



Characterization of Antibiotic Prophylaxis Prior to Trans Rectal Ultrasound Guided Prostate Needle Biopsy (TRUS PNB): A 5-Year Nationwide Study among Patients in the United States Veterans Health Administration

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Introduction

- Prostate cancer: worldwide (USA) 1.6M (165k) cases, 366k (29k) deaths annually; 5-year survival rate >98%.
- Transrectal ultrasound (TRUS)-guided Prostate Needle Biopsy (TRUS-PNB) is the most common approach for prostate biopsy.
- Infection is most common complication; rate post TRUS-PNB up to 8%; 2-5% develop sepsis. Rates increasing b/o antibiotic resistance.
- Prophylactic antibiotics are used prior to TRUS-PNB to reduce risk for infectious complications such as UTI, prostatitis, epididymitis, orchitis, bacteremia and sepsis.
- Fluoroquinolones are commonly used for prophylaxis.
- The incidence of post TRUS-PNB infections caused by fluoroquinolone resistant *Escherichia coli* has increased.

Objectives

- Characterize the prophylaxis agents used nationwide in the Veterans Health Administration (VHA) for TRUS-PNB.

Methods

- VHA is the largest integrated health care system in the United States, providing care at 1,298 health care facilities, including 171 VA Medical Centers and 1,113 outpatient sites of care to over 9 million Veterans.
- Data from all records flow into the Corporate Data Warehouse (CDW).
- Data collected from the VHA's CDW on all patients undergoing TRUS-PNB from January 1st, 2013, to December 31st, 2018.
- We collected data about outpatient oral prophylaxis antibiotics, inpatient injectable antibiotics and microbiology results from rectal swabs and urine cultures performed within 90 days prior to the procedure.

Results and Tables

- 153,055 patients underwent TRUS-PNB between January 1st, 2013 and December 31st, 2018.

	Urine Cultures	Rectal Cultures
Performed	27.6%	3.5%
Positive (<i>E coli</i>)	3.1%	20.1%

Table 1. Urine and rectal swab cultures results

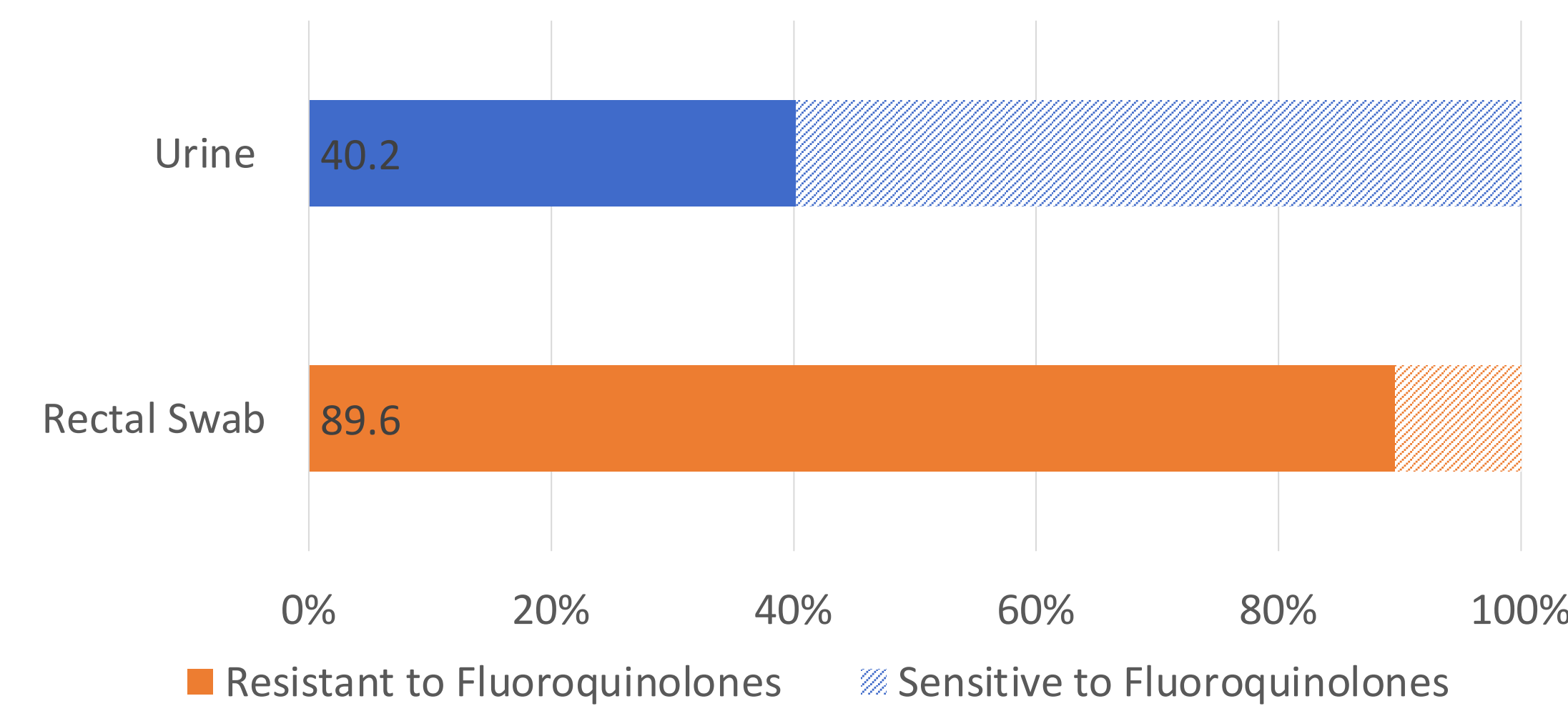


Figure. Percentage of Fluoroquinolones resistant *E. coli* in urine and rectal swab cultures

Oral antibiotics	Percentage	Injectable antibiotics	Percentage
Fluoroquinolones	76.6	Carbapenem	< 0.2
Ciprofloxacin	69.1	Meropenem	<0.1
Levofloxacin	7.5	Ertapenem	<0.1
Cephalosporins	11.3	Imipenem	<0.01
Cephalexin	4.8	Fluoroquinolones	0.5
Cefuroxime	4.4	Ciprofloxacin	0.5
Cefpodoxime	2.1	Cephalosporins	0.8
Tetracyclines	3.1	Cefazolin	0.3
Doxycycline	2.1	Ceftriaxone	0.5
Minocycline	1	Aminoglycoside	<0.2
Trimethoprim/Sulfamethoxazole	11.3	Gentamicin	<0.1
Fosfomycin	2.1	Tobramycin	<0.01
		Penicillin	0.2

Table 2. Percentage of oral prophylactic antibiotics administered within the 90 days prior to the procedure and injectable antibiotics administered on the day of the procedure.

Conclusion

- Despite the high rate of recovery of fluoroquinolone-resistant *E. coli* in pre-procedure urine and rectal swabs, oral fluoroquinolones remained the most frequently used prophylactic agents before TRUS-PNB.
- This mismatched prophylactic coverage may increase the risk of infectious complications following prostate biopsy.

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