

Comparison of Infectious Complications in Patients Undergoing Transperineal Biopsy with and without Antibiotic Prophylaxis

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Conflict of Interest Statement

- No conflicts or disclosures

IRB Determination

- Exempt

Objectives

- Review rates of infection following transperineal (TP) prostate needle biopsy (PNB) with and without antibiotic prophylaxis (ABP)
- Review American Urological Association (AUA) and European Urology (EU) recommendation for PNB ABP

Background

- Prostate cancer (PCa) is the most-common non-cutaneous malignancy in men
- Tissue samples are required to make a diagnosis of PCa
- Transrectal (TR) approach has been the historical preference
- ABP is usually given to avoid infection from rectal microbiota

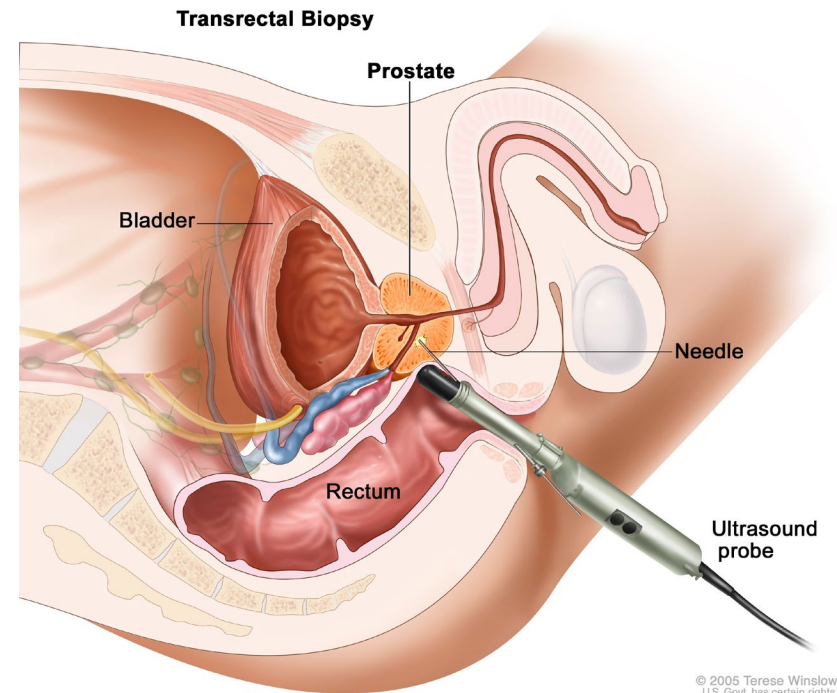
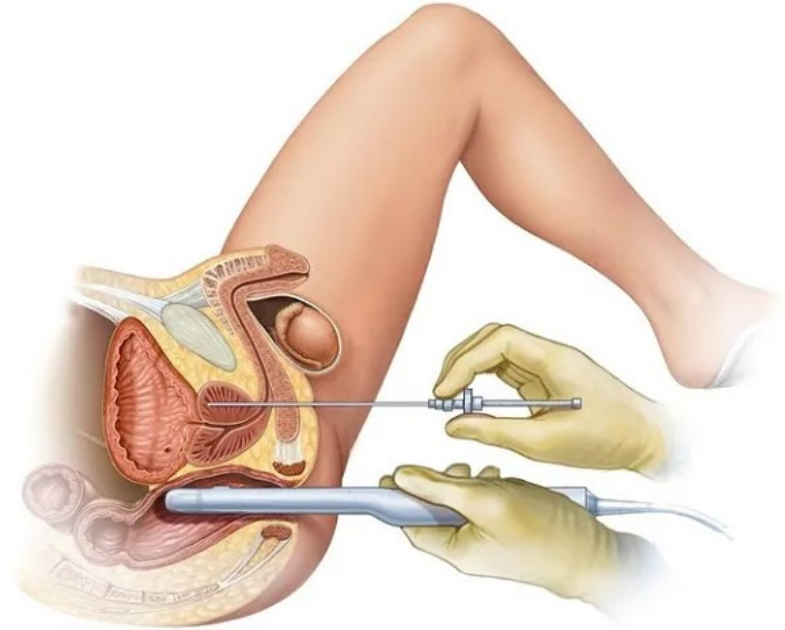


Image adapted from National Cancer Institute.
National Cancer Institute. Transrectal Biopsy. NCI Dictionary of Cancer Terms. Accessed April 8, 2023. <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/transrectal-biopsy>.

Background

- TP biopsy has gained popularity based on ease of anterior zone sampling and avoidance of rectal bacteria
- Reduced rates of infection via TP approach have been documented
- Further studies have shown ABP may not benefit TP PNB



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Image adapted from Mayo Clinic.
Mayo Clinic. Implementation of transperineal biopsy clinic. Mayo Foundation for Medical Education and Research. March 3, 2023. Accessed April 8, 2024.
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Castellani D, Pirola GM, Law YXT, et al. Infection Rate after Transperineal Prostate Biopsy with and without Prophylactic Antibiotics: Results from a Systematic Review and Meta-Analysis of Comparative Studies. *J Urol*. 2022;207(1):25-34. doi:10.1097/JU.0000000000002251

Basourakos SP, Alshak MN, Lewicki PJ, et al. Role of Prophylactic Antibiotics in Transperineal Prostate Biopsy: A Systematic Review and Meta-analysis. *Eur Urol Open Sci*. 2022;37:53-63. Published 2022 Jan 29. doi:10.1016/j.euros.2022.01.001

Hypothesis

- There is no difference in infectious complications between patients who undergo TP PNB with or without ABP

Methodology

- Retrospective chart review
- Two institutions
 - Fox Chase Cancer Center (FCCC; Philadelphia, PA)
 - Vanderbilt University Medical Center (VUMC; Nashville, TN)
- Primary outcome of measure
 - Presence of infectious complication (UTI, fever, sepsis) within 30 days of TP PNB

Results

Variable	No Antibiotics (n=217)	Antibiotics (n=235)	p-value
Age*	64.3	63.0	0.48
BMI*	28.9	29.3	0.74
Site†			<0.01
VUMC	23 (10.6)	203 (86.4)	
FCCC	194 (89.4)	32 (13.6)	
Race†			0.21
African-American	25 (11.5)	34 (14.5)	
Asian	3 (1.4)	5 (2.1)	
Caucasian	161 (74.2)	137 (58.3)	
Other	11 (5.1)	16 (6.8)	
Unknown	17 (7.8)	43 (18.3)	
Ethnicity†			0.69
Hispanic/Latino	7 (3.2)	5 (2.1)	
Non-Hispanic/Latino	186 (85.7)	169 (71.9)	
Unknown	24 (11.1)	61 (26.0)	
Procedure Location†			<0.01
Clinic	122 (56.2)	63 (26.8)	
OR	78 (35.9)	23 (9.8)	
Surgery Center	10 (4.6)	148 (63.0)	
Unknown	7 (3.2)	1 (0.4)	

* Mean, † Sum (%)

Variable	No Antibiotics (n=217)	Antibiotics (n=235)	p-value
Infectious Complications†			
Fever	1 (0.4)	1 (0.4)	1.00
UTI	2 (1.0)	1 (0.4)	0.60
Sepsis	1 (0.4)	1 (0.4)	1.00
Total	4 (1.8)	3 (1.8)	0.70
† Sum (%)			

Discussion

- We found no difference in infectious complications following TP PNB for patients who did and did not receive ABP
- Our findings are consistent with the literature
 - Castellani et al. *J Urol.* 2022. – Meta-analysis
 - Basourakos et al. *Eur Urol.* 2022. – Meta-analysis
 - Hu et al. *Eur Urol.* 2024 – RCT
 - Mian et al. *J Urol.* 2024. – RCT

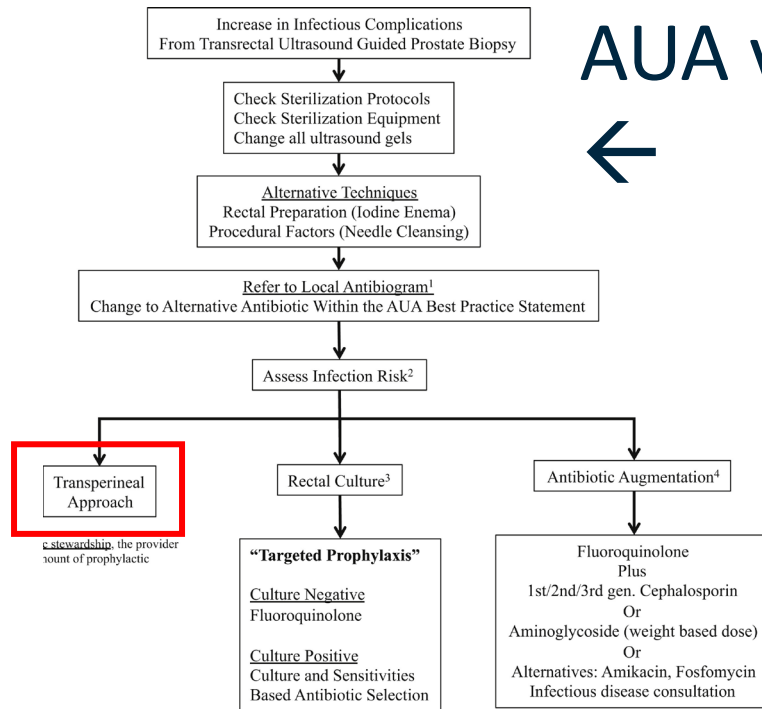
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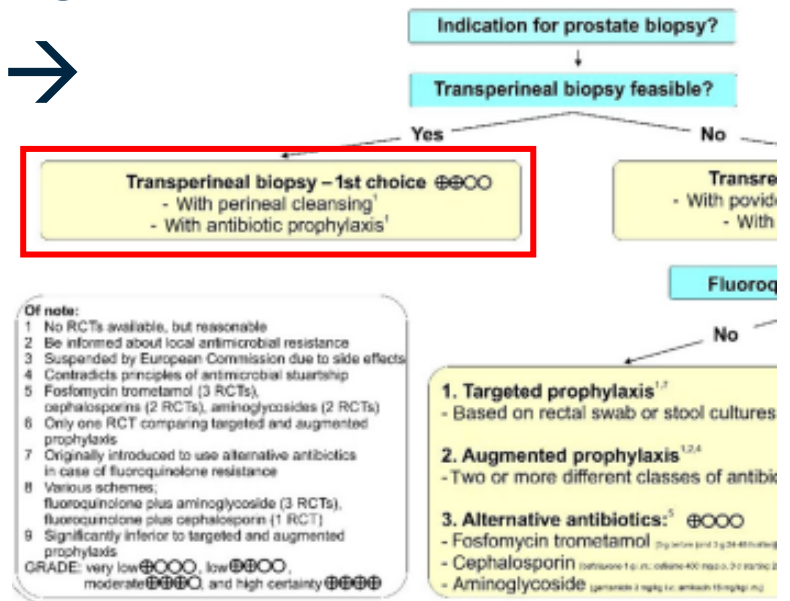
AUA vs EU Guidelines



AUA vs. EU



Prostate biopsy workflow to reduce infection



- More than 1 million PNB are performed every year among Medicare beneficiaries alone = a whole lot of antibiotic prescriptions

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Limitations and Future Direction

- Retrospective data
- Potential for selection bias
- Limited data from two institutions
- Relatively small sample size

- Expanded sample size and additional institutions
- Evaluation of other complications (pain, urinary retention, etc.)

Conclusion

- Withholding ABP for TP PNB is safe in the majority of patients
- Withholding ABP for TP PNB furthers enhances the practice of antibiotic stewardship