

Evaluation of Asymptomatic Bacteriuria in Critical Access Hospitals

Whitney Hartlage¹, Chloe Bryson-Cahn^{1,3}, Jeannie Chan^{1,3}, Natalia Martinez-Paz¹, John Lynch^{1,3}, Rupali Jain^{1,3}, Paul S. Pottinger^{1,3}, Alyssa Y. Castillo⁴, Zahra Kassamali-Escobar^{1,2}

¹UW Center for Stewardship in Medicine, Seattle, WA, USA; ²Fred Hutchinson Cancer Center, Seattle, WA, USA; ³Division of Allergy and Infectious Diseases, University of Washington School of Medicine, Seattle, WA, US; ⁴University of Colorado, Denver, CO, USA

Background

- Asymptomatic bacteriuria (ASB): ≥ 1 bacteria growing in the urine in the absence of signs or symptoms of infection.¹
- About 65% of patients are given antibiotics for ASB although they are not indicated in most cases.^{1,2}
- Critical access hospitals (CAHs) provide essential, high-quality healthcare and 24-hour emergency services in rural communities and do not exceed 25 inpatient beds.³
- The UW Center for Stewardship in Medicine (CSiM) works with critical access and rural medicine partners to empower individuals and teams by:
 - Providing education
 - Mentoring
 - Building community and encouraging resource sharing

Objective

- To quantify the overall prevalence of asymptomatic bacteriuria (ASB) and proportion treated in rural and critical access hospitals.

Methods

- Study design:** quality improvement initiative including 17 rural and critical access hospitals participating in UW CSiM programs
- Definitions:**
 - Positive urine culture (cx): ≥ 1 species of bacteria growing in the urine at $\geq 100,000$ colony forming units (CFU)/mL
 - Prevalence of ASB: positive urine culture without documented signs or symptoms of urinary tract infection (UTI)
 - Fever ($>38^{\circ}\text{C}$)
 - Suprapubic tenderness
 - Costovertebral angle pain or tenderness
 - Urinary urgency or frequency
 - Dysuria
 - Hematuria
 - AMS plus a systemic sign of possible infection (peripheral leukocytosis $>10,000$ cells/mm³, SBP <90 mmHg, ≥ 2 SIRS criteria)
 - Treatment of ASB: documentation of antimicrobial treatment for ASB
- Inclusion criteria:** had a urine culture collected
- Exclusion criteria:** pregnant women, receiving antimicrobials for a concomitant bacterial infection, and patients with whom relevant details were missing during data collection

Figure 1: Geographic Location of Participating Hospitals, N = 17

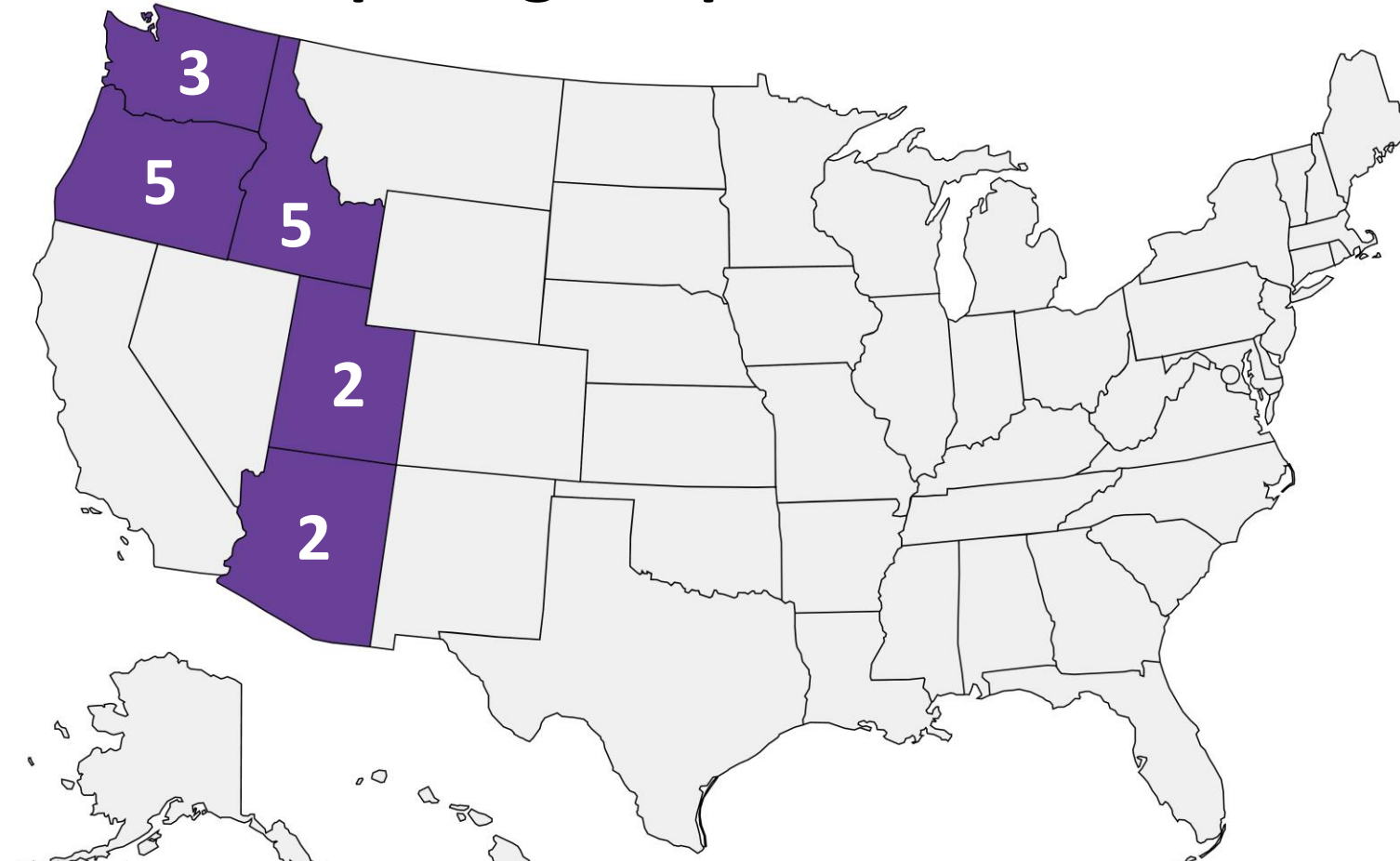
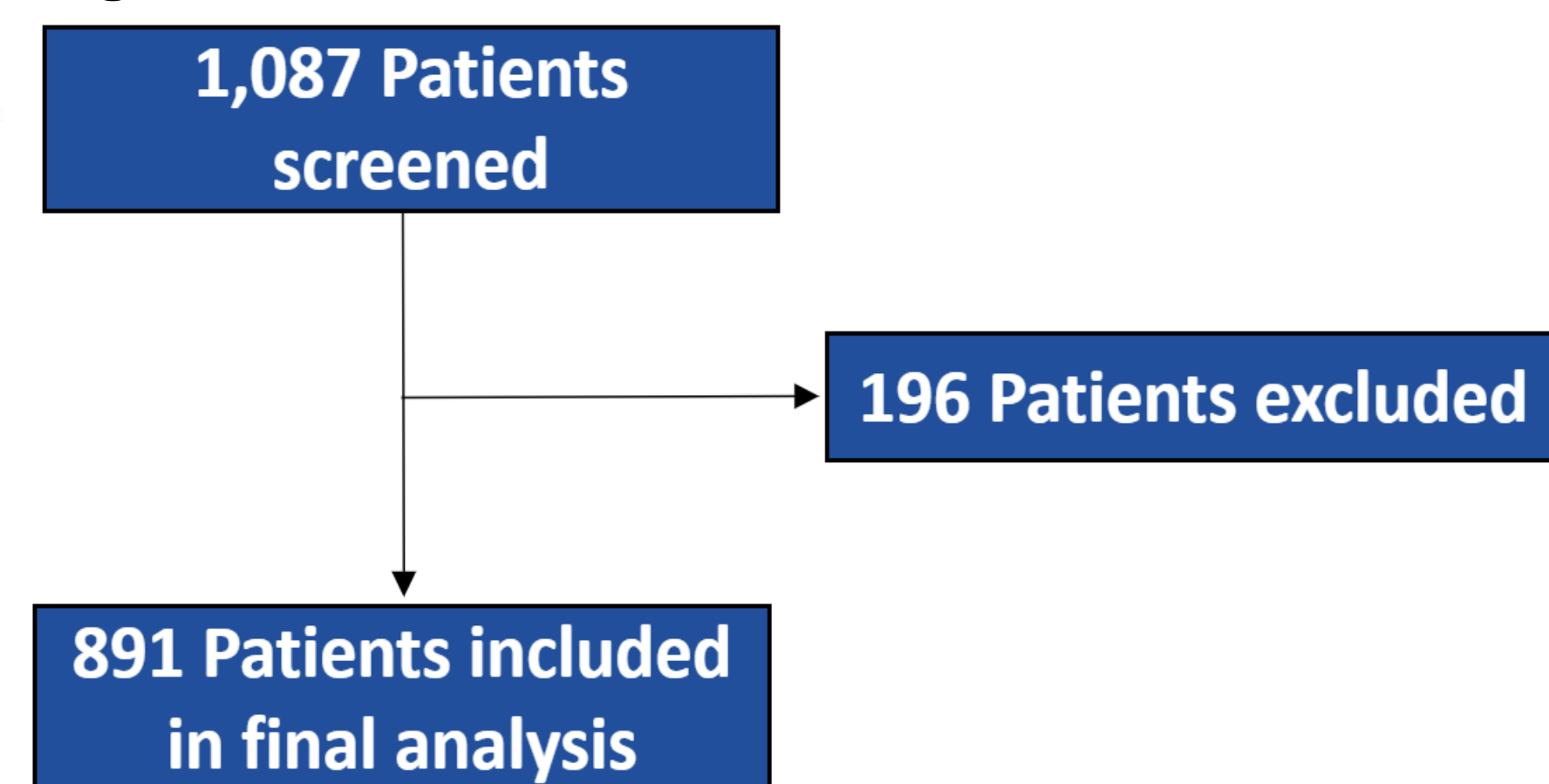


Figure 2: Enrollment

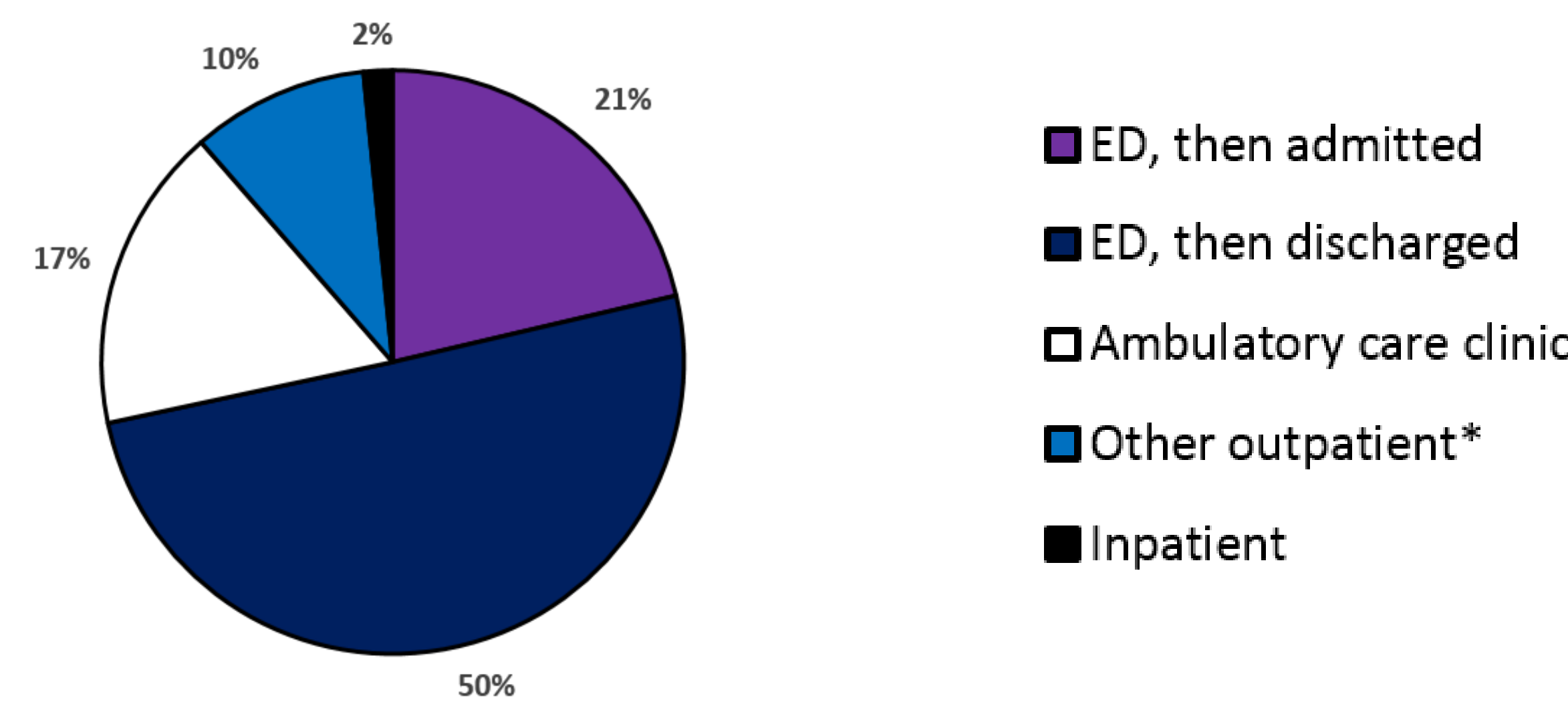


Results

Table 1: Baseline Characteristics

N (%)	Non-positive urine cx, n=405 (45.5)	Positive urine cx, n=486 (54.5)	Prevalence of ASB, n=170 (34.9)	Treatment of ASB, n=129 (75.9)
Age, median (IQR)	65 (41-78)	71 (56-82)	75 (64-85)	78 (65-85)
Women (%)	296 (73.1)	381 (78.4)	132 (77.6)	95 (73.6)
Urological comorbidities (%)	69 (17.0)	78 (16.3)	28 (16.5)	25 (19.4)
≥ 2 SIRS criteria (%)	45 (11.1)	76 (15.6)	20 (11.8)	8 (6.2)

Figure 3: Location of Urine Culture Collection

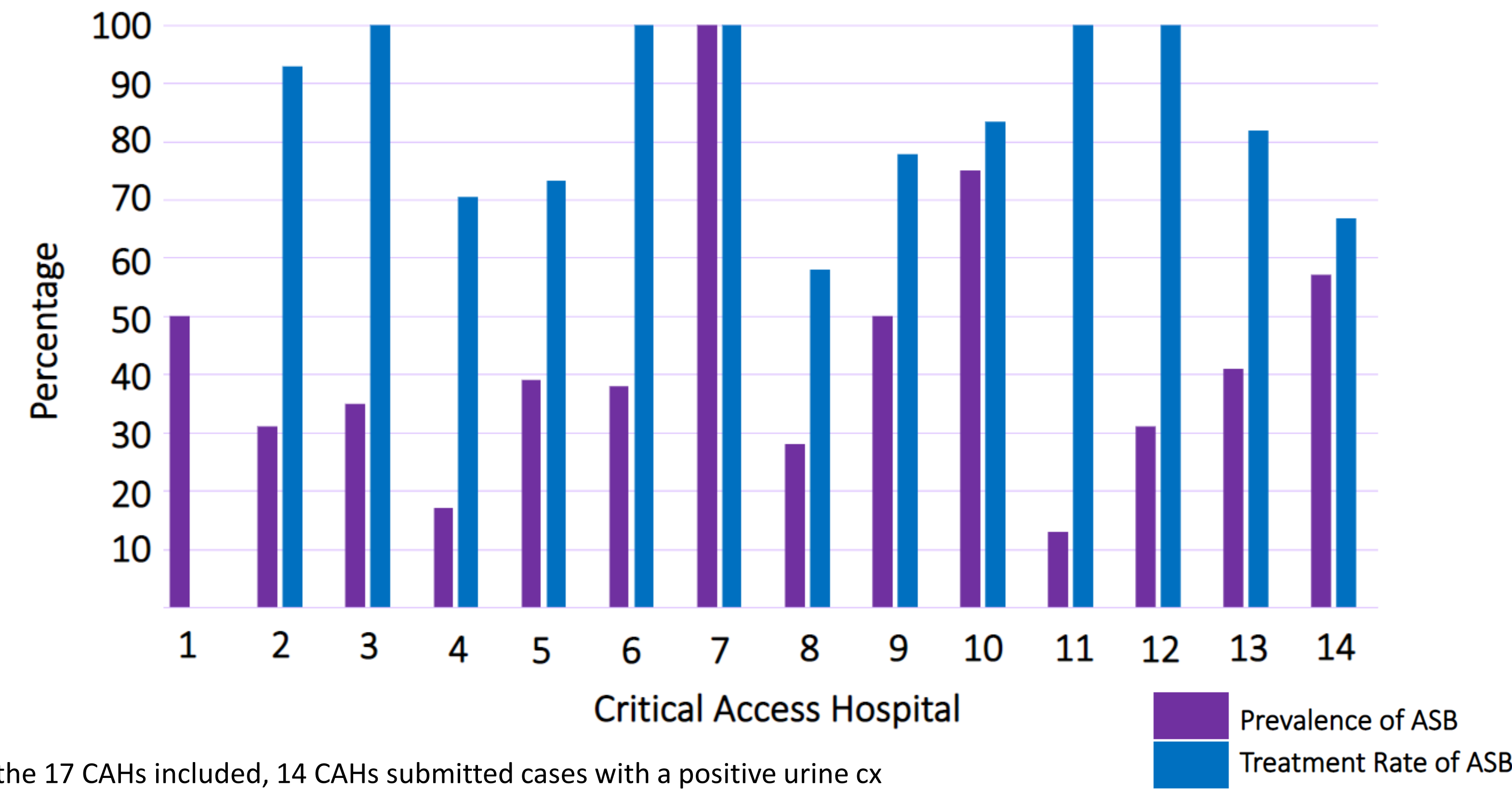


*Other outpatient: rehab or long-term care, urgent or quick care facility, home health

Table 2: Total Number of Cases Submitted by each CAH

CAHs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Total cases, N	21	59	44	107	76	40	4	94	32	45	38	133	29	166

Figure 4: Prevalence and Treatment Rate of Asymptomatic Bacteriuria



*Of the 17 CAHs included, 14 CAHs submitted cases with a positive urine cx

Figure 5: Clinical Characteristics of Patients Treated for ASB

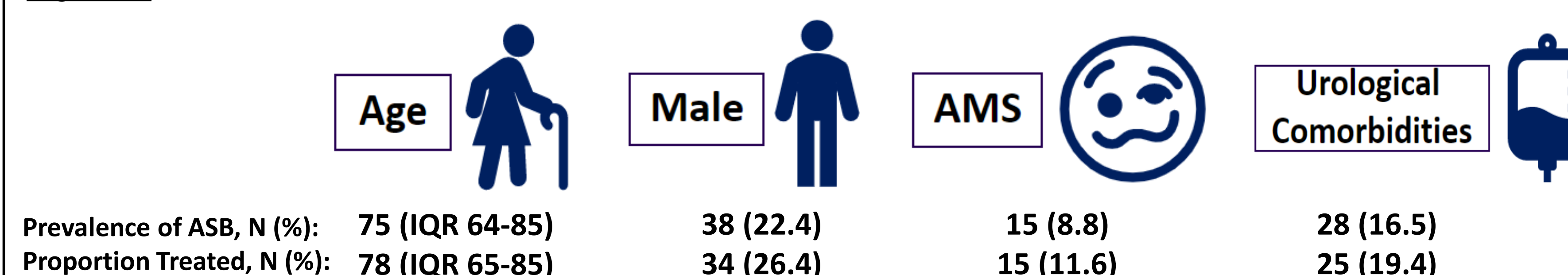


Figure 6: Treatment Rate in Patients with a Non-positive Urine Culture

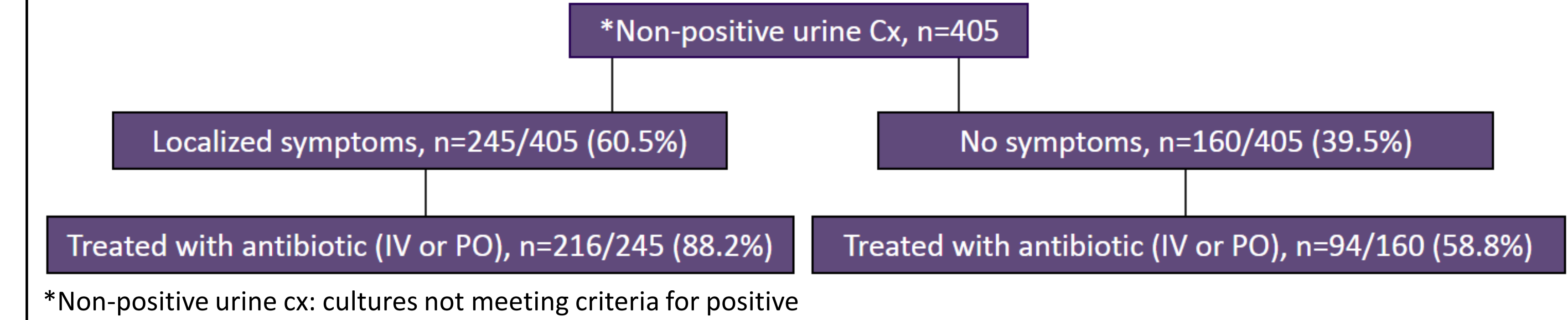


Figure 7: Oral Antimicrobial Selection in Treated ASB

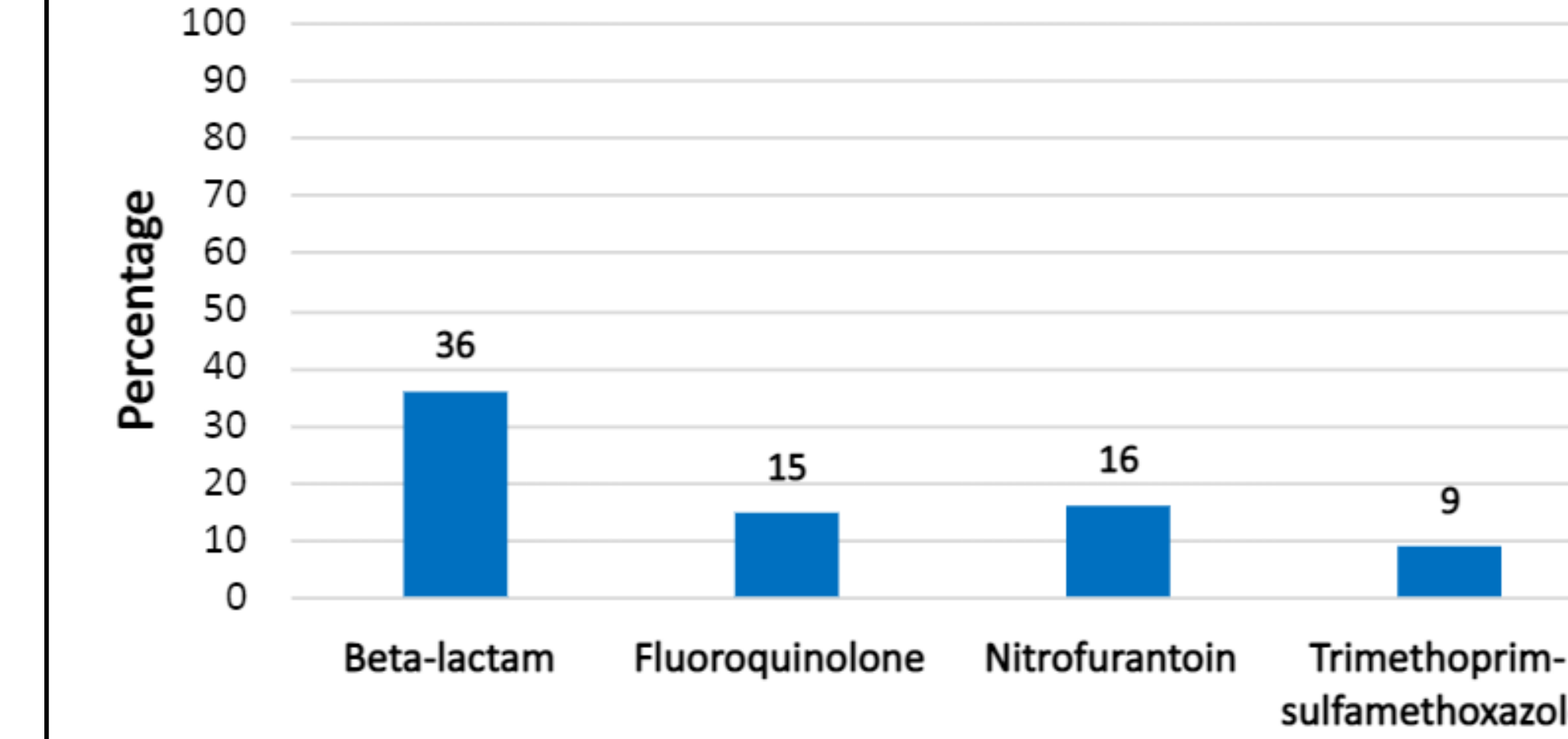


Figure 8: Median Duration of Therapy among Treated ASB

7.0 days
IQR 3-7

Summary

- Approximately 70% of urine cultures were collected in the emergency department
- Prevalence of ASB: 35% among 891 patients (n=170)
- Treatment of ASB: 76% of patients with ASB received antibiotics (n=129/170)
- Median antibiotic treatment duration was 7 days (IQR 3-7)
- Oral fluoroquinolones were prescribed in 15% of the treatment for ASB
- 59% of patients with a non-positive urine culture AND without signs or symptoms of UTI were prescribed antibiotics (n=94/160)

Focus for Stewardship

- Duration:** 7 days of antibiotics exceeds guidelines recommendations
- Diagnosis:** 3 out of 4 patients with ASB were treated with antibiotics

References

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Disclosure

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Conflicts of Interest: all authors have no relevant conflicts of interest