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PCa Screening and Prostate Biopsy

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Milton S. Hershey Medical Center
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Acknowledgement

- **J. Kellogg Parsons, MD, MHS, FACS**
 - Professor and Endowed Chair
 - Moores Comprehensive Cancer Center
 - UC San Diego Health System



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Disclosures

- **MDxHealth**
 - Study site investigator – urine biomarker trial
- **Urogen Pharma Ltd**
 - Study site investigator – Olympus trial
 - Strategic advisor board
- **American Kidney Stone Management (AKSM)**
 - Stock ownership



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Outline

- **Resources for study and AUA publications**
- **Prostate-specific antigen (PSA) screening**
- **Prostate biopsy**
 - **Prophylaxis**
 - **Technical elements**
 - **Complications and Prevention**



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Resources

- **National Comprehensive Cancer Network (NCCN) guidelines**
- **Diagnosis and Management of PCa**
 - <https://www.nccn.org>
 - Evidence-based, updated annually
 - Committee composition = majority urologists



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www.nccn.org

Key AUA Publications

- **Early Detection of Prostate Cancer**
 - Guideline 2013; reviewed for validity 2018
- **Optimal Techniques of Prostate Biopsy and Specimen Handling**
 - White Paper 2015
- **Prevention and Treatment of the More Common Complications Related to Prostate Needle Biopsy**
 - White Paper 2017



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Key AUA Publications

- **Urologic Surgery Antimicrobial Prophylaxis**
 - Best Practice Statement 2008; reviewed for validity 2012
- **MRI of the Prostate, Standard Operating Procedure**
 - Policy Statement 2017



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(Basic) Principles of Screening

Early Detection of Prostate Cancer: AUA Guideline

H. Ballentine Carter, Peter C. Albertsen, Michael J. Barry, Ruth Etzioni, Stephen J. Freedland, Kirsten Lynn Greene, Lars Holmberg, Philip Kantoff, Badrinath R. Konety, Mohammad Hassan Murad, David F. Penson and Anthony L. Zietman

- 5 Index groups that broadly formulate basis of guideline statements
 - Age-based



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

1. The Panel recommends against PSA screening in men under age 40 years. (*Recommendation; Evidence Strength Grade C*)

- Low prevalence of disease



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

2. The Panel does not recommend routine screening in men between ages 40 to 54 years at average risk. (*Recommendation; Evidence Strength Grade C*)

- Some men at increased risk may benefit from screening
 - Positive family history
 - 1st degree male relative
 - African-American or Black race



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

3. For men ages 55 to 69 years the Panel recognizes that the decision to undergo PSA screening involves weighing the benefits of preventing prostate cancer mortality in 1 man for every 1,000 men screened over a decade against the known potential harms associated with screening and treatment. For this reason, the Panel strongly recommends shared decision-making for men age 55 to 69 years that are considering PSA screening and proceeding based on a man's values and preferences. (Standard; Evidence Strength Grade B)



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

- **Shared decision making and weighing risks and benefits of screening for men 55 to 69 years of age**
- **Panel recognizes that greatest benefit of screening appears to be in men 55 to 69 years**



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

4. To reduce the harms of screening, a routine screening interval of two years or more may be preferred over annual screening in those men who have participated in shared decision-making and decided on screening. As compared to annual screening, it is expected that screening intervals of two years preserve the majority of the benefits and reduce over diagnosis and false positives. (*Option; Evidence Strength Grade C*)

An interval of 2 to 4 years may be preferred over annual screening in men with normal PSA



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

- No specific screening interval data
- Intervals for re-screening can be individualized by baseline PSA
 - For men > 60 years with PSA < 1.0 ng/mL, 4-year interval unlikely to miss curable cancer
 - Goteberg randomized trial



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

5. The Panel does not recommend routine PSA screening in men age 70 years or more, or any man with less than a 10 to 15 year life expectancy. (*Recommendation; Evidence Strength Grade C*)

- **Some men age 70 or greater who are in excellent health may benefit from screening**



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Carter HB et al. J Urol 2013

(Basic) Principles of Screening

- **Additional testing**
 - **PSA based studies**
 - PSA velocity and kinetics
 - PSA density
 - PSA (Free and Total)
 - **Ancillary Markers**
 - PCA3; PHI; 4K
 - Risk calculators
- **Should not be used for primary screening**
 - **Considered in decision to biopsy or repeat biopsy**



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Carter HB et al. J Urol 2013

Prostate MRI

Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study

Hashim U Ahmed, Ahmed El-Shater Bosaily*, Louise C Brown*, Rhian Gabe, Richard Kaplan, Mahesh K Parmar, Yolanda Collaco-Moraes, Katie Ward, Richard G Hindley, Alex Freeman, Alex P Kirkham, Robert Oldroyd, Chris Parker, Mark Emberton, and the PROMIS study group†*

- **PROMIS Trial (2017)**
 - **Multi-center paired cohort trial comparing mpMRI to conventional TRUS biopsy with reference standard being systemic template mapping biopsy**



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Ahmed HU et al. Lancet 2017

PROMIS Trial (2017)

- **mpMRI as a screening modality can**
 - **Potentially allow over 25% of patients with normal mpMRI to avoid a biopsy**
 - **Increase diagnosis of clinically significant prostate cancer**
 - **Reduce likelihood of diagnosing clinical insignificant cancer**



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Ahmed HU et al. Lancet 2017

Prostate MRI

MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis

V. Kasivisvanathan, A.S. Rannikko, M. Borghi, V. Panebianco, L.A. Mynderse, M.H. Vaarala, A. Briganti, L. Budäus, G. Hellawell, R.G. Hindley, M.J. Roobol, S. Eggener, M. Ghei, A. Villers, F. Bladou, G.M. Villeirs, J. Virdi, S. Boxler, G. Robert, P.B. Singh, W. Venderink, B.A. Hadaschik, A. Ruffion, J.C. Hu, D. Margolis, S. Crouzet, L. Klotz, S.S. Taneja, P. Pinto, I. Gill, C. Allen, F. Giganti, A. Freeman, S. Morris, S. Punwani, N.R. Williams, C. Brew-Graves, J. Deeks, Y. Takwoingi, M. Emberton, and C.M. Moore, for the PRECISION Study Group Collaborators*

- **PRECISION Trial (2018)**
 - **Prospective, randomized, non-inferiority trial of 500 patients undergoing MRI (with or without targeted biopsy) versus conventional TRUS PNB**



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Kasivisvanathan V et al. N Engl J Med 2018

PRECISION Trial (2018)

- **28% of MRI cohort avoided biopsy due to non-suspicious findings**
- **Clinically significant cancer in**
 - **38% of MRI targeted**
 - **26% of standard TRUS PNB**



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Kasivisvanathan V et al. N Engl J Med 2018

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Prostate Biopsy Prophylaxis

BACTEREMIA AND BACTERIURIA AFTER TRANSRECTAL ULTRASOUND GUIDED PROSTATE BIOPSY

KELLY A. LINDERT, JOHN N. KABALIN AND MARTHA K. TERRIS*

From the Department of Urology, Stanford University Medical Center, Stanford and Section of Urology, Veterans Affairs Palo Alto Health Care System, Palo Alto, California, and Section of Urologic Surgery, University of Nebraska College of Medicine, Scottsbluff, Nebraska

- **50 patients**
- **No prophylaxis prior to TRUS PNB**

Bacteriuria – 44%

Bacteremia – 16%



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Lindert KA et al. J Urol 2000

Prostate Biopsy Prophylaxis

SINGLE-DOSE ORAL CIPROFLOXACIN VERSUS PLACEBO FOR PROPHYLAXIS DURING TRANSRECTAL PROSTATE BIOPSY

DEEPAK A. KAPOOR, IRA W. KLIMBERG, GHOLAM H. MALEK, JOHN D. WEGENKE,
CLAIR E. COX, A. LYNN PATTERSON, EVELYN GRAHAM, ROGER M. ECHOLS,
EDWARD WHALEN, AND STEVEN F. KOWALSKY

BJU International (2000), 85, 682–685

Antibiotic prophylaxis for transrectal needle biopsy of the prostate: a randomized controlled study

M. ARON, T.P. RAJEEV and N.P. GUPTA
Department of Urology, All India Institute of Medical Sciences, New Delhi, India



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Kapoor DA et al. *Urology* 1998
Aron M et al. *BJU Int* 2000

Prostate Biopsy Prophylaxis

Best Practice Policy Statement on Urologic Surgery Antimicrobial Prophylaxis

J. Stuart Wolf, Jr., Chairman,* Carol J. Bennett,† Roger R. Dmochowski,‡ Brent K. Hollenbeck,
Margaret S. Pearle§ and Anthony J. Schaeffer
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AUA (updated 1/1/2014)

- All regimens \leq 24 hours
- First line
 - Oral fluoroquinolone
 - IV / IM 1st / 2nd / 3rd gen. cephalosporin
- Alternatives
 - Oral TMP-SMX (as of 1/1/14)
 - IV / IM aminoglycoside or aztreonam



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Wolf JS et al. *J Urol* 2008

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Prostate Biopsy Technique

Optimization of Initial Prostate Biopsy in Clinical Practice: Sampling, Labeling and Specimen Processing

Marc A. Bjurlin, H. Ballentine Carter, Paul Schellhammer, Michael S. Cookson,
Leonard G. Gomella, Dean Troyer, Thomas M. Wheeler, Steven Schlossberg,
David F. Penson and Samir S. Taneja*

- **Minimum of 10 to 12 cores**
- **Evidence does not support > 12 cores for initial biopsy**
 - **May be considered for repeat biopsy.**



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Bjurlin MA et al. J Urol 2013

Prostate Biopsy Technique

- **Apical sampling critical**
 - Entire apex composed of peripheral zone
 - Increases detection rate and reduces repeat bx
- **“Far-lateral” zone**
 - Laterally directed biopsies improve cancer detection and NPV



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Bjurlin MA et al. J Urol 2013

Prostate Biopsy Technique

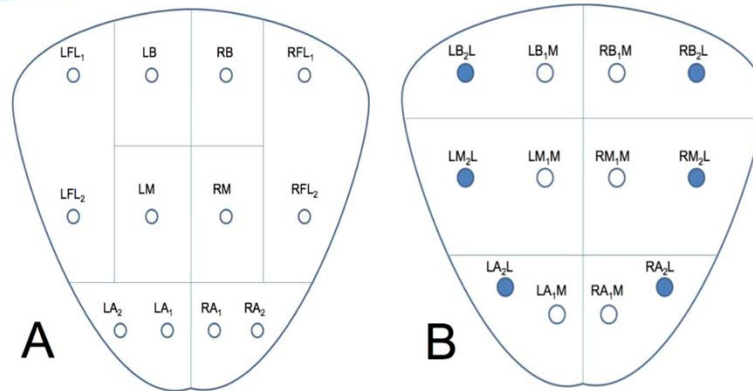
- **Location of cancer in cores**
 - Does not predict exact location of pT3 (EPE) or site of positive margin
 - Does predict laterality of disease
- **Questionable benefit of transition zone bx**



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Bjurlin MA et al. J Urol 2013

Prostate Biopsy Technique

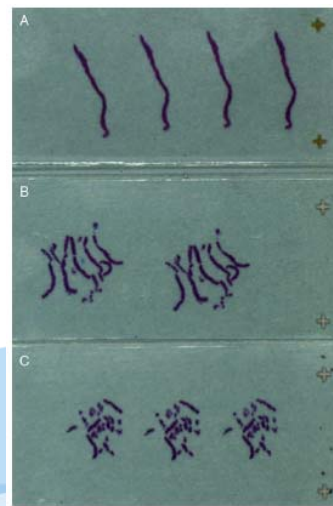


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Bjurlin MA et al. J Urol 2013

Prostate Biopsy Technique

- **Specimen processing**
 - ≤ 2 cores in each container
 - > 2 cores = tissue distortion with impact on cancer detection



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Prostate Biopsy Complications

Possible risks of prostate biopsy and frequency

	% Risk
Infection:	5–7
Hospitalization	1–3
Bleeding:	
Hematuria (% intervention)	50 (less than 1)
Rectal (% intervention)	30 (2.5)
Hemospermia (% greater than 4 wks)	50 (30)
Lower urinary tract symptoms (transient ~1 mo)	6–25
Urinary retention	0.2–2.6
Erectile dysfunction (transient ~1 mo)	Less than 1



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Liss MA et al. J Urol 2017

Prostate Biopsy Complications

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Liss MA et al. J Urol 2017

Prostate Biopsy Complications

Increasing Hospital Admission Rates for Urological Complications After Transrectal Ultrasound Guided Prostate Biopsy

Robert K. Nam,^{*,†} Refik Saskin,[†] Yuna Lee,[†] Ying Liu,[†] Calvin Law,[†] Laurence H. Klotz,[‡] D. Andrew Loblaw,[†] John Trachtenberg,[†] Aleksandra Stanimirovic,[†] Andrew E. Simor,[†] Arun Seth,[†] David R. Urbach[†] and Steven A. Narod[†]

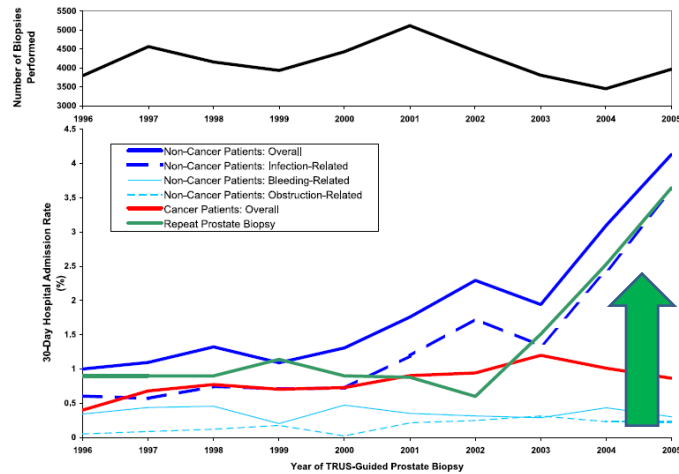
- **75,190 men undergoing TRUS PNB in Canada between 1996 - 2005**
- **Hospital and cancer registries for admission and mortality data**



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Nam RK et al. J Urol 2013

Prostate Biopsy Complications



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Nam RK et al. J Urol 2013

Prostate Biopsy Complications

The Incidence of Fluoroquinolone Resistant Infections After Prostate Biopsy—Are Fluoroquinolones Still Effective Prophylaxis?

Joseph Feliciano,^{*} Ervin Teper, Michael Ferrandino, Richard J. Macchia, William Blank, Ivan Grunberger[†] and Ivan Colon

From the State University of New York Downstate Medical School, Brooklyn, New York

Sepsis Due to Fluoroquinolone-resistant *Escherichia coli* After Transrectal Ultrasound-guided Prostate Needle Biopsy

Jennifer L. Young, Michael A. Liss, and Richard J. Szabo

Bacterial Sepsis After Prostate Biopsy—A New Perspective

Dirk Lange, Christopher Zappavigna, Reza Hamidzadeh, S. Larry Goldenberg, Ryan F. Paterson, and Ben H. Chew



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Utilization of fluoroquinolones and *Escherichia coli* resistance in urinary tract infection: inpatients and outpatients

Karel Urbánek^{1,*}, Mijan Kolář², Jan Strojil¹, Dagmar Koukalová³, Luboslava Čekanová³ and Petr Hejnar²

Prevention of PNB Complications

An Update of the American Urological Association White Paper on the Prevention and Treatment of the More Common Complications Related to Prostate Biopsy

Michael A. Liss,* Behfar Ehdaie, Stacy Loeb, Maxwell V. Meng, Jay D. Raman, Vanessa Spears and Sean P. Stroup

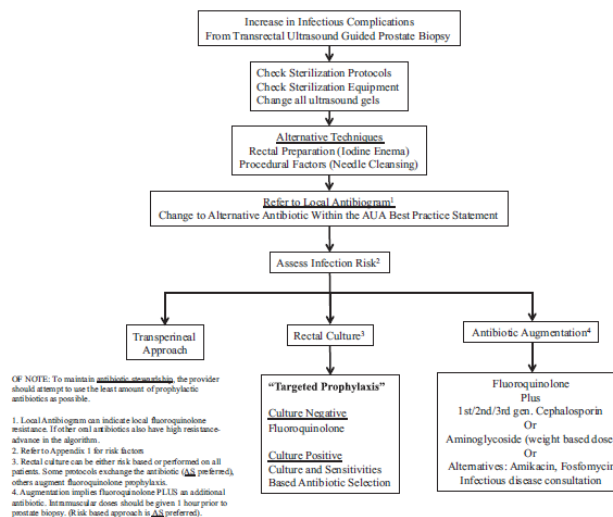
From the University of Texas Health Science Center San Antonio, San Antonio, Texas (MAL); Memorial Sloan Kettering Cancer Center (BE) and New York University (SL), New York, New York; University of California San Francisco, San Francisco, California (MVM); University of Pennsylvania, Philadelphia, Pennsylvania (JDR); Society of Urologic Nurses Association, Pitman, New Jersey (VS); and Naval Medical Center San Diego, San Diego, California (SPS)



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Algorithm to Decrease Infections



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Algorithm to Decrease Infections

Increase in Infectious Complications
From Transrectal Ultrasound Guided Prostate Biopsy



Check Sterilization Protocols
Check Sterilization Equipment
Change all ultrasound gels



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Algorithm to Decrease Infections

Does Disposable Needle Guide Minimize Infectious Complications After Transrectal Prostate Needle Biopsy?

Altug Tuncel, Yilmaz Aslan, Tezcan Sezgin, Omur Aydin, Umit Tekdogan, and Ali Atan

Lower rates of bacteriuria and clinical infections in cohort undergoing biopsy with **disposable biopsy needles** ($p < 0.001$)



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Tuncel A et al. Urology 2008

Algorithm to Decrease Infections

Infection prevention and control in ultrasound - best practice recommendations from the European Society of Radiology Ultrasound Working Group

Christiane M. Nyhsen¹ • Hilary Humphreys^{2,3} • Roland J. Koerner⁴ • Nicolas Grenier⁵ •
Adrian Brady⁶ • Paul Sidhu⁷ • Carlos Nicolau⁸ • Gerhard Mostbeck⁹ •
Mirko D'Onofrio¹⁰ • Afshin Gangi¹¹ • Michel Claudon¹²

Single use recommended over multiple use
bottles due to contamination

If multi-use, **change daily**



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Nyhsen CM et al. Insights Imaging 2017

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Check Sterilization Protocols
Check Sterilization Equipment
Change all ultrasound gels



Alternative Techniques
Rectal Preparation (Iodine Enema)
Procedural Factors (Needle Cleansing)



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Algorithm to Decrease Infections

Peri-procedural povidone-iodine rectal preparation reduces microorganism counts and infectious complications following ultrasound-guided needle biopsy of the prostate

Justin R. Gyorfi · Christopher Otteni · Kevin Brown · Amar Patel · Kathleen Lehman · Brett E. Phillips · Kalyan Dewan · Girish Kirimanjeswara · Jay D. Raman

Povidone iodine can reduce colony counts in the rectal vault by **97% within 5 minutes of instillation**



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Gyorfi JR et al. World J Urol 2014

Algorithm to Decrease Infections

Decrease in Infection Rate Following Use of Povidone-Iodine During Transrectal Ultrasound Guided Biopsy of the Prostate: A Double Blind Randomized Clinical Trial

Mahyar Ghafoori ^{1,2*}, Madjid Shakiba ¹, Hamidreza Seifmanesh ¹, Kamal Hoseini ³

A Prospective Randomized Trial of Povidone-Iodine Prophylactic Cleansing of the Rectum Before Transrectal Ultrasound Guided Prostate Biopsy

Zeid AbuGhosh,* Joseph Margolick,* S. Larry Goldenberg,† Stephen A. Taylor,* Kourosh Afshar,* Robert Bell,* Dirk Lange,* William R. Bowie,* Diane Roscoe,* Lindsay Machan‡ and Peter C. Black*,§

Randomized trials show promise but are not conclusive

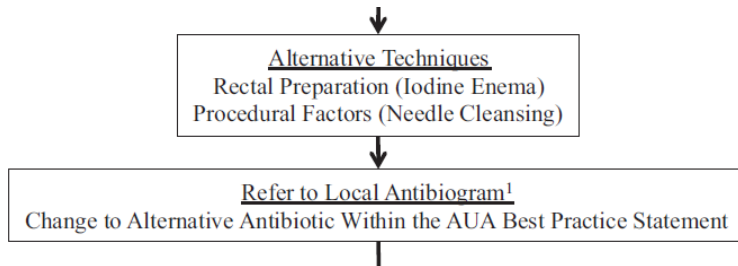
Low risk intervention



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Ghafoori M et al. Iran J Radiol 2012
AbuGhosh Z et al. J Urol 2013

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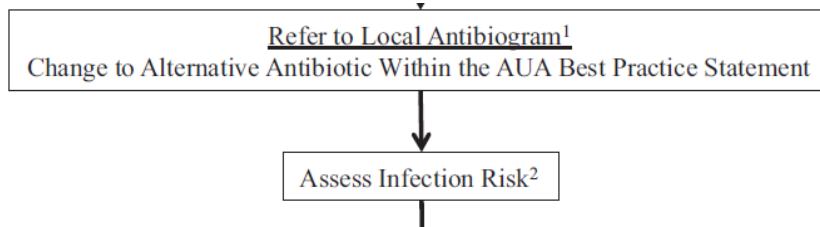
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Algorithm to Decrease Infections

Hershey Medical Center Antibigram for Gram-Negatives, Jan – Dec 2016 (Inpatient at top and Outpatient at bottom)																					
Gram-Negatives January – December, 2016	# Isolates Tested (not all tested for each drug)	% Susceptible (A blank box can mean that drug is inappropriate for that bacteria or that a similar drug in that class usually can be used)																			
		Penicillins and Cephalosporins								β-lactam / β-lactamase inhibitor Combinations		Carbapenems		Fluoroquinolones		Aminoglycosides		Others			
		Ampicillin	Cefazolin	Ceftazidime	Ceftriaxone	Cefepime	Amoxicillin / Clavulanate	Ampicillin / Sulbactam	Piperacillin / Tazobactam	Ticarcillin / Clavulanate	Meropenem	Ertapenem	Ciprofloxacin	Moxifloxacin	Levofloxacin	Gentamicin	Tobramycin	Amikacin	Nitrofurantoin (for urine infections)	Tetracycline	Trimethoprim / Sulfamethoxazole
INPATIENT																					
<i>Escherichia coli</i>	801	53	80	89	89	89	81	58	97	100	100		74	72	75	90	91	99	97	74	78
<i>Klebsiella pneumoniae</i>	374	0	82	87	87	87	84	74	87	94	93	96	86	86	86	95	88	99	45	82	82
<i>Proteus mirabilis</i>	148	78	89	98	98	98	96	87	99	99	99	65	61	71	91	91	99	0	0	76	
<i>Enterobacter cloacae</i>	112	0	0	84	87	96	0	0	91	100	97	96	99	98	98	98	100	*	87	95	
<i>Enterobacter aerogenes</i>	55	0	0	73	69	100	0	0	75	100	100	100	100	100	100	100	100	100	*	85	98
<i>Serratia marcescens</i>	55	0	0	91	87	100	0	0	85	100	100	91	98	98	96	87	95	*	2	100	
<i>Pseudomonas aeruginosa</i>	300			87	86				94**			61	80		87	95	98				
<i>Citrobacter freundii</i>	48	0	0	73	77	96	0	0	94	100	100	85	*	88	88	88	100	*	61	77	
<i>Morganella morganii</i>	35	0	0	89	74	97	0	6	91	100	100	71	*	77	83	94	100	*	0	69	
<i>Stenotrophomonas maltophilia</i>	43				56					44					88						95
OUTPATIENT																					
<i>Escherichia coli</i>	2311	59	89	95	96	96	88	65	98	100	100		85	78	88	94	95	100	98	79	81
<i>Klebsiella pneumoniae</i>	436	0	94	96	96	96	93	82	94	99	98	94	92	96	98	96	99	47	83	80	
<i>Proteus mirabilis</i>	209	83	94	100	100	100	99	93	100	100	100	80	*	83	94	94	100	0	0	83	
<i>Enterobacter cloacae</i>	84	0	0	85	85	94	0	0	90	100	100	90	*	94	96	94	100	13	83	87	
<i>Enterobacter aerogenes</i>	49	0	0	92	90	98	0	0	92	100	96	98	*	98	100	100	100	20	96	98	
<i>Serratia marcescens</i>	62	0	0	90	89	100	0	0	89	100	97	82	83	87	97	92	97	*	8	90	
<i>Pseudomonas aeruginosa</i>	268			94	92				97**	94		82		79	85	98	99				
<i>Citrobacter freundii</i>	57	0	0	84	86	100	0	0	96	100	98	89	*	93	93	95	100	93	89	86	
<i>Morganella morganii</i>	32	0	0	91	88	100	0	3	97		97	97	78	*	81	94	97	100	*	0	66
<i>Stenotrophomonas maltophilia</i>	57				51					46					88						98

Algorithm to Decrease Infections



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Liss MA et al. J Urol 2017

Algorithm to Decrease Infections

Risk factors for prostate biopsy infection

Medical history:

- Diabetes
- Significant comorbidities (Charlson score >1)
- Immunosuppression (steroids, chemotherapy, HIV)

Urological history:

- Urinary tract infection or prostatitis
- Prostate biopsy infection
- Greater cumulative number of biopsies

Exposures to antibiotic resistance:

- Antibiotics in last 6 months
- Recent international travel
 - Endemic resistant locations: India and Southeast Asia
 - Use of antibiotics to prevent traveler's diarrhea
- Health care worker

Colonization with resistant bacteria:

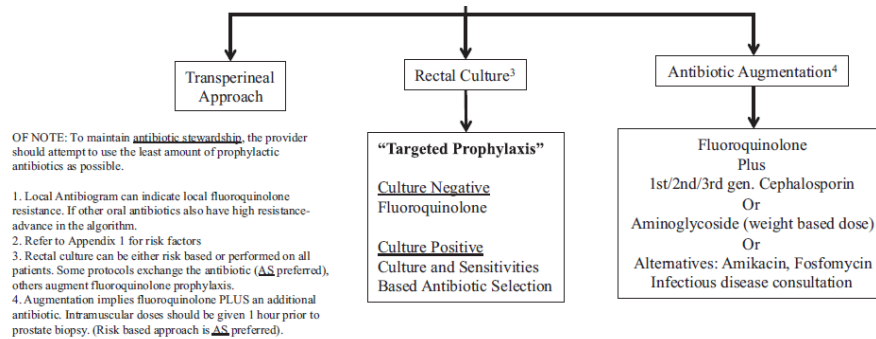
- Colonized with fluoroquinolone resistant E. coli via rectal culture



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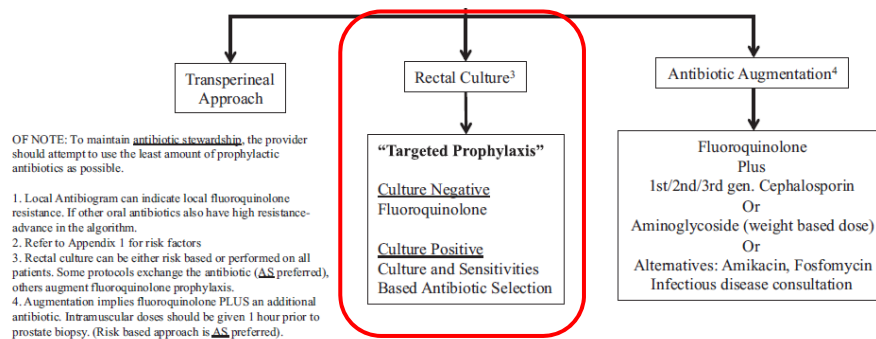
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Rectal Cultures Before Transrectal Ultrasound-guided Prostate Biopsy Reduce Post-prostatic Biopsy Infection Rates

Christopher A. Duplessis, Mary Bavaro, Mark P. Simons, Charles Marguet, Michael Santomauro, Brian Auge, Daniel A. Collard, Joshua Fierer, and James Lesperance

Targeted Antimicrobial Prophylaxis Using Rectal Swab Cultures in Men Undergoing Transrectal Ultrasound Guided Prostate Biopsy is Associated With Reduced Incidence of Postoperative Infectious Complications and Cost of Care

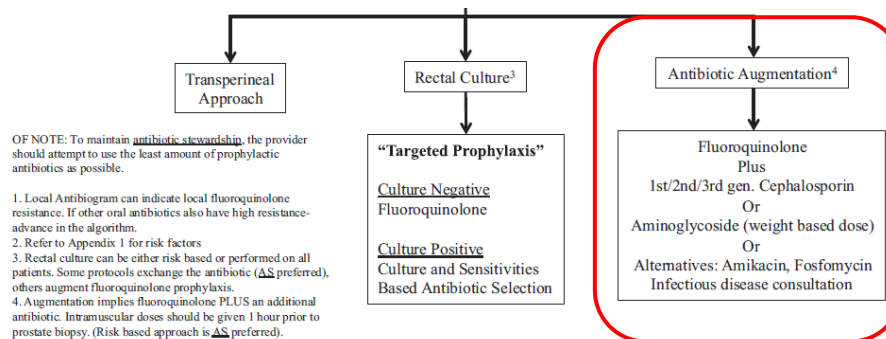
Aisha K. Taylor, Teresa R. Zembower, Robert B. Nadler, Marc H. Scheetz, John P. Cashy, Diana Bowen, Adam B. Murphy, Elodi Dielubanza and Anthony J. Schaeffer*,†



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Duplessis CA et al. Urology 2012
Taylor AK et al. JUrol 2012

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Algorithm to Decrease Infections

Intramuscular Gentamicin Improves the Efficacy of Ciprofloxacin as an Antibiotic Prophylaxis for Transrectal Prostate Biopsy

Henry SS Ho,¹*MRCS, MMed, FAMS (Urology)*, Lay Guat Ng,¹*MBBS, FRCS, FAMS (Urology)*, Yeh Hong Tan,¹*MBBS, FRCS, FAMS (Urology)*, Mavis Yeo,²*DTMBL, Dip Bacteriology, FRCPA*, Christopher WS Cheng,¹*MBBS, FRCS, FAMS (Urology)*

Combined Ciprofloxacin and Amikacin Prophylaxis in the Prevention of Septicemia After Transrectal Ultrasound Guided Biopsy of the Prostate

Elijah O. Kehinde,* May Al-Maghrebi, Mehraj Sheikh and Jehoram T. Anim

From the Departments of Surgery (Division of Urology) (EOK), Biochemistry (MAM), Radiology (MS) and Pathology (JTA), Faculty of Medicine, Kuwait University, Kuwait



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Ho HSS et al. Ann Acad Med Singapore 2009
Kehinde EO et al. JUrol 2013

PNB Bleeding Complications

- **Hematuria**
 - Typically transient & self-limiting
 - Risk factors
 - Large prostate volume & large transition zone
- **Blood Per Rectum**
 - Typically transient & self-limiting
 - Risk factors
 - Increased # of cores and anticoagulation



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PNB Bleeding Complications

- **Hematospermia**
 - Occurs in over 90% of biopsy pts
 - Long duration
 - 1/3 still present at 4 weeks post-PNB
- **Risk factors**
 - Age, higher prostate volume, prior TURP



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PNB Anticoagulation

Anticoagulation and Antiplatelet Therapy in Urological Practice: ICUD/AUA Review Paper

Daniel J. Culkin,^{*,†} Emilio J. Exaire, David Green, Mark S. Soloway,
Andreas J. Gross,[‡] Maheshbhai R. Desai, James R. White[§] and Deborah J. Lightner

Health Sciences Center, University of Oklahoma (DJC, EJE), Oklahoma City, Oklahoma, Northwestern University (DG), Chicago, Illinois, University of Miami (MSS), Bal Harbour, Florida, Urologische Abteilung (AJG), Hamburg, Germany, Muljibhai Patel Urological Hospital (MRD), Nadiad, India, Baltimore, Maryland (JRW), and Mayo Clinic (DJL), Rochester, Minnesota

**Anticoagulation recommendations are discussed
for PNB in setting of all urologic procedures**



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Culkin DJ et al. J Urol 2014

PNB Anticoagulation

- **Aspirin, NSAIDS**
 - Appear to be safe to continue
- **Anti-platelet agents and Coumadin**
 - Data too limited to draw conclusions
 - Most studies recommend discontinuation 5-7 days prior
 - **Coumadin interacts with quinolones, macrolides, and cephalosporins**



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Culkin DJ et al. J Urol 2014

PNB Urinary Retention

- **Pelvic pain (rectum, suprapubic, glans)**
- **Risk factors**
 - Larger volume prostate, IPSS > 19, increased transition zone volume
- **Alpha-blocker x 7 days may decrease risk**
 - Begin 1 day prior to biopsy
- **5-7 days catheter drainage**



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ARS Q1:

Which of the following is the most significant risk factor for urosepsis following transrectal prostate needle biopsy?

- a) Diabetes
- b) Immunosuppression
- c) Number of prior biopsies
- d) History of antibiotics in last 6 months
- e) Recent travel to Southeast Asia



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Answer: D

D. History of antibiotics in last 6 months

All of these patient factors are associated with increased risk of post-biopsy, but the most significant is antibiotic use in the previous 6 months



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ARS Q2:

A 59 year-old white man with a history of well-controlled hypertension is referred to you for PSA = 6.0 ng/mL. He has no urinary symptoms. DRE is unremarkable. The next best step is:

- a) Informed discussion of risks and benefits of prostate cancer diagnosis
- b) Ciprofloxacin x 4 weeks, then re-check PSA
- c) Recheck PSA with % free fraction
- d) MRI of pelvis/prostate
- e) Prostate biopsy



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Answer: A

A. Informed discussion of risks and benefits of prostate cancer diagnosis

Prior to prostate biopsy, all patients—even those with PSA > 4 ng/mL—should be counseled as to the potential risks and benefits of prostate cancer diagnosis, including overtreatment. Antibiotics are not recommended for asymptomatic PSA elevations. Free PSA, PSA density, and MRI are reasonable secondary tests after an informed discussion.



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ARS Q3:

The following patient(s) that should be offered prostate cancer screening through informed discussion is:

- a) 39 year-old African-American man
- b) 78 year-old African-American man with history of insulin-dependent diabetes and coronary artery disease
- c) 39 year-old Hispanic man with father and older brother diagnosed with aggressive prostate cancer
- d) Both a and c
- e) None of the above



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Answer: E

E. None of the above

Prostate cancer screening should not be offered to men < 40 years of age. For those ages 40 to 55 years, screening can be considered in African-Americans and those with a family history of prostate cancer. Screening should not be routinely offered to men ≥ 70 years or those with ≤ 10 to 15 life expectancy.



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ARS Q4:

Prior to TRUS-guided prostate biopsy, your routine practice is Ciprofloxacin 500 mg po once. You note a substantial increase in post-biopsy urinary infections over a 6-month period. The next best step is:

- a) In addition to ciprofloxacin, administer gentamicin 1.5 mg/kg IM once prior to biopsy
- b) Verify equipment sterilization protocols
- c) Change antibiotic prophylaxis per local antibiogram
- d) Initiate iodine enemas prior to biopsy
- e) Perform transperineal prostate biopsies



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Answer: B

B. Verify equipment sterilization protocols

If an increase in post-biopsy infections occurs, the next step is to verify equipment sterilization protocols, check sterilization equipment, and change all ultrasound gels. Changes in technique—including iodine enemas and biopsy needle cleaning with formalin—may then be considered, followed by antibiogram-directed prophylaxis. Antibiotic augmentation and transperineal biopsy are reasonable options, but only after completion of risk assessment.



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ARS Q5:

For initial diagnostic prostate biopsy, proper technique includes all of the following components except:

- a) Routine transition zone sampling
- b) Laterally-directed samples
- c) Apically-directed samples
- d) No greater than 2 core samples placed in each individual specimen jar
- e) Minimum of 10 to 12 separate core samples obtained



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Answer: A

A. Routine transition zone sampling

Transition zone sampling does not improve cancer detection in initial diagnostic biopsy. Proper technique involves lateral and apical samples; ≤ 2 samples placed in each specimen jar; and a minimum of 10 to 12 cores.



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