

model. ROC AUC in Figure 1 was 0.691 for Tumbarello and 0.670 for Duke. With a 2-point cutoff, sensitivity for Tumbarello was 71% and specificity 61%, for Duke 58% and 75%, increasing cutoff to 4 points increases specificity to 87 and 93%, decreasing sensitivity to 35 and 20%, respectively. Table 2 classifies by type of UTI, shows the percentage of adequate initial antibiotic for ESBL, and the number of cases predicted by each model. Tumbarello's model predicts all cases, while Duke's model predicts most cases of cystitis and pyelonephritis and all cases of complicated UTI and urosepsis.

Conclusion. Clinical scoring models have a high specificity identifying best non-ESBL infections, this aids in the choice of a more adequate empirical antibiotic for community-acquired UTI.

Table 1

Variable	β -Coefficient	P	Confidence Interval 95%
Recent antibiotic therapy	0.23	<0.001	0.16–0.35
Diabetes mellitus	0.17	<0.001	0.11–0.32
Previous hospitalization	0.16	<0.001	0.10–0.32
Connective tissue disease	0.11	0.014	0.06–0.48
Complicated UTI	0.11	0.017	0.02–0.19

Figure 1

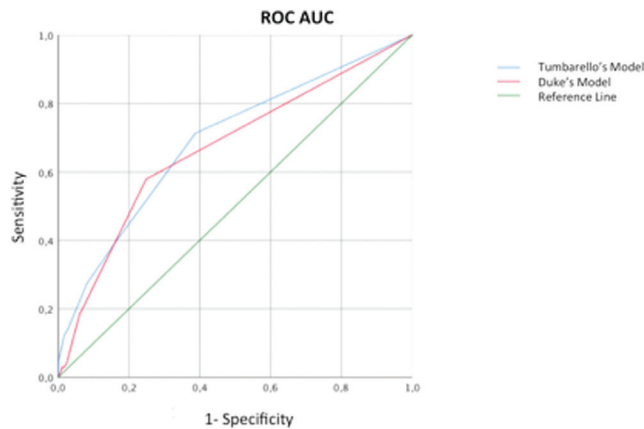


Table 2

Type of UTI/Initial Antibiotic	ESBL <i>E. coli</i>	Non-ESBL <i>E. coli</i>	Tumbarello	Duke
Cystitis	62	118	87	60
Nitrofurantoin o fosfomicyn	10%	5%		
Pyelonephritis	77	140	89	71
Carbapenem	58%	31%		
Complicated UTI	89	93	126	89
Carbapenem	56%	42%		
Urosepsis	40	40	64	45
Carbapenem	65%	78%		

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1512. Variation in Outpatient Urine Testing Practices for Uncomplicated Urinary Tract Infections

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Background. Urinary tract infections (UTIs) are common in outpatient settings. Evidence-based recommendations suggest empiric treatment of healthy female patients presenting with two or more classic symptoms of UTIs, rather than urine testing. It is unknown how often urine testing is ordered in the community, and if there are opportunities to reduce the number of unnecessary urine tests. This study aims to describe urine testing practices for uncomplicated UTIs in outpatient settings.

Methods. Using the 2009–2013 Truven Health Analytics MarketScan database, we extracted outpatient claims data for premenopausal, nonpregnant women aged 18–44 years who met criteria for an uncomplicated UTI or cystitis with antibiotic prescribed ± 5 days of diagnosis. Women with recent infections, hospitalizations, urologic

abnormalities, diabetes, chronic kidney disease, immune compromise, or other complicating factors were excluded. Urine laboratory tests coded within ± 5 days of index UTI were identified. To explore variation in urine testing practices, we compared frequencies of urine testing types according to patient age, region, provider type, testing location, residence in a metropolitan statistical area (MSA), and office visit using Chi-square tests.

Results. Of 669,892 eligible patients with an uncomplicated UTI, 584,863 (87%) received at least one urine test. Of the patients who received at least one test, 285,639 (49%) patients received both a urinalysis (UA) and culture, 247,740 (42%) received a UA only, and 51,484 (9%) received culture only. Significant variation in testing was observed by patient age, region, provider type, testing location, and office visit (Table 1). Patients in the Northeast and in urban locations more frequently received both a UA and culture. Patients who received both UA and culture were more likely to have been seen by an OB/GYN, whereas patients treated empirically without testing were more likely to have been seen by emergency physicians.

Conclusion. In contrast to evidence-based recommendations, the vast majority of patients with uncomplicated UTI received at least one urine test. We observed variation in urine testing practices, which suggests that diagnostic testing stewardship opportunities exist for outpatients with UTIs.

Table 1: Baseline characteristics of study population (N=669,892) by type of testing at initial visit.

Characteristic	No Test ¹ 85,029 (13%)	Urinalysis (UA) only 247,740 (37%)	Culture only 51,484 (8%)	UA & Culture 285,639 (43%)	P-value
Age	N (%)				<0.001
18–24yrs (203,570)	26,910 (13.2)	75,214 (36.9)	14,506 (7.1)	86,940 (42.7)	
25–30yrs (124,479)	16,168 (13.0)	46,216 (37.1)	9,834 (7.9)	52,261 (42.0)	
31–35yrs (111,451)	13,937 (12.5)	41,311 (37.1)	8,809 (7.9)	47,394 (42.5)	
36–40yrs (125,951)	15,448 (12.3)	46,572 (36.9)	9,999 (7.9)	53,932 (42.8)	
41–44yrs (104,441)	12,566 (12.0)	38,427 (36.8)	8,336 (8.0)	45,112 (43.2)	
Region					<0.001
Northeast (92,051)	12,523 (13.6)	22,637 (24.6)	11,005 (12.0)	45,947 (49.9)	
Midwest (158,102)	18,224 (11.5)	66,112 (41.8)	7,855 (5.0)	65,910 (41.7)	
South (266,562)	33,036 (12.4)	105,474 (39.6)	21,496 (8.1)	106,556 (40.0)	
West (140,013)	19,684 (14.1)	47,696 (34.1)	10,471 (7.5)	62,162 (44.4)	
Unknown (13,164)	1,562 (11.9)	5,821 (44.4)	657 (5.0)	5,064 (38.6)	
MSA					=0.025
Rural (105,948)	13,225 (12.5)	48,718 (45.9)	4,955 (4.7)	39,050 (36.9)	
Urban (563,944)	71,804 (12.7)	199,022 (35.3)	46,529 (8.3)	246,589 (43.7)	
Provider Type					<0.001
Internist (67,652)	9,077 (13.4)	24,950 (36.9)	4,412 (6.5)	29,213 (43.2)	
Family Medicine (242,703)	22,529 (9.3)	102,336 (42.2)	13,922 (5.7)	103,916 (42.8)	
OB/GYN (61,598)	5,107 (8.3)	12,753 (20.7)	10,099 (16.4)	33,639 (54.6)	
Emergency Medicine (52,623)	13,861 (26.3)	17,355 (33.0)	1,206 (2.3)	20,201 (38.4)	
MD- Not classified elsewhere (47,329)	5,994 (12.7)	17,998 (38.0)	2,903 (6.1)	20,434 (43.2)	
NP & PA (21,656) ²	4,215 (19.5)	10,156 (46.9)	902 (4.2)	6,383 (29.5)	
All Others (78,919) ³	9,138 (11.6)	27,630 (35.0)	5,373 (6.8)	36,778 (46.6)	
Testing Location					<0.001
Outpatient Provider Office (417,182)	N/A	198,357 (47.6)	13,924 (3.3)	204,901 (49.1)	
Urgent Care (28,883)	N/A	15,736 (54.5)	161 (0.6)	12,986 (45.0)	
ED (38,960)	N/A	16,235 (41.7)	543 (1.4)	22,182 (56.9)	
Other Outpt Services ⁴ (99,838)	N/A	17,412 (17.4)	36,856 (36.9)	45,570 (45.6)	
Office Visit					<0.001
No (126,638)	28,329 (22.4)	33,566 (26.5)	14,591 (11.5)	50,152 (39.6)	
Yes (543,254)	56,700 (10.4)	214,174 (39.4)	36,893 (6.8)	235,487 (43.4)	

Percentages are row percentages. Columns are mutually exclusive. ¹No test: No UA or culture. ²NP&PA – Nurse practitioner and physician assistants. ³All others includes surgical specialties, medical specialties, multi-specialty physician groups, osteopathic medicine, therapists, medical technicians. ⁴Other Outpatient Services – laboratories, outpatient hospital diagnostic services.

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1513. A New Method for Rapid Phenotypic Antimicrobial Susceptibility Testing Directly from Patient Samples

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Background. Life-threatening syndromic hospital infections including sepsis, ventilator acquired pneumonia, catheter-associated urinary tract infection (CAUTI), and surgical site infections are often caused by multidrug-resistant pathogens. Implementing the targeted narrow-spectrum antimicrobial therapy as rapidly as possible at the onset of infection is critical for lowering morbidity and mortality for these infections. We present the new MultiPath technology for rapid syndromic infection detection, pathogen identification, and phenotypic antimicrobial susceptibility testing (AST). Our feasibility data demonstrate the technology's potential application as a rapid CAUTI diagnostic.

Methods. The MultiPath technology detects and counts cells in a 30-minute assay using nonmagnified digital imaging. For identification, target pathogen cells are labeled using fluorescent in situ hybridization (FISH) with rRNA-specific probes, tagged with magnetic nanoparticles, deposited on a surface, imaged, and quantified. For AST, samples are mixed with growth medium, incubated for 4 hours in the presence of serial dilutions of antibiotics, FISH-labeled, magnetically selected, and quantified by digital imaging. The MultiPath assays use a dye-cushion layer to optically sequester the sample and unbound fluorescent probes from the imaging surface, eliminating the need for sample preparation and wash steps.