

# A Provincial Retrospective Case Series on the Spread of the Emerging Pathogen *Actinotignum schaalii*

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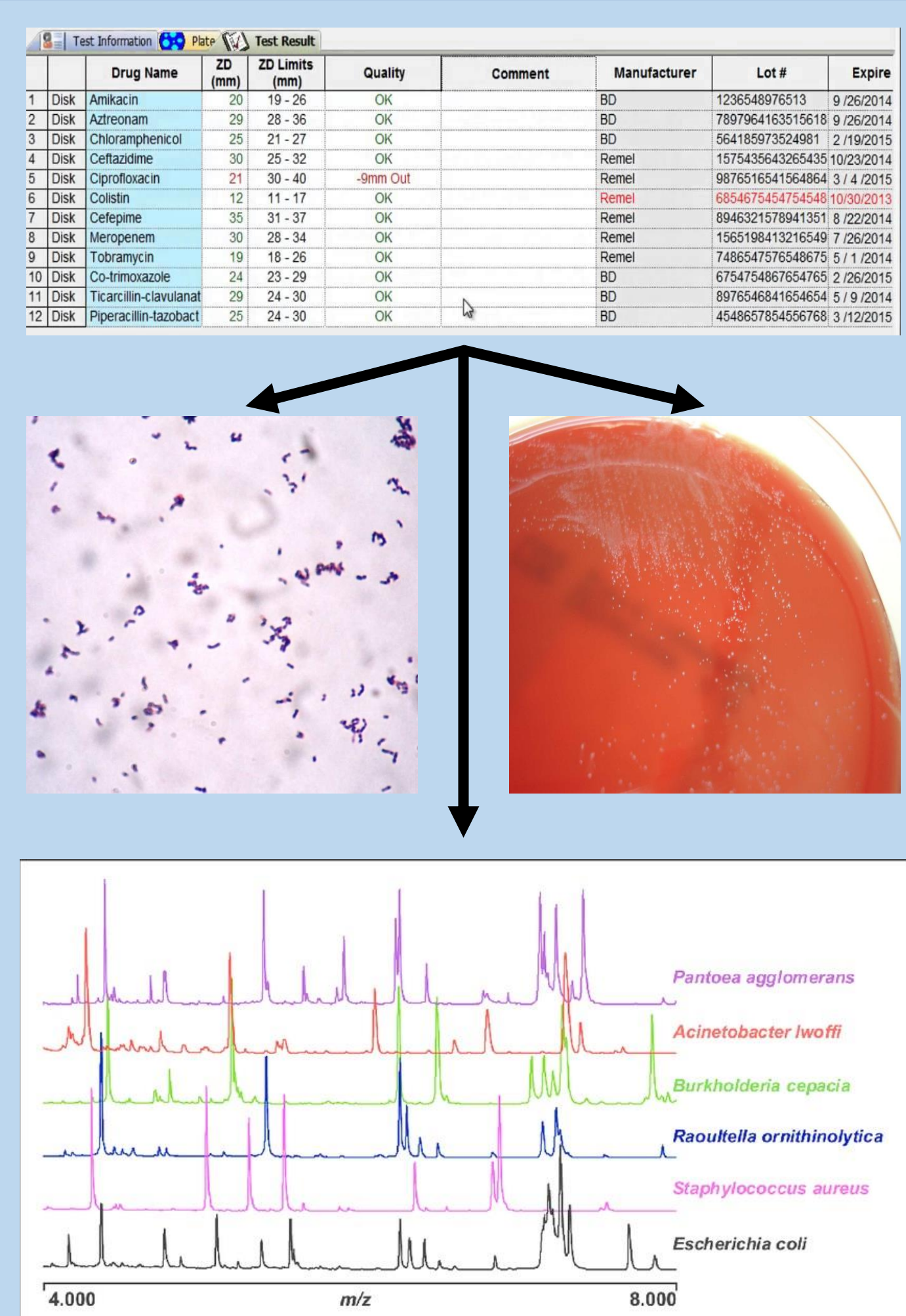


## Introduction

*Actinotignum schaalii* is an emerging, opportunistic pathogen linked with urinary tract infections and other noninfectious diseases such as prostate cancer. *A. schaalii* infections are often polymicrobial and can extend beyond the urogenital system, but its clinical significance is often underestimated. Furthermore, there is a void in the existing literature regarding its infectious manifestations, microbiological laboratory data, and antimicrobial sensitivities. Therefore, a retrospective case series on patients infected with *A. schaalii* was conducted to glean insight into the variations in presentation, sources of infection, and other microbiological parameters influencing the spread of *A. schaalii* in the province of Saskatchewan.

## Methods

- Electronic microbiology database for Saskatchewan was reviewed.
- Retrospective clinical data from January 2020 to August 2021
- Patients with positive *A. schaalii* cultures or positive results on MALDI-TOF
- Hospital in-patients
- Collected variables:
  - Demographic data
  - Site of presentation
  - Management strategies
  - Microbiological parameters
  - Antimicrobials at the time of discharge



## Results: *A. schaalii* Infections

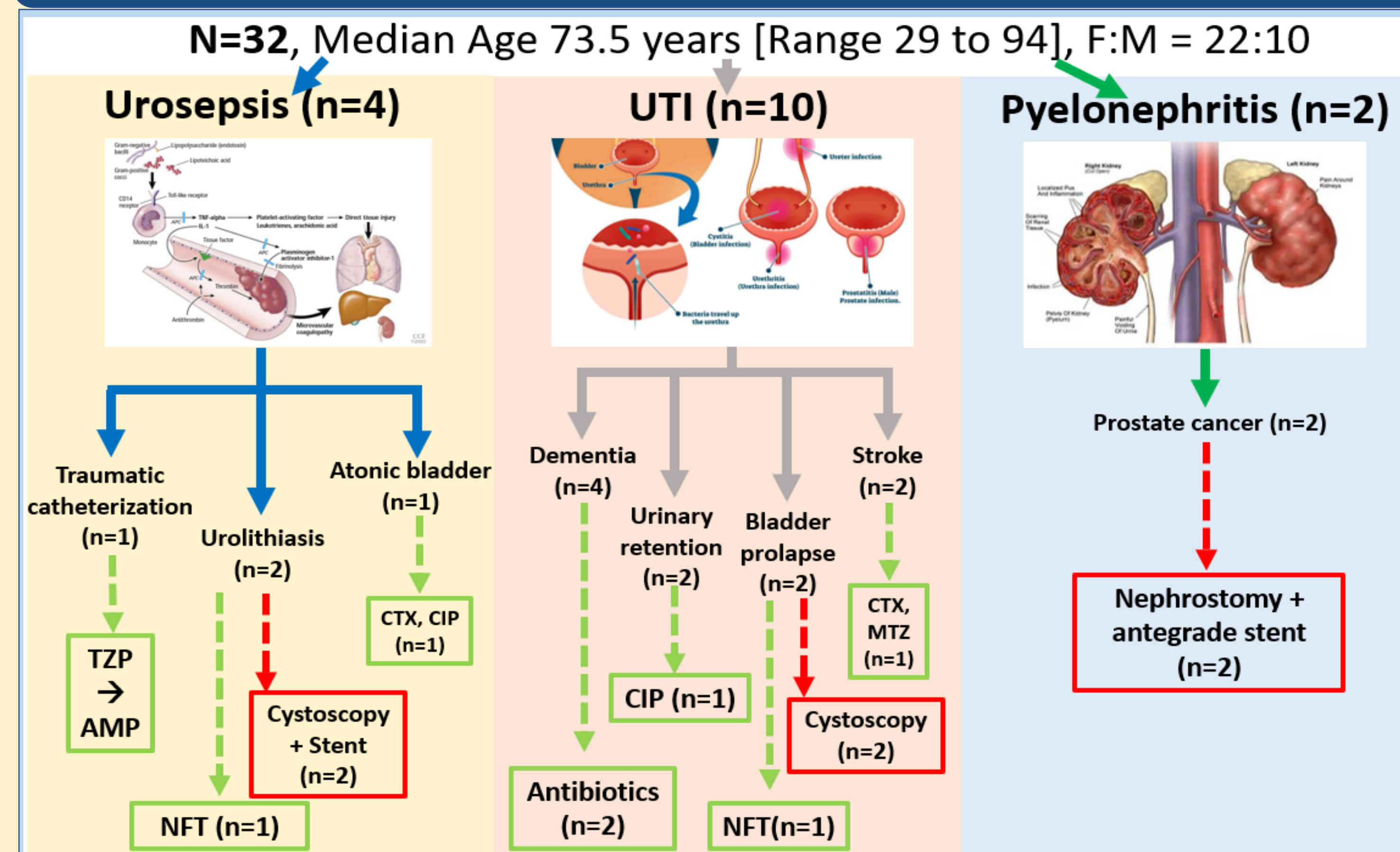


Figure 2: Summary of the urinary tract pathology, management strategy and antimicrobial choice prior to cultures. TZP: piperacillin-tazobactam, AMP: ampicillin, NFT: nitrofurantoin, CTX: ceftriaxone, CIP: ciprofloxacin, MTZ: metronidazole, →:de-escalation

## Bacterial ID & Antimicrobials

Table 1: Summary of the microbiology lab results, and antimicrobial choice after cultures

Diagnosis (n)	Culture type (n)	Organism Identity (n)	Discharge Antimicrobial (n)
Abscess (8)	Mono (2)	<i>Actinotignum schaalii</i> (2)	Metronidazole (1), Cephalexin (1)
	Poly (6)	<i>Propionibacterium avidum</i> (2), <i>Finexgoldia magna</i> (1), <i>Escherichia coli</i> (1), <i>Peptoniphilus asaccharolyticus</i> (1), <i>Klebsiella pneumoniae</i> (1), <i>Morganella morganii</i> (1), <i>Staphylococcus hominis</i> (1), <i>Streptococcus intermedius</i> (1), <i>Actinomyces neuii</i> (1), <i>Bacillus circulans</i> (1)	Clindamycin (2), Cefixime (1), TMP (1), Doxycycline (1)
Ulcer (3)	mono (1)	<i>Actinotignum schaalii</i> (1)	Cephalexin (1)
	Poly (2)	<i>Enterococcus faecalis</i> (1), <i>Staphylococcus lugdunensis</i> (1)	Clindamycin (1), Amoxicillin-clavulanate (1)
Urosepsis (4)	Mono* (1)	<i>Actinotignum schaalii</i> (2)	Ampicillin (1), Amoxicillin-clavulanate (1)
	Poly (2)	<i>Peptoniphilus asaccharolyticus</i> (1), <i>Proteus mirabilis</i> (1)	NA (2)
UTI (10)	Mono (7)	<i>Actinotignum schaalii</i> (7)	Cefuroxime (1), Amoxicillin (1), Metronidazole (2), Ciprofloxacin (1), ceftriaxone (1), Amoxicillin-clavulanate (1), NA (1)
	Poly (3)	<i>Actinotignum schaalii</i> (3), <i>Aerococcus urinae</i> (3), <i>Escherichia coli</i> (1)	Amoxicillin (1), Ciprofloxacin (1), NA (1)
	Mono (1)	<i>Actinotignum schaalii</i> (1)	NA
Pyelonephritis (2)	Poly* (1)	<i>Candida albicans</i> (1)	NA
	Mono (2)	<i>Actinotignum schaalii</i> (2)	TMP-SMX (1), NA (1)
Septic Hip Arthritis (4)	Poly (2)	<i>Finexgoldia magna</i> (1), <i>Enterococcus faecalis</i> (1)	Amoxicillin-clavulanate (1), NA (1)
	Mono (2)	<i>Actinotignum schaalii</i> (2)	NA (2)
Perforated viscus (1)	Poly (1)	<i>Bacteroides fragilis</i> (1)	Ciprofloxacin (1), Metronidazole (1)

\*Antimicrobial sensitivities were requested

## Results: *A. schaalii* Infections

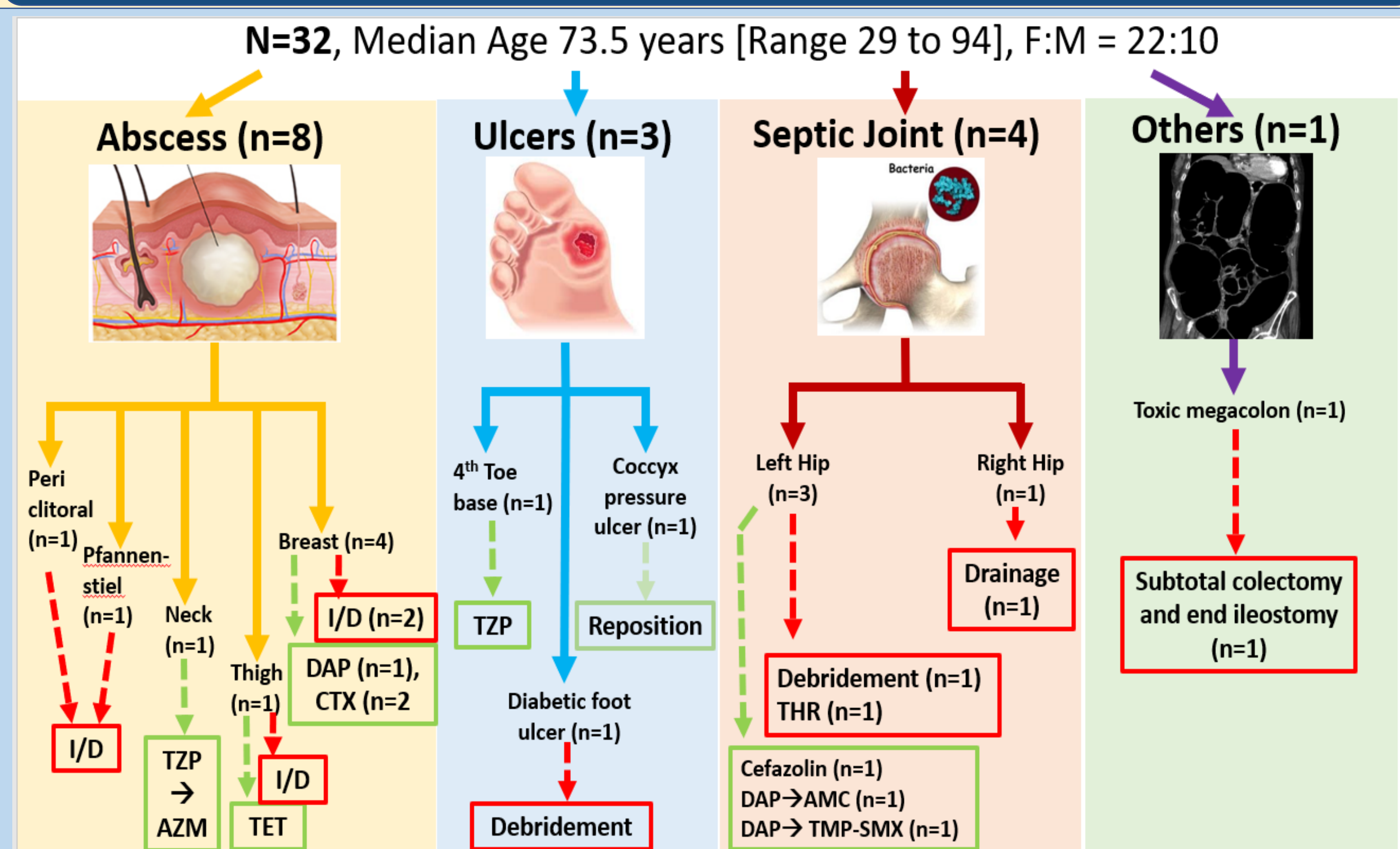


Figure 1: Summary of the clinical diagnoses, management strategy and antimicrobial choice prior to cultures. I/D: incision & drainage, TZP: piperacillin-tazobactam, AZM: azithromycin, TET: tetracycline, DAP: daptomycin, CTX: ceftriaxone, AMC: amoxiclav, →:de-escalation

## Results: Gram Stain

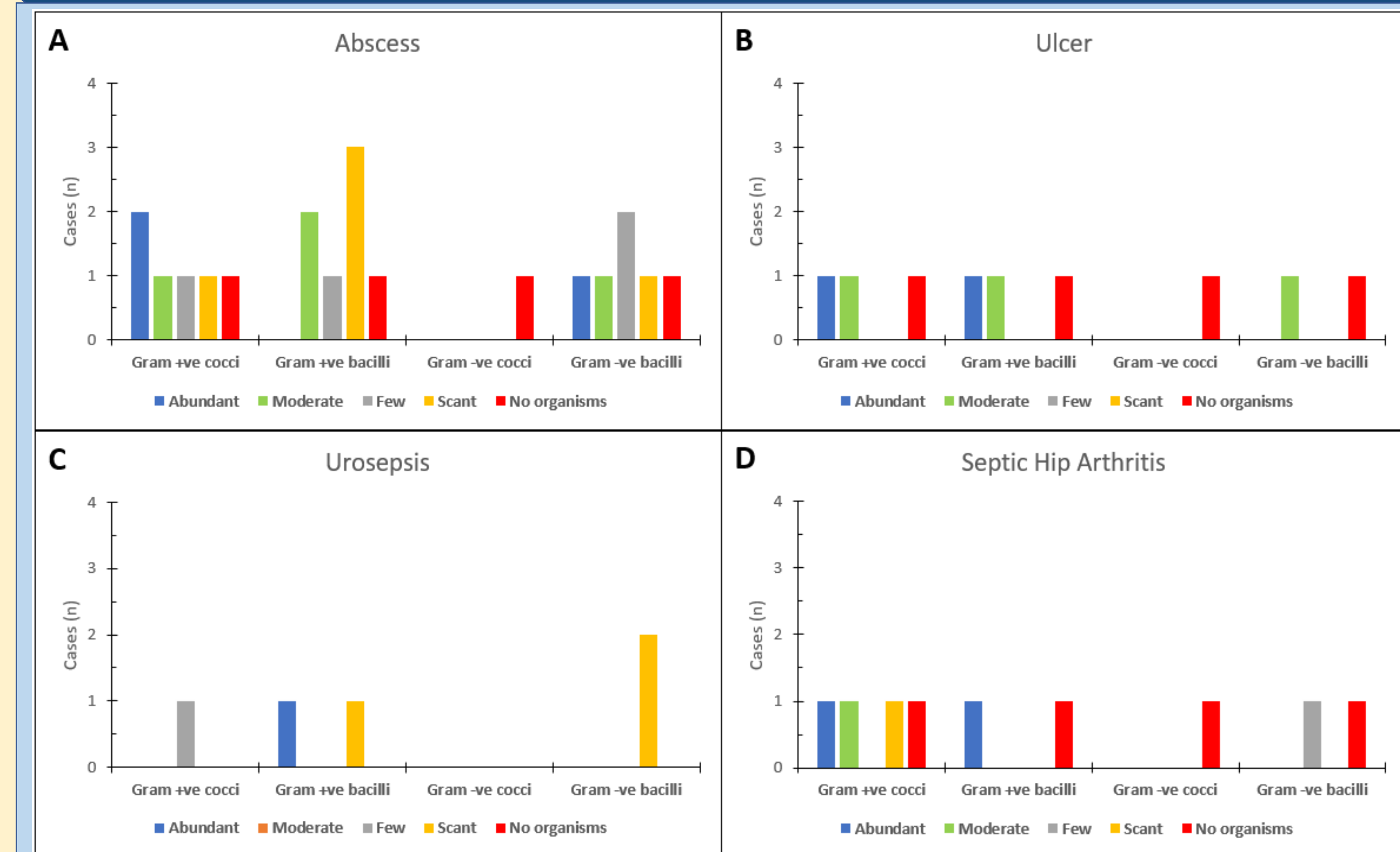


Figure 3: Summary of gram stain test for samples sent for each of the infections. A: Results for abscess samples. B: Results for ulcer samples. C: Results for urosepsis samples. D: Results for septic hip arthritis samples.

## Conclusion

- A. schaalii* infections are diverse, prominent in abscesses spanning from the neck to the thigh, septic arthritis of the Hip, and Ulcers.
- As a Uropathogen, it is prominent in UTIs and Urosepsis
- The gram stain profiles showed abundant polymorphonuclear leukocytes and majority of the cases were polymicrobial.
- A. schaalii* is a gram +ve coccobacilli.
- Most cases were gram +ve. Both cocci and bacilli have a higher distribution spanning between abundant to scant density of organisms.
- Management of *A. schaalii* is multimodal, consisting predominantly of antimicrobials and various surgical procedures depending on the site and etiology.
- The most popular antimicrobial choice at discharge in the monomicrobial and polymicrobial cohorts was metronidazole (n=3) and clindamycin (n=3), respectively. Overall, metronidazole (n=4) and amoxicillin-clavulanate (n=4) were the popular antimicrobials
- The only 2 documented cases (pyelonephritis and urosepsis) wherein a clinician requested sensitivity for *A. schaalii*. *A. schaalii* was sensitive to penicillin and Amoxicillin-clavulanate. *A. schaalii* was resistant to metronidazole and ciprofloxacin.
- A. schaalii* is not just an emerging uropathogen and its clinical significance remains undervalued.
- Although the majority of *A. schaalii* cultures are polymicrobial, clinicians should request sensitivities for *A. schaalii* so that appropriate antimicrobial coverage can be provided to manage this pathogen effectively.