

Cost effectiveness of rectal screening for ESBL producing organisms in preventing urosepsis following transrectal prostate biopsy

Laena Hines, MD,¹ Sonal Munsiff, MD,² Jeanne O'Brien,¹

¹Department of Urology, University of Rochester Medical Center, Rochester NY

²Department of Infectious Disease, University of Rochester Medical Center, Rochester NY



Background

- Urosepsis following transrectal ultrasound guided prostate biopsy (TRUS PB) occurs in 0.3-3.1% of patients.¹
- Standard prevention includes ciprofloxacin and ceftriaxone.²
- Rise in urinary pathogens resistant to fluoroquinolones or producing extended spectrum beta lactam (ESBL+).³
- Other institutions have shown cost effectiveness of rectal screening for ESBL+ organism prior to TRUS PB.⁴
- We compare our center's incidence of urosepsis admissions following TRUS PB to the expected rate and calculate cost-effectiveness of pre-procedure screening to prevent urosepsis admissions.

Methodology

- All patients identified by prostate biopsy CPT billing code from January 2020 through January 2021 were identified retrospectively.
- Charts were queried for emergency department or urgent care visits and hospital admissions within two weeks of TRUS PB
- Admissions reviewed for evidence of urosepsis and ESBL+ cultures.
- Hospitalization cost was compared to the extrapolated cost of doing pre-procedural rectal swabs.

Cost of swab and culture per patient: \$39.02

Cost of ID and sensitivity per isolate: \$67.00

Table 1: Cost of urosepsis admission compared to pre-procedure rectal swabs

	Cost per unit	Units	Total cost
Urosepsis admission	\$12,636.98	3	\$37,910.92
ESBL Urosepsis admission	\$13,531.88	2	\$27,063.76
Rectal swab and culture on selective media	\$39.02	1593	\$62,158.86
Organism ID and sensitivity	\$67.00	796	\$ 53,332.00
Rectal swab screening overall			\$115,490.86

Results

- 33 of 1593 patients presented to our institution within 2 weeks of TRUS PB
- 3 were admitted for urosepsis post TRUS PB (2 with ESBL+ infection, 1 with no growth on culture)
- 12 had ED visits relating to their TRUS PB without urosepsis, (2 due to non ESBL+ UTI)
- 18 visits were unrelated to TRUS PB.
- Our urosepsis admission rate was 0.19% (for ESBL+ 0.13%).
- Cost of the 3 hospitalizations was \$37,910.92 (\$27,063.76 for 2 ESBL+ infections).
- Rectal swabs would in theory have prevented 2 admissions.
- Cost of swab and culture would be \$62,158.86.
- 50% of the swabs would need further testing to identify ESBL+ organism, for an additional cost of \$53,365.50.

Conclusions

- Our institution had lower than expected urosepsis admission rates
- Pre-procedure rectal swabs would not be cost effective, especially since some admissions may be unavoidable.
- The cost analysis is an underestimate as a visit some days prior to procedure would be scheduled and the staff resource utilization to collect the swab is not accounted for.
- The total cost of screening with rectal swabs would be \$115,000 for this population, which is contrasted to possible \$27,000 cost of preventing ESBL+ urosepsis admissions

References

1. Loeb S, Carter HB, Berndt SI, Ricker W, Schaeffer EM. Complications after prostate biopsy: data from SEER-Medicare. *J Urol*. 2011 Nov;186(5):1830-4.
2. Lightner DJ, Wymer K, Sanchez J et al: Best practice statement on urologic procedures and antimicrobial prophylaxis. *J Urol* 2020; 203: 351.
3. Zowawi, H., Harris, P., Roberts, M. et al. The emerging threat of multidrug-resistant Gram-negative bacteria in urology. *Nat Rev Urol* 12, 570–584 (2015).
4. Holmes, Michael, et al. Screening for Fluoroquinolone Resistant E. Coli Prior to TRUS Guided Prostate Biopsy Is Cost Effective and Significantly Reduces the Risk of Sepsis. *Journal of Urology*, vol. 195, no. 4S, Apr. 2016.



MEDICINE *of* THE HIGHEST ORDER