

study was to assess laxative administration among inpatients tested for CDI in VA hospitals and identify factors associated with guideline discordance. **Methods:** Adults hospitalized in Illinois, Wisconsin, and Michigan VA Medical Centers from January 2019-December 2022 with a CDI test performed during the admission were included. CDI tests included Toxin B gene Polymerase Chain Reaction or Toxin Enzyme Immunoassay. Tests were defined as positive, negative, or cancelled according to the diagnostic protocols of the VA testing laboratories. Laxative use, patient demographics, admission data, and comorbidities were collected from the VA Corporate Data Warehouse. Guideline discordant testing was defined as a diagnostic test for CDI ordered within 48 hours of a recorded laxative dose. Factors associated with discordant testing were analyzed using clustered binomial logistic regression models. Analyses were completed using SAS 9.4. **Results:** There were 7,326 tests ordered for 4,888 patients during the study. Patients were predominantly White (61.8%), male (95.6%), and elderly (mean age=70.0 standard deviation=12.1). Most (59.0%) patients had received at least one dose of laxative in the 48 hours preceding their CDI test. Being Black (Odds Ratio (OR)=0.86 (95%Confidence Interval (95%CI) =0.76,0.98) or Hispanic (OR (95%CI) =0.62(0.48,0.82) vs White) was associated with a decreased likelihood of inappropriate testing due to recent laxative use. Being tested at a rural facility (OR (95%CI) =1.23 (1.07,1.41) vs urban), within a long-term care (LTC) unit (OR (95%CI) =1.67 (1.41,1.97) vs inpatient), or within an intensive care unit (ICU) (OR (95%CI) =1.40 (1.24,1.59)) were all associated with an increased likelihood of being inappropriately tested. Guideline discordant tests were more likely to have negative results (OR (95%CI) =1.25 (1.05,1.49)) compared to guideline concordant tests. Discussion: Laxative administration in the 48 hours preceding CDI testing was common among hospitalized Veterans and associated with a lower likelihood of positive **Results:** This echoes non-VA studies where laxative use was reported at 44%. An increased likelihood of guideline discordant testing in ICU and LTC settings suggests the need for greater diagnostic stewardship interventions. Additionally, further work to determine negative outcomes associated with inappropriate testing are needed.

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Subject Category: Diagnostic Stewardship

Survey of VA Laboratory Practices for Carbapenem-resistant Acinetobacter baumannii and Pseudomonas aeruginosa

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Background: Carbapenem-resistant Acinetobacter baumannii (CRAB) and Pseudomonas aeruginosa (CRPA) are drug-resistant pathogens causing high mortality rates with limited treatment options. Understanding the incidence of these organisms and laboratory knowledge of testing protocols is important for controlling their spread in healthcare settings. This project assessed how often Veterans Affairs (VA) healthcare facilities identify CRAB and CRPA and testing practices used. **Method:** An electronic survey was distributed to 126 VA acute care facilities September-October 2023. The survey focused on CRAB and CRPA incidence, testing and identification, and availability of testing resources. Responses were analyzed by complexity of patients treated at VA facilities (High, Medium, Low) using Fisher's exact tests. **Result:** 77 (61.1%) facilities responded, most in urban settings (85.4%). Most respondents were lead or supervisory laboratory

technologists (84.2%) from high complexity facilities (69.0%). Few facilities detected CRAB ≥ once/month (4.4%), with most reporting that they have not seen CRAB at their facility (55.0%). CRPA was detected more frequently: 19% of facilities with isolates ≥ once/month, 29.2% a few times per year, and 26.9% reporting had not seen the organism. No differences in CRAB or CRPA incidence was found by facility complexity. Nearly all facilities, regardless of complexity, utilize the recommended methods of MIC or disk diffusion to identify CRAB or CRPA (91.9%) with remaining facilities reporting that testing is done off-site (7.8%). More high complexity facilities perform on-site testing compared to low complexity facilities (32.0% vs 2.7%, p=0.04). 83% of laboratories test for Carbapenemase production, with one-fourth using off-site reference labs. One-fourth of facilities perform additional antibiotic susceptibility testing for CRAB and CRPA isolates, most of which test for susceptibility to combination antibiotics; no differences between complexities were found. Agreement that sufficient laboratory and equipment resources were available was higher in high complexity than in medium complexity facilities (70.7% vs 33.3%, p=0.01), but not low complexity facilities (43.8%). **Conclusion:** Having timely and accurate testing protocols for CRAB and CRPA are important to quickly control spread and reduce associated mortality. This study shows that most VA protocols follow recommended testing and identification guidelines. Interestingly, there was no difference in CRAB or CRPA incidence for facilities providing higher vs lower complexity of care. While high and low complexity facilities generally reported sufficient resources for CRAB and CRPA evaluation, some medium-complexity labs, who may feel more compelled than low-complexity labs to bring testing in house, reported that additional resources would be required.

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A Stepwise Diagnostic Stewardship Approach to Reduce Unnecessary Urine Cultures, Asymptomatic Bacteriuria, and CAUTI Rate

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Background: Clinically non-indicated asymptomatic bacteriuria (ASB) identification precipitates higher reported catheter-associated urinary tract infection (CAUTI) rates and urinary tract infection (UTI)-directed antimicrobial overuse. Published diagnostic stewardship interventions to reduce ASB were mostly tested individually and heterogeneously; hence the optimal bundle approach is yet to be defined. **Methods:** We performed a single-center sequential quasi-experimental study involving hospitalized,

Urine Cultures

Urine cultures should only be sent for an approved indication. Inappropriate urine cultures may identify asymptomatic bacteriuria. Asymptomatic bacteriuria is bacteria in the urine without symptoms of a UTI and should not be treated with antibiotics (except pregnancy and urologic surgery). Antibiotics offer no benefit and may cause harm.

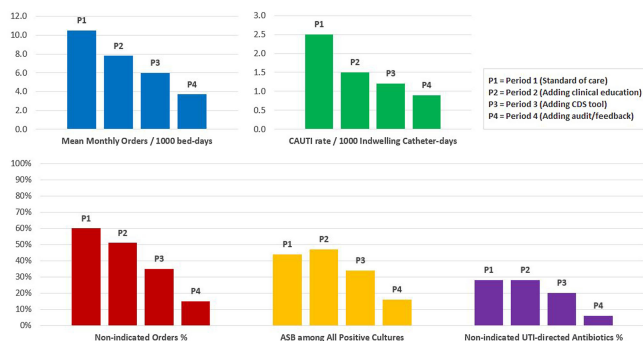
Urine Culture order options:
Please select the appropriate indication for ordering a urine culture

Indications for urine cultures will be audited by infection prevention

Urine Culture Only	Analysis with reflex to urine culture
If a urinalysis is needed, please order separately	UTI Symptoms: dysuria, flank pain, suprapubic pain, frequency, urgency, new or worse incontinence
1 Prior to urologic surgery	Unlikely to be UTI: confusion, falls, cloudy urine, smelly urine
2 Pregnancy	1 Septic shock, unknown source
3 Neutropenic fever	2 Sepsis or fever in a patient unable to localize symptoms
4 UTI symptoms with suprapubic catheter or nephrostomy	3 Symptoms of UTI or pyelonephritis
5 Other	4 Fever in a kidney transplant recipient
	5 Fever after endologic procedure/surgery
	6 Fever and known urinary tract obstruction
	7 Genitourinary obstruction or trauma
	8 Gross hematuria
	9 Spinal cord injury patient with neurologic changes
	10 Chronically catheterized with fever or AMS (at time of admission only)
	11 Other

Document indication in chart. Will be audited

Outcome	Period/Intervention			
	P1: Background	P2: Education	P3: CDS	P4: Audit/Feedback
Sampled orders	542/2717	503/1966	511/1523	584/943
Mean monthly orders /1000 bed-days	10.5	7.8	6.0	3.7
Non-indicated orders	324/542 (60%)	257/503 (51%)	180/511 (35%)	90/584 (15%)
ASB among positive cultures	53/116 (46%)	52/111 (47%)	53/154 (34%)	29/187 (16%)
Non-indicated antimicrobials	31/110 (28%)	31/109 (28%)	39/196 (20%)	14/225 (6%)
ASB-directed antimicrobials	29/110 (26%)	29/109 (27%)	32/196 (17%)	10/225 (4%)
CAUTI's /1000 indwelling catheter-days	2.5	1.5	1.2	0.9



emergency, and long-term care patients at a VA healthcare facility, retrospectively comparing standard of care (period 1: 1/1/2022-6/30/2022) to adding dedicated provider education on facility-approved urine-culturing indications (period 2: 7/1/2022-1/19/2023), then adding an electronic clinical decision support (CDS) tool (Figure 1) mandating urine-culturing indications selections (period 3: 1/20/2023-6/30/2023), then prospectively adding real-time case-based physician-generated audit/feedback emails on ordering appropriateness (period 4: 7/1/2023-12/31/2023). We randomly sampled approximately 500 orders from each period and measured the impact on the rate of urine reflex/culture orders, the percentage of non-indicated orders and ASB, UTI-directed antimicrobial usage, and facility-wide CAUTI rates. **Results:** We analyzed 2140 urine reflex/culture orders (Table 1 and Figure 2). The mean monthly orders per 1000 bed-days and percentage of non-indicated orders decreased with each intervention to one-fourth of the initial values by period 4 ($p=0.0002$). The ASB rate among positive cultures was unchanged from periods 1 to 2 but started to decrease in period 3 with the biggest impact in period 4 ($p=0.01$). Non-indicated and ASB-directed antimicrobial courses both followed the previous pattern, dropping from 28% and 26% baseline to 6% and 4% by the study conclusion ($p=0.015$ and 0.008), respectively. Estimated UTI-directed antimicrobials decreased by 34% (363/551) with antimicrobial-days saved from 4093 to 2846 per 6-month period. CAUTI rate relatively declined with each intervention, along with a reduction in ASB-attributed CAUTI's from 45% (5/11) initially to 20% (1/5) in period 4. **Conclusion:** A stepwise urine-culturing diagnostic stewardship approach of clinical education, electronic CDS tool, plus real-time audit/feedback decreased overall urine reflex/cultures, non-indicated ordering, ASB identification, unnecessary antimicrobials, and CAUTI rates, with the greatest impact after bundling all interventions including order appropriateness audit/feedback.

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UTI Symptomatology and Antibiotic Prescribing among US Veterans Seen in Outpatient Clinics

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Background: Infectious Diseases Society of America guidelines recommend antibiotic prescribing for urinary tract infections (UTIs) when there is a positive culture and signs and symptoms of infection. Despite these guidelines, prescribing for asymptomatic bacteriuria remains prevalent. We conducted a chart review of UTI outpatient encounters to determine the prevalence of antibiotic prescribing as well as patient and provider factors associated with inappropriate prescribing for UTIs. **Methods:** Patients who were seen at any Department of Veterans Affairs (VA) outpatient clinic with a positive urine culture from 1/1/2019-12/31/2022 were evaluated for inclusion. Exclusion criteria were pregnancy, neutropenia, neurogenic bladder, spinal cord injury/disorder, chronic kidney disease stage III and above, and those undergoing urologic surgical procedures within 7 days. Inappropriate prescribing was defined as an antibiotic prescription given for UTI treatment when no signs or symptoms of infection were recorded during the patient encounter. Chi-square, Fisher's exact and t-tests were used to evaluate the association between patient and provider characteristics and antibiotic prescribing. **Results:** Among 341 visits, most patients were male (70%), White (40%), older (mean age of 65.8 ± 15.9 years) and treated at an urban facility (57%). Antibiotics were prescribed for 67% (229/341) of visits. Of the 229 antibiotic courses prescribed, 119 (52%) were appropriate; issued to patients with ≥ 1 sign or symptom consistent with a urinary tract infection. The most common symptom recorded was dysuria, followed by frequency, urgency, and hematuria (Figure 1). The remaining 110 (48%) antibiotic prescriptions were inappropriate; given to patients without documented UTI-related signs or symptoms. The proportion of inappropriate prescribing was higher among advanced practice practitioners (39/56; 69%) compared to physicians (68/113; 60%; $P < 0.0001$). Prescribing of an antibiotic did not differ by gender (p -value=0.3779), race (p -value=0.3972), age (p -value=0.7461) or urban versus rural geography (p -value=0.3647). **Discussion:** In outpatient clinics, nearly half of antibiotics prescribed to patients with a positive urine culture occurred in the absence of documented signs or symptoms of a UTI. These results suggest that interventions to improve antibiotic use for UTI-related concerns in the outpatient setting should address UTI-related signs and symptoms as well as asymptomatic bacteriuria. Advanced practice practitioners were more likely to prescribe without documentation of relevant signs or symptoms than physicians. Improving meaningful documentation about the presence or absence of signs and symptoms of a UTI may help reduce inappropriate antibiotic prescriptions in the outpatient setting.

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Figure 1: Frequency of documented UTI signs and symptoms

