

URINE CYTOLOGY

LEAH DVORAK M.D

ANATOMIC AND CLINICAL PATHOLOGIST

MINNESOTA PATHOLOGISTS CHARTERED

MAY 2024

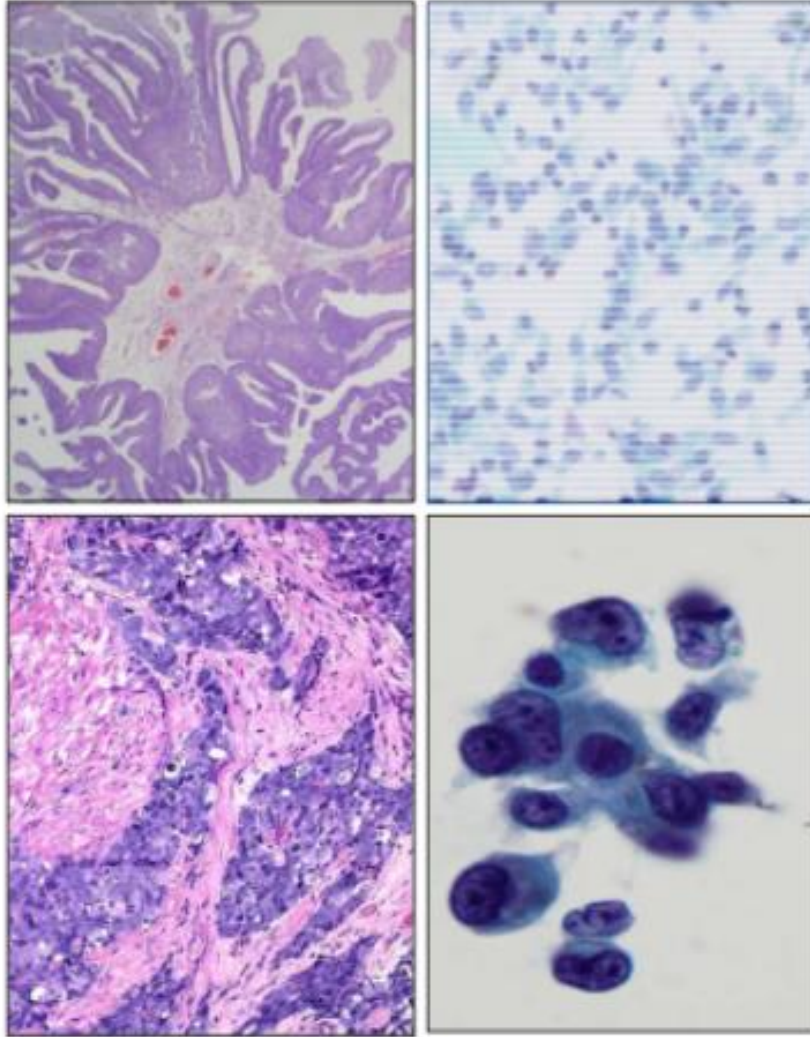
PURPOSE OF URINE CYTOLOGY AND WHEN TO ORDER

- Purpose:
 - To detect urothelial carcinoma.
- When to order:
 - **GROSS HEMATURIA**
 - 85% of patients with a new bladder tumor present with gross hematuria
 - Microscopic hematuria has a low predictive value for bladder cancer
 - Urinary frequency, urgency, difficulty urinating, dysuria
 - Bladder cancer can present with UTI symptoms

TYPES OF CANCER IN THE BLADDER

- UROTHELIAL CARCINOMA (90%)
 - Low-grade
 - Low-grade papillary urothelial carcinoma
 - Noninvasive and invasive
 - High grade
 - Flat urothelial carcinoma in situ
 - High-grade papillary urothelial carcinoma
 - Noninvasive and invasive
- Others
 - Squamous cell carcinoma, adenocarcinoma, small cell carcinoma, sarcoma, lymphoma, melanoma, direct extension of tumor outside the bladder

Bladder cancer – more than one disease?

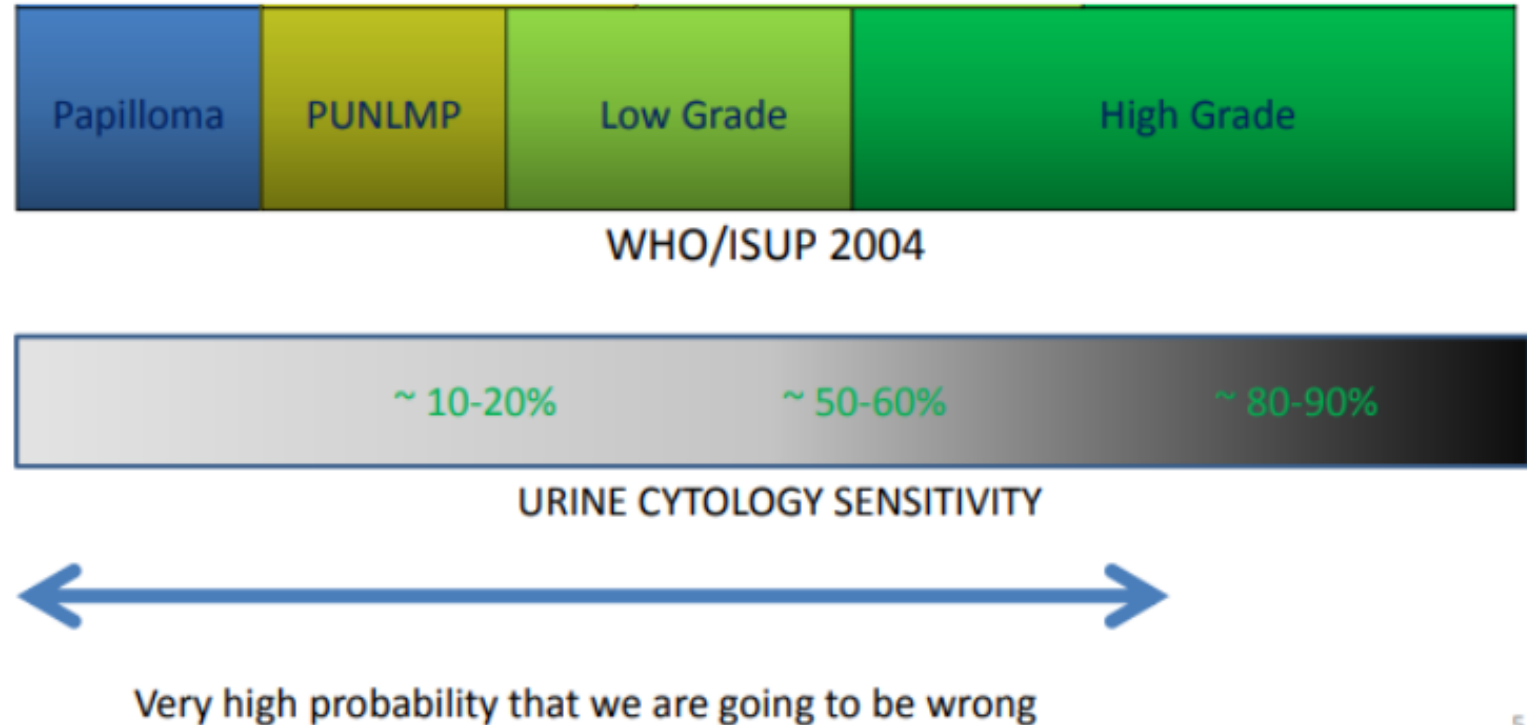


- ~ 75 % Non-Muscle-Invasive (Ta/T1)
 - Good prognosis
 - Recurrence
 - 10%-15% progression (LG Ta - <1%)*
- ~ 25 % Muscle-Invasive (\geq T2)
 - >60% overall survival

*Nielsen ME et al. Trends in Stage-Specific Incidence Rates for Urothelial Carcinoma of the Bladder In the United States: 1998-2006. Cancer 2014;120:86

SENSITIVITY OF URINE CYTOLOGY FOR DIAGNOSING UROTHELIAL CARCINOMA

- Not good for the diagnosis of low-grade urothelial carcinoma (10-20%)
- Quite good for the diagnosis of high-grade urothelial carcinoma (>95%)
- High-grade urothelial carcinoma is what we really care about
 - Potential for deep muscle invasion, metastasis and death



Clinical Management

Marcus L. Quek, Trinity J. Bivalacqua, Ashish M. Kamat, and Mark P. Schoenberg

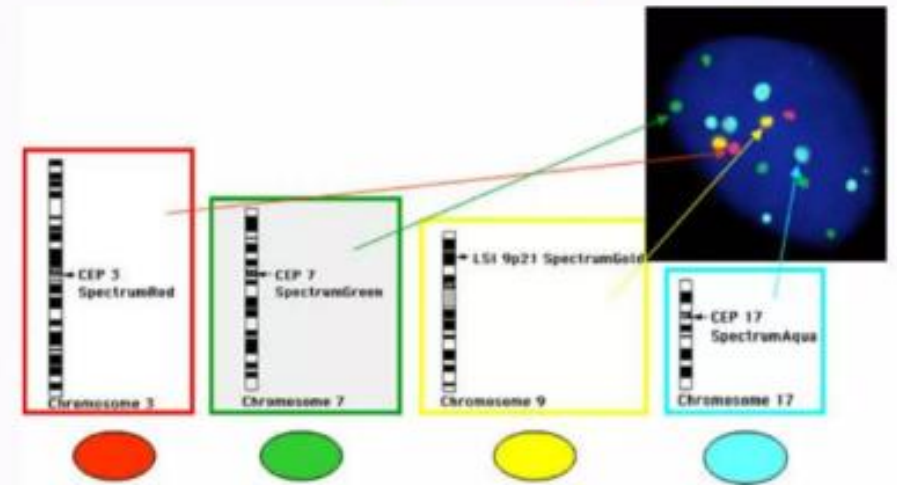
Risk of malignancy – ongoing studies

Category	Risk of Malignancy	Management
Unsatisfactory/Nondiagnostic	? (<5%)	Repeat cytology, cystoscopy in 3 months if increased clinical suspicion
Negative for HGUC	0-2%	Clinical follow up as needed
Atypical Urothelial Cells (AUC)	8-35%	Clinical follow up as needed. Use of ancillary testing.
Suspicious for HGUC	50-90%	More aggressive follow up, cystoscopy, biopsy
LGUN	~10%	Need biopsy to further evaluate grade and stage
High Grade UC	>90%	More aggressive follow up, cystoscopy, biopsy, staging
Other malignancy	>90%	More aggressive follow up, cystoscopy, biopsy, staging

MANAGEMENT OPTIONS FOR AUC

- Clinical judgement
 - Low risk:
 - No other cause for atypia => repeat urine cytology in 3 months
 - Other cause for atypia => Nothing
 - High risk:
 - Ancillary testing
 - UroVysion FISH (sensitivity 89% for AUC)
 - Repeat urine cytology
 - Cystoscopy

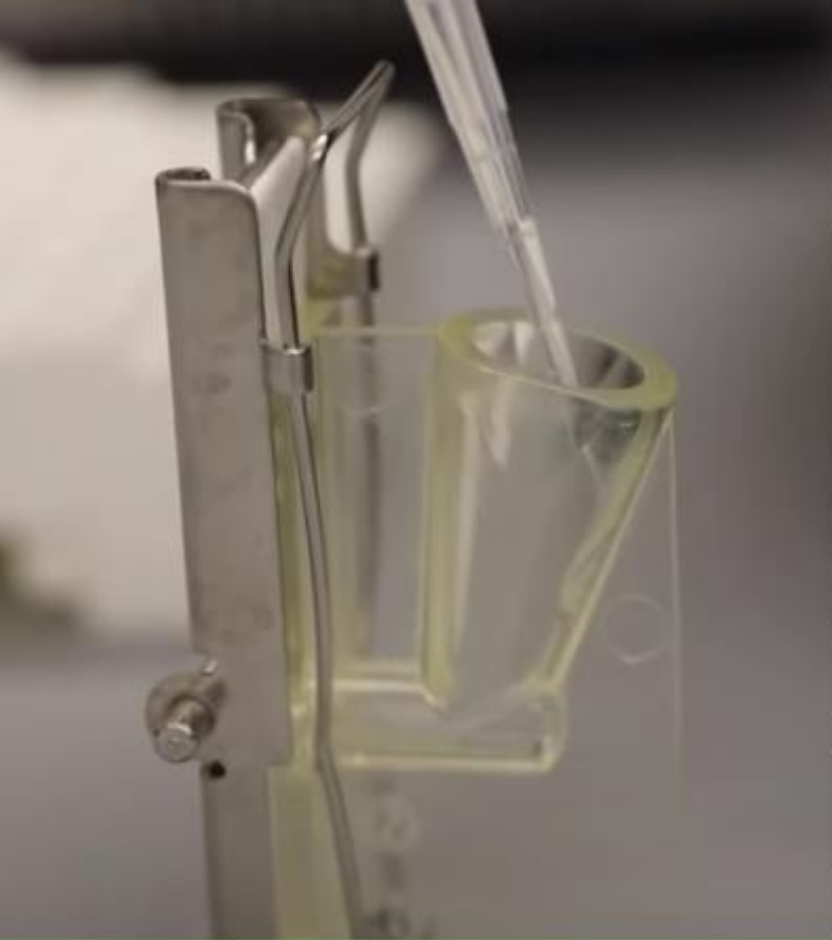
FISH (UroVysion)



<https://www.slideshare.net/slideshow/urothelial-ca-urinary-markers/49680032>

EFFECTIVENESS OF UROVYSION FISH AND CYTOLOGY FOR BLADDER CANCER DETECTION

	Sensitivity	Specificity
Urovysion FISH	72% 89% (with a cytology dx of AUC)	83%
Cytology	42%	96%



URINE CYTOLOGY CYTOSPIN PROCEDURE

**I'M
HALF
FULL**



**I'M
HALF
EMPTY**



**I THINK
THIS IS
PEE!**



REALISTS

**THE ONLY ONES WHO REALLY
KNOW WHAT'S GOING ON!**

To claim CME credit (Must complete by 12-27-2024)



- Scan QR Code or click on the link below-
 - iPhone: use camera to take you to the site
 - QR Code Reader App
 - Snap Chat (take a snap!)
 - Facebook (“Explore” – QR Code)
- <https://survey.alchemer.com/s3/7645302/CME-Clinical-Updates-ENDURING-MATERIAL>
- Contact carla.griffin@centracare.com with questions or for a CME transcript.