

NMP22 BladderChek

**A new Tumor Marker for Early Detection of
Bladder Cancer**

Tumor of the Urogenital Tract

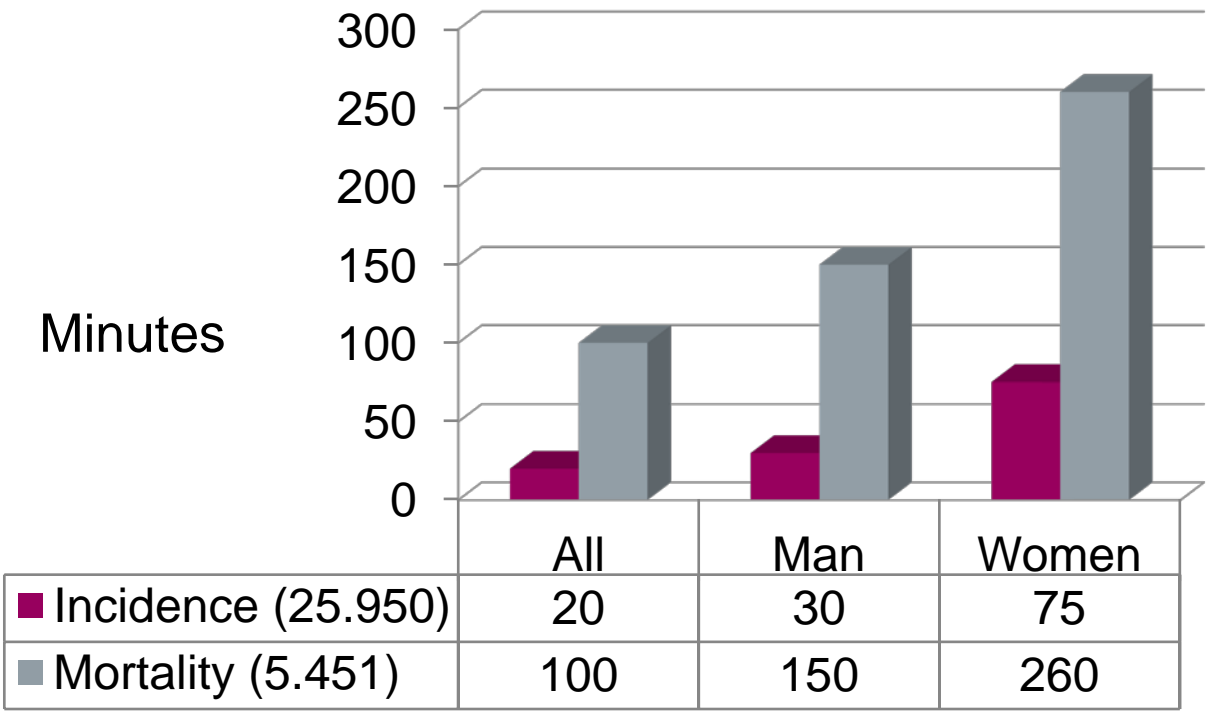
- Distribution of the urological tumors

• Prostate	41,6 %
• Bladder	33,7 %
• Kidney	18,6 %
• Testicle	5,5 %
• Penis	0,6 %

2010 - Bladder Cancer in the USA

- In 2010, an estimated 70,530 adults (52,760 men and 17,770 women) will be diagnosed with bladder cancer in the USA
- It is estimated that 14,680 people will die from this disease.
- Of newly diagnosed bladder cancer cases, approximately 70%-80% will present with nonmuscle-invasive disease, and despite endoscopic and intravesical treatments, 50%-70% will recur and 10%-30% will progress to muscle-invasive disease.

Incidence & Mortality of Bladder Cancer in Germany in Minutes



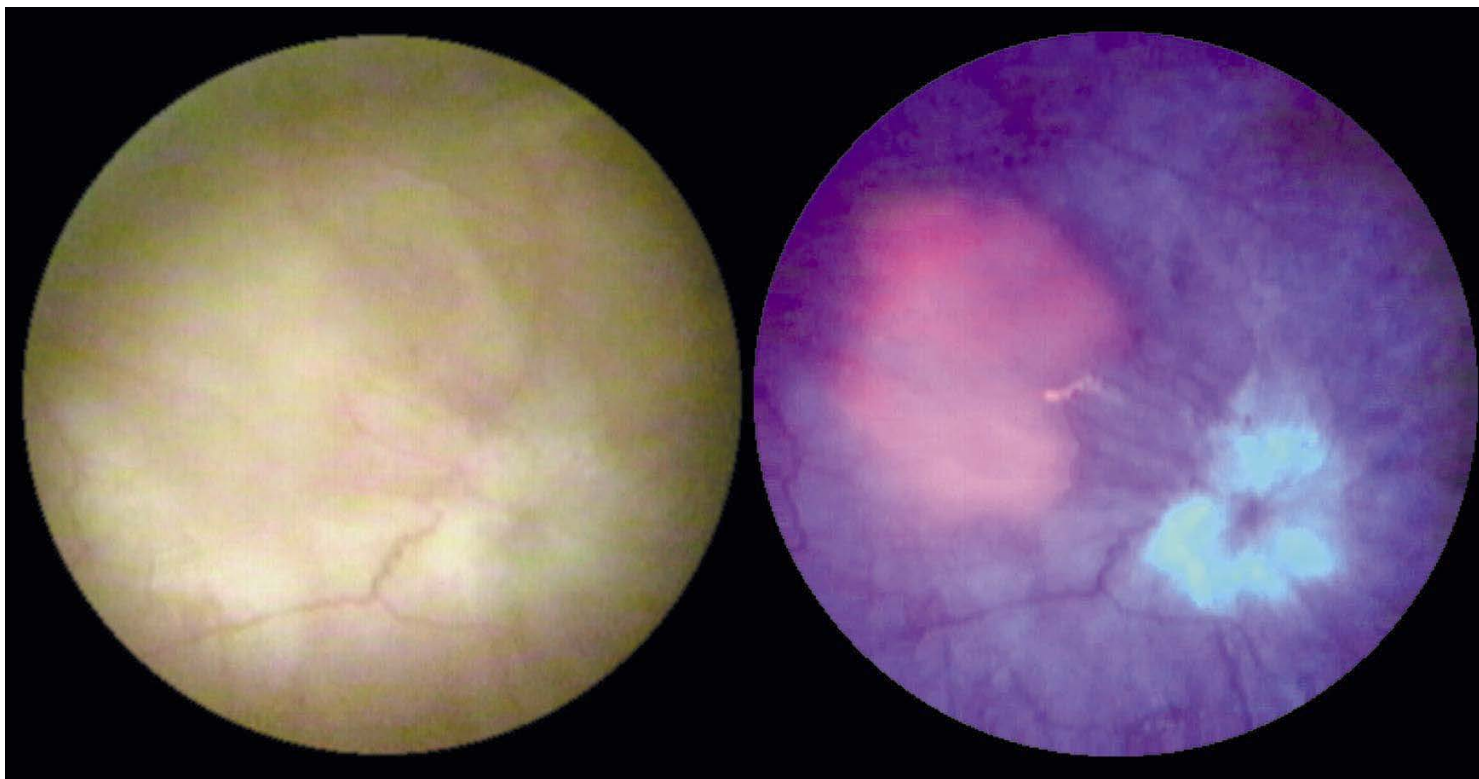
Diagnostic Problems I

- Up to now, there are no special, high-sensitive non-invasive diagnostic examination methods for an early detection of a BT.
- The urine cytology achieves in the area of the non-invasive, good differentiated tumours (pTa, pT1, G1) a very low sensitivity.
- The diagnosis becomes even more difficult due to the fact, that ~ 70%-80 % of all BT are superficial, well differentiated tumors.
- Consequence: *There is a big diagnostic uncertainty among the greatest group of all bladder tumours.*

Diagnostic Problems II

- The bladder cystoscopy is the “Golden Standard” – it is good but not perfect.
- The disadvantage is a “sometimes painful” procedure for the patient and some limitations in the diagnosis of a BT.
(CIS, upper UT, occult tumors, early detection)
- The basic problem of the urine diagnostic of proteins is the decomposition of the molecule through proteolytic enzymes.
- A method, which stabilizes the substance of interest or could be used immediately would be of great help for the urologists to get a more accurate biological status of the disease.

A tumor marker like NMP22 is a perfect adjunct to cystoscopy



white light

blue light

NMP22 - a new tumor marker for

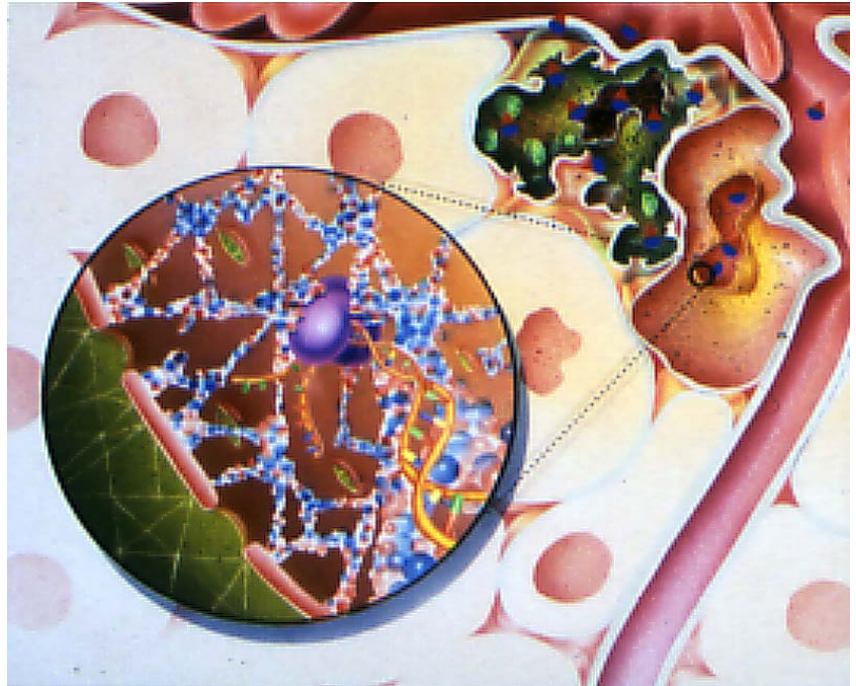
- Preventive medical check-up
- Early diagnosis
(risk groups, symptomatic patients with hematuria,..)
- Monitoring

What is NMP22 ?

- NMP22 is a nucleus matrix protein, which is expressed very early in tumour cells (10-100 times).
- The test demonstrates a very high sensitivity for superficial tumour compared to cytology.
- The NMP22 test shows no diagnostic gap for the diagnosis of bladder tumours with an high sensitivity and specificity for all tumour stages.
- The test has passed the **FDA registration** regulations in the USA.

What are Nuclear Matrix Proteins?

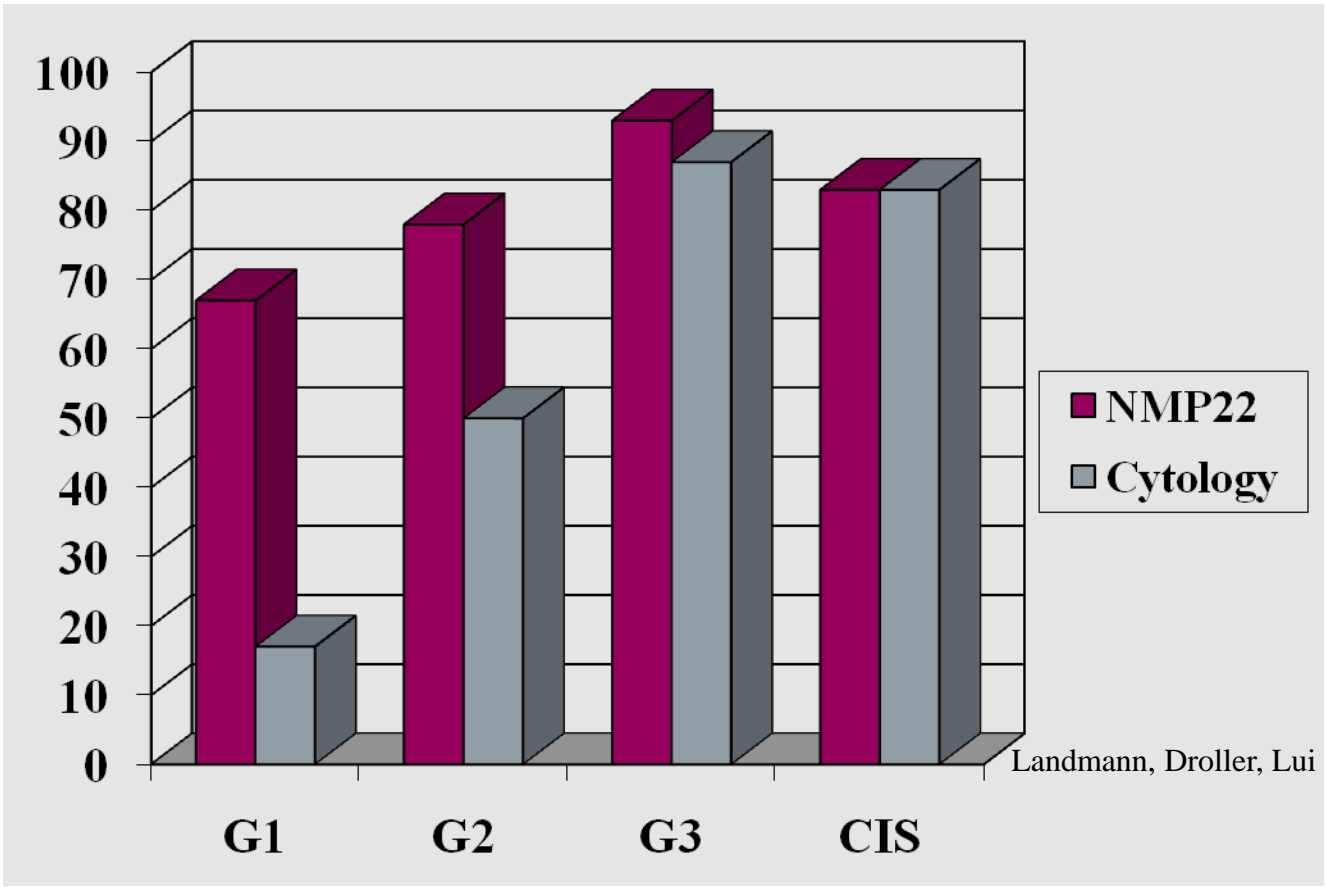
- Protein framework which organizes DNA
- Control center of cell
- Common to all cells
- NMPs vary by cell type, stage of differentiation, cell cycle and type of cancer
- NMPs are released into blood and urine through apoptosis/cell death
- Applicable to most, if not all forms of cancer



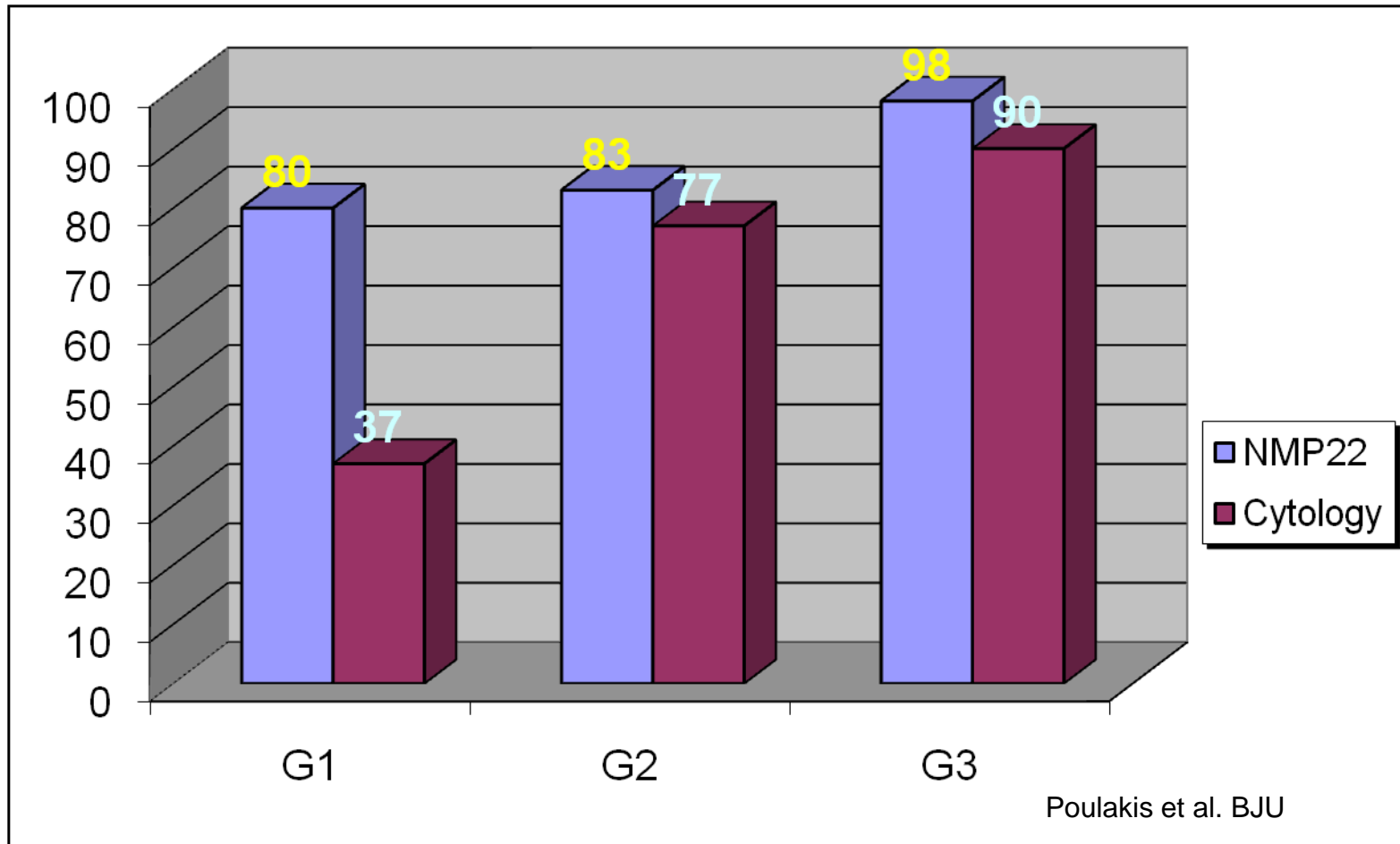
NMP22- Clinical Utility

- NMP22 is not a test which can replace Cystoscopy – it is a perfect adjunct to it.
- NMP22 can possibly help the clinicians to confirm cystoscopies and/or help to optimise the definition of time intervals.
- NMP22 can be used for a screening parameter as confirmation or exclusion test for risk patients, as well as for monitoring of patients after a TURBT.
- NMP22 can detect cancer in the upper urinary tract.
- NMP22 can be used as adjunct to the urological standard diagnostic.

NMP22 - more sensitive as cytology



Sensitivity of NMP22 vs. UC



Poulakis et al. (n=739) BJU 2001

Sensitivity in %	NMP22 (n)	Cytology (n) -VUC
All	85 (347)	62 (253)
pTa	83 (174)	44 (93)
pTis	74 (23)	84 (26)
pT1	85 (40)	70 (33)
pT2	95 (55)	78 (45)
pT3	96 (43)	93 (42)
pT4	100 (9)	89 (8)
pTa,Tis,T1	83 (237)	53 (152)
pT2-T4	96 (107)	85 (95)
G1	82 (106)	38 (49)
G2	89 (149)	68 (109)
G3	94 (66)	90 (63)
Specificity without EC*	68 (226)	96 (253)
Specificity with EC*	94 (121)	

*exclusion criteria

Various NMP22 studies with NMP22

Author	Journal	No. Patients	Sensitivity	Specificity	S/M
Soloway	JoU 1996	90	70%	86%	M
Akaza	Jpn J Cancer C 1997	183	86%	79%	S
Saad	BJU 2002	120	81%	87%	S/M
Oehr	Tumor Diag&T2006	113	86%	98%	S
Poulakis	BJU 2001	739	85%	68%94%*	S/M
Mianaga	JoU 1997	300	81%	100%	S/M
Nero del	Eur Urol 1999	105	83%	87%	M
Ponsky	JoU 2001	608	88%	84%/99%*	S/M
Lüdecke	CME Program 2007	8871	73%	73%	Meta-analys. Pub.96-02
Hautmann	XX.EAU 2005.	75	85%	91%	S/M
Grossman	JAMA 2006	668	50%#	87%	M
Lüdecke	XIX.EAU 2004.	517	75%	92%	M
Grossman	JAMA 2005	1331	56%#	86%	S
Kumar	Jpn J Clin Onc 2006	131	85%/91%+	77%/88%	M

S=Screening
M= Monitoring
* With exc

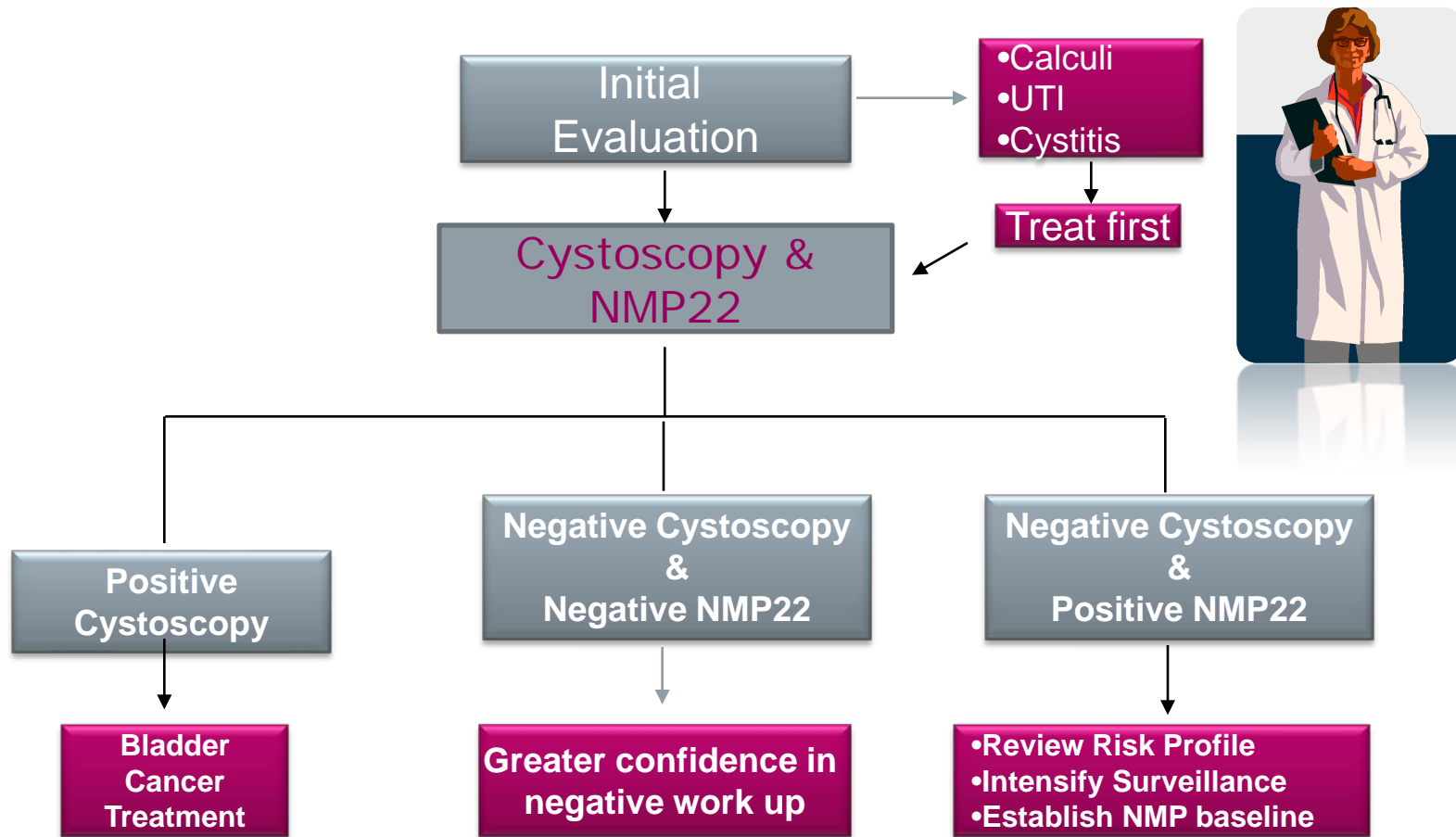
Use of the NMP22 BladderChek

"The combination of NMP22 and cystoscopy is the most effective method for the early detection of bladder cancer available to the clinician today."

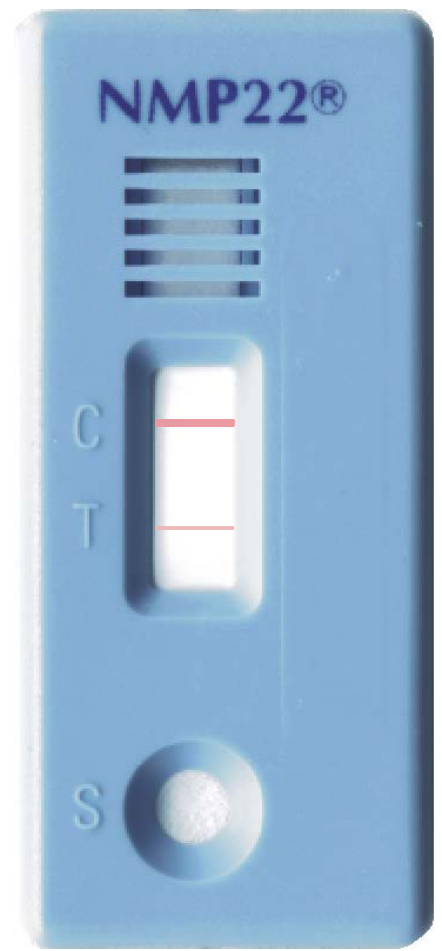
NMP22 together with white light cystoscopy increases the detection rate for BC up to 96% - 99%.

Grossman et al: JAMA 2005 & 2006

Diagnostic Work up: Patients at Risk for Bladder Cancer Cystoscopy & NMP22



NMP22-BladderChek



NMP22 – BladderChek

- Qualitative results in 30 minutes.
- Only 4 drops of urine is needed
- No external lab and shipment of samples.
- clinical utility for diagnosis & monitoring - FDA approved
- Use fresh urine – no freezing
- No interference through hematuria (0,8V%).
- 95% concordance with the quantitative NMP22 version.
- Results are available during the patients visit.