

	Standard Urine Culture (SUC)	Expanded Quantitative Urine Culture (EQUC)	Polymerase Chain Reaction (PCR)	Next Generation Sequencing (NGS)
Type of Diagnostic Tool	Phenotypic; developed in 1880s	Phenotypic (advanced); developed in 2014	Genotypic; developed in 1970s	Genotypic (advanced); developed in 2004
Methodology	Grow bacteria and fungi on agar plates with one standard growth condition	Grow atypical bacteria and fungi on agar plates with modified growth conditions	Use short DNA sequences to look for specific bacterial and fungal sequences	“Reads” DNA and matches sequences to bacteria and fungi in curated databases
Detection Highlights	Good at detecting predominant UTI pathogens; not good with other UTI pathogens or polymicrobial infections	Good at detecting pathogens not detected with SUC and polymicrobial infections; may also detect non-pathogens more easily	Good at detecting polymicrobial infections; only detects what the test is looking for	Good at detecting all pathogens in a sample and lists by dominance; detects non-pathogens
Antibiotic Sensitivity Highlights	Phenotypic; bacteria that causes infections used to identify which antibiotics should clear the infection	Phenotypic; bacteria that causes infections used to identify which antibiotics should clear the infection	Genotypic; only detects resistance genes that are on the panel; presence/absence of a gene does not always predict susceptibility	Genotypic; identifies the “resistome” (all known resistance genes present in the sample); presence/absence of a gene does not always predict susceptibility
Specimen Management	Sensitive to time and temperature (organisms need to grow)	Sensitive to time and temperature (organisms need to grow)	Not as sensitive to time and temperature (looking for DNA; organism may or may not be alive)	Not as sensitive to time and temperature (looking for DNA; organism may or may not be alive)
Turn Around Time (from the time the laboratory receives the urine)	2+ days (longer for more complicated organisms/workup)	2+ days (longer for more complicated organisms/workup)	1 day	3-5 days
Cost	\$-\$	\$	\$-\$	\$\$\$