <sup>9</sup> /L
White blood cells	25.18 10 <sup>9</sup> /L
Neutrophils	22.29 10 <sup>9</sup> /L
Lymphocytes	0.65 10 <sup>9</sup> /L
Creatinine	111 umol/L
Alanine transaminase	28 IU/L
C-reactive protein	32 mg/L
SARS-CoV-2 RNA	Detected
Catheter specimen urine	>100/uL WBC <i>A schaalii</i> > 100x10 <sup>6</sup> /L
Blood cultures Day 1	<i>A schaalii</i> at 29 hours
Blood cultures Day 3	Sterile
HIV-1 Ag/Ab	Negative
US Kidneys	Non-obstructive nephrolithiasis

Table 2: Susceptibilities

Antimicrobial	MIC (mg/L)
Clindamycin	0.03
Co-amoxiclav	0.008
Meropenem	0.03
Penicillin	0.008
Piperacillin/tazobactam	<0.008
Vancomycin	0.25
Ceftriaxone	0.016

## Key learning points

- Gram-positive coccoid rod
- Phylogenetically related to Actinomyces
- Commensal of the genitourinary tract
- Fastidious facultative anaerobe, grows slowly (5 days) on enriched blood agar media in 5% CO<sub>2</sub> or anaerobic atmosphere
- Identification often requires the use of molecular methods
- Typically causes UTI in the elderly and in those with underlying urologic conditions
- Reported to cause bacteremia and associated complications including endocarditis and osteomyelitis
- Typically resistant to trimethoprim-sulfamethoxazole, and fluoroquinolones

## Case description

- We report a case of *A schaalii* bacteraemia in a 22-year-old gentleman with a background of a urethral stricture following a circumcision for phimosis, managed with intermittent self-catheterisation for the last two years
- He took no regular medications, and had no known drug allergies
- He worked in Dublin airport, and was a non-smoker
- He presented to the emergency department with a five day history of chills and headaches, and was pyrexial
- Point-of-care testing for SARS-CoV-2 was positive, and he was discharged home
- He was re-called to the hospital when blood cultures were reported as containing Gram-positive bacilli in both bottles at 29 hours, subsequently *A schaalii* was identified on MALDI-TOF
- Following identification in blood, *A schaalii* was cultured from urine under anaerobic conditions on enriched blood agar
- A full list of investigations are included in Table 1
- He received piperacillin/tazobactam 4.5g TDS for three days as an inpatient, followed by ceftriaxone 2g OD via the Outpatient Parenteral Antimicrobial Treatment (OPAT) service to complete two weeks of therapy
- Full susceptibilities were obtained from the UK Anaerobe Reference Unit, Cardiff and included in Table 2 – no breakpoint data is available

## Discussion

- *A schaalii* has been highlighted in population-based studies as having the potential to cause severe infection<sup>3</sup>
- Bacteraemia typically occur in elderly men with medical co-morbidities, and are associated with a high mortality, however urological conditions such as catheterisation have been implicated as a risk factor, as seen in our patient
- Reported complications of bacteraemia include: endocarditis, discitis, abscesses, pyelonephritis and Fournier gangrene<sup>1,3</sup>
- In our case, culture of the organism in urine would not have occurred without the initial molecular identification in blood - we consider the importance of identification due to resistance of *A schaalii* to trimethoprim-sulfamethoxazole and fluoroquinolones<sup>1,2</sup>, frequently used in the treatment of UTI
- We recommend a higher clinical suspicion in patients with predisposing factors and sterile pyuria, and the adjustment of culture or molecular approaches to diagnosis