

Q2 2018 Throat – Urine Culture



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Specimen 1 Urine – 78 year old Female, Nursing home, incontinence

Organisms	Extent 1	2	3	4	5	Total
943 - Aerobe found; but referred for ID	8	0	0	0	0	8
799 - Escherichia coli	0	0	4	0	0	4
993 - Growth of gram-negative organisms	4	0	0	0	0	4
811 - Klebsiella sp.; NOS	0	0	1	0	0	1
942 - Primary culture only, refer for ID	1	0	0	0	0	1
	TOTAL PARTICIPANTS					18

Flagging appears for failure to report 798, 799, 942, 943, 983, 987 or 993.

In addition to the required organism, participants in all extents may report (No additional codes)

This sample contained *Escherichia coli*.

Strong urges to urinate, and sometimes urinary incontinence can be symptoms of a urinary tract infection (UTI), as seen in this case. Quantitative urine culture of a clean-catch urine specimen obtained from this patient grew $>10^5$ CFU/ml *Escherichia coli*. *E. coli* is an organism that, in contrast to the vast majority of organisms encountered in the clinical bacteriology laboratory, can be tested and reported with minimal work-up. That is, oxidase-negative and gram-negative organisms that are spot indole-positive and β -hemolytic on blood agar can be identified as *E. coli*. Alternatively, indole-positive colonies that are nonhemolytic and lactose positive (e.g., MAC, EMB) can be identified as *E. coli* with a negative Pyrrolidonyl Arylamidase (PYR) test.

Specimen 2 Urine - 58 year old Female, Dysuria

Organisms	Extent 1	2	3	4	5	Total
943 - Aerobe found; but referred for ID	7	0	0	0	0	7
993 - Growth of gram-negative organisms	4	0	0	0	0	4
834 - Proteus sp.; NOS	0	0	3	0	0	3
835 - Proteus mirabilis	0	0	2	0	0	2
777 - Corynebacterium sp.; NOS	0	0	2	0	0	2
949 - No aerobic growth	1	0	0	0	0	1
942 - Primary culture only, refer for ID	1	0	0	0	0	1
	TOTAL PARTICIPANTS					20

Flagging appears for failure to report 834, 835, 942, 943, 990 or 993.

In addition to the required organism, participants in all extents may report 777

This sample contained *Proteus mirabilis* and *Corynebacterium spp.*

This patient's (noninvasive) urine specimen grew $>10^5$ CFU/ml gram-negative rods (GNR) and $<10^4$ CFU/ml of catalase-positive gram-positive rods (GPR). Most work-up recommendations/guidelines, in general, would suggest work-up for only the GNR and a minimal morphologic identification (MMI) for the GPR (i.e., based on colony/Gram stain morphology, hemolysis, and rapid same-day biochemical or serological tests). The GNR was presumptively identified as *Proteus spp.* with swarming growth on blood agar and a clear colony on MAC (nonlactose fermenter) and later confirmed as *Proteus mirabilis* on a semi-automated ID system. While the coryneform GPR was worked-up by MMI (according to the local protocol) and reported as "Urogenital Microbiota", it can be important in some cases (i.e., especially for high-risk patients) to rule-out uropathogenic *Corynebacterium urealyticum*, if clinically indicated (*C. urealyticum* tests urease-positive; whereas, most other *Corynebacterium spp.* test negative for urease).

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Specimen 3 Urine - 74 year old Male, Foley catheter

Organisms	Extent	1	2	3	4	5	Total
949 - No aerobic growth		10	0	5	0	0	15
943 - Aerobe found; but referred for ID		1	0	0	0	0	1
948 - No pathogens isolated		1	0	0	0	0	1
		TOTAL PARTICIPANTS					17

Flagging appears for failure to report [no codes].

In addition to the required organism, participants in all extents may report 720, 948 and 949

All inoculated media was negative for culture of this urine specimen. Such culture results are typically reported as "Urine culture negative" or "No growth of uropathogens". While infectious syndromes such as cystitis or, more commonly, acute pyelonephritis can be associated with flank pain, other noninfectious causes are possible, as well (e.g., kidney stones, muscle spasm, Crohn's disease).

Specimen 4 Throat - 22 year old Female, Cough, fever, sore throat

Organisms	Extent	1	2	3	4	5	Total
922 - Neg for Grp A strep screen by culture		7	5	2	0	0	14
799 - Escherichia coli		0	0	2	0	0	2
798 - Escherichia sp.; NOS		0	0	1	0	0	1
		TOTAL PARTICIPANTS					17

Flagging appears for failure to report 919, 922, 947 or 975.

In addition to the required organism, participants in all extents may report (No additional codes).

This sample contains *Escheria coli* and *Neisseria spp.*

Abundant (4+) growth of *Escherichia coli* and few *Neisseria spp.* colonies were isolated from this patient's throat culture. While the *Neisseria spp.* should be considered (and reported) as resident microbiota, enteric organisms (such as *Escherichia coli*, in this case) are infrequent as colonizers of the upper respiratory tract, but also not considered to have a pathogenic role in pharyngitis. However, this case involved a hospitalized 3 year-old boy that also had lower respiratory specimen that was growing the same organism, and therefore, the likely reason for the observed result. While viruses (i.e., predominantly RSV) are the most common cause of pediatric nosocomial respiratory tract infections, gram-negative bacteria (*E. coli*, *K. pneumoniae*, and *P. aeruginosa*) are the predominant bacterial pathogens, and are associated with a high mortality rate. Therefore, while adherence to reporting protocols is paramount, unusual results such as this should be communicated to clinical laboratory leadership to be investigated further.

Specimen 5 Throat - 6 year old Male, Mild sore throat

Organisms	Extent	1	2	3	4	5	Total
923 - Pos for Grp A strep screen by culture		6	5	2	0	0	13
886 - Streptococcus sp.; beta-hemolytic Grp A (<i>S. pyogenes</i>)		0	0	2	0	0	2
922 - Neg for Grp A strep screen by culture		1	0	0	0	0	1
921 - Pos for beta-hemolytic strep screen		0	0	1	0	0	1
		TOTAL PARTICIPANTS					17

Flagging appears for failure to report 886, 921, 923 or 976.

In addition to the required organism, participants in all extents may report (No additional codes).

This sample contained *Streptococcus pyogenes*, Group A.

Culture demonstrated abundant growth of *Streptococcus pyogenes* for this patient. *S. pyogenes* or Group A β-hemolytic streptococcus (GABHA) accounts for 30% of pharyngitis cases in children (ages 5 to 15), but only 10% of adult cases. So, while a rare case of acute pharyngitis for this demographic, it can and does occur. Other bacterial causes of pharyngitis include group C and G β-hemolytic streptococci, *Neisseria gonorrhoeae*, *Corynebacterium diphtheria*, and *Arcanobacterium haemolyticum*. However, most cases have a viral etiology (e.g., rhinovirus, coronavirus). Given the emergence of commercial rapid diagnostic tests (RDTs; antigen- and nucleic acid-based) for GABHA and their comparable performance to that of culture, most guidelines are no longer recommending routine culture to back-up negative RDTs

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(especially, in this age category), but rather leave the decision to the physician to order when indicated (e.g., outbreak investigations, monitoring the spread of antimicrobial resistance, examination for pathogens other than GABHS).