TUR of Bladder Tumour and Blue Light Cystoscopy

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Bladder Cancer Incidence
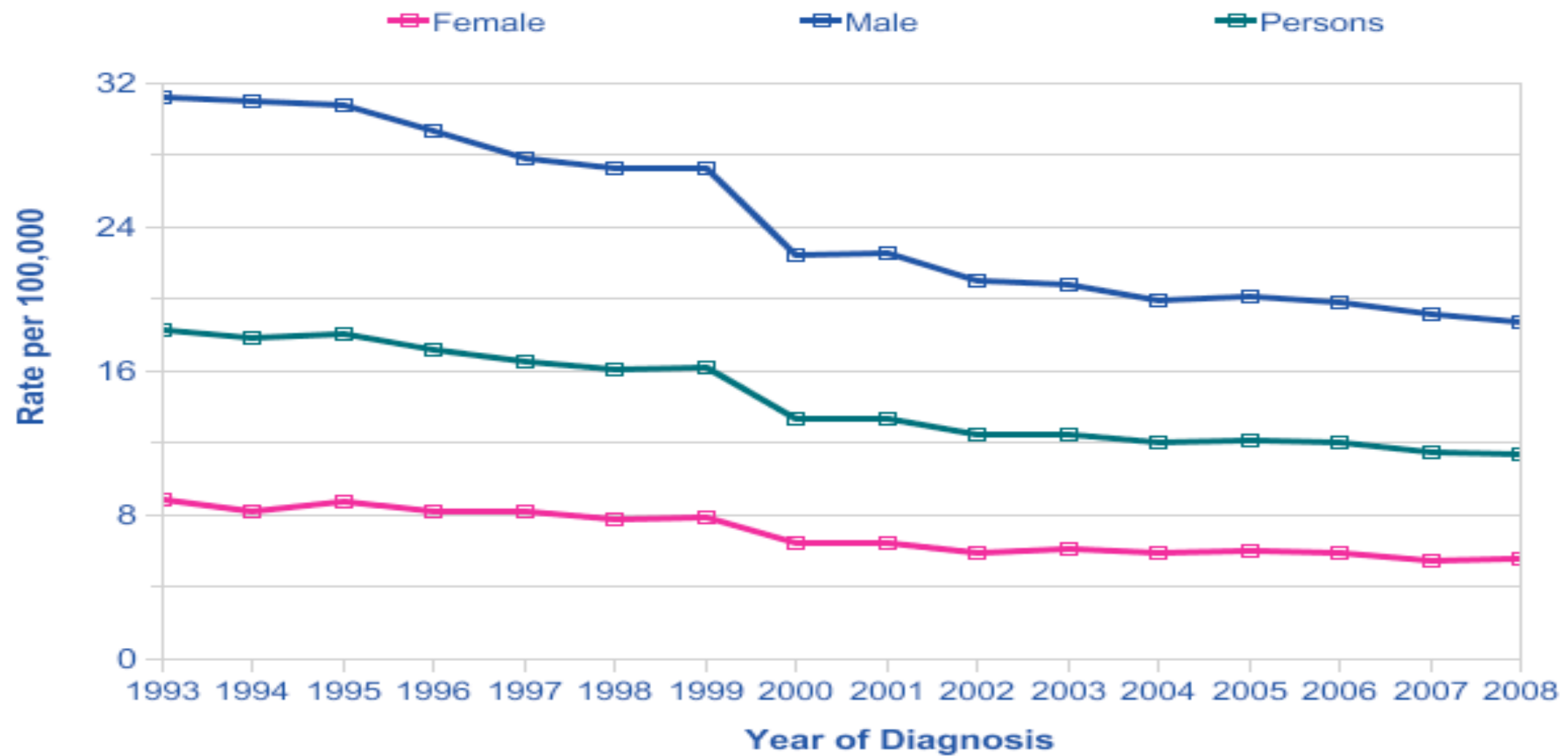
EUROPE

- 3.1-41.5/100 000

- 45 000/1 year

- 90% urothelial cancers

- 75-85% non muscle invasive

UK

- 11,2/100 000

Trends in UK

Bladder Cancer

Management is the most expensive (from dg to death)

- *mostly non lethal*

- *mostly lifelong surveillance (invasive)*

- *frequent recurrences (invasive Tx and adjuvant Tx)*

- *limited data on cost effectiveness of BC interventions*

Bladder Cancer

Recurrence

- Natural history

- Incomplete resection   (>40% in multifocal)/Missed Tumours

- Absence of standards for TUR BT

- Presence of CIS

Future

- Prophylaxis? Prevention?

Recurrence and Progression

Recurrence score	Probability of recurrence at 1 year (%) (95% CI)	Probability of recurrence at 5 years (%) (95% CI)	Recurrence risk group
0	15 (10-19)	31 (24-37)	Low risk
1-4	24 (21-26)	46 (42-49)	Intermediate risk
5-9	38 (35-41)	62 (58-65)	
10-17	61 (55-67)	78 (73-84)	High risk

Progression score	Probability of progression at 1 year (%) (95% CI)	Probability of progression at 5 years (%) (95% CI)	Progression risk group
0	0.2 (0-0.7)	0.8 (0-1.7)	Low risk
2-6	1 (0.4-1.6)	6 (5-8)	Intermediate risk
7-13	5 (4-7)	17 (14-20)	
14-23	17 (10-24)	45 (35-55)	High risk

Recurrence and Progression

Factor	Recurrence	Progression
No. of tumors		
Single	0	0
2 to 7	3	3
≥8	6	3
Tumor size		
<3 cm	0	0
≥3 cm	3	3
Prior recurrence rate		
Primary	0	0
≤1 recurrence/year	2	2
>1 recurrence/year	4	2
T category		
Ta	0	0
T1	1	4
Carcinoma in situ		
No	0	0
Yes	1	6
Grade		
1	0	0
2	1	0
3	2	5
Total score	0-17	0-23

Multifocal tumour

- *Operator*

- *Non invasive tests*

  - *NMP22, BTA, FISH, UroVysion, BCLA,...*

- *Invasive tests*

  - *Endoscopy - PDD*

    - NBI

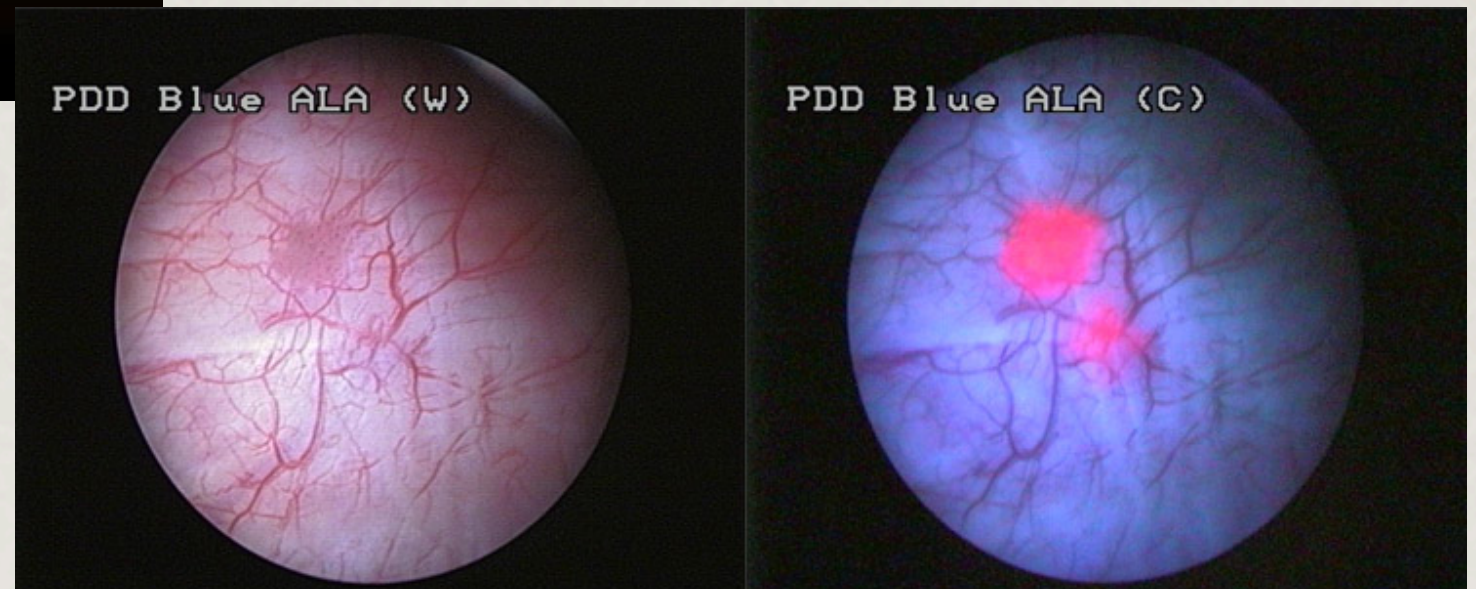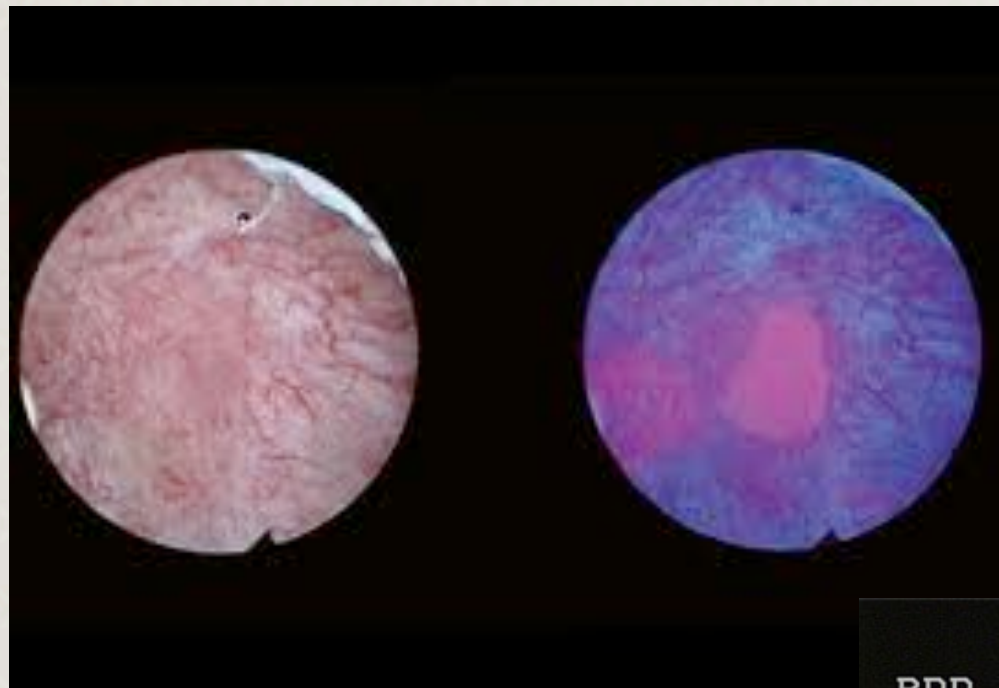# PDD
PhotoDynamic Diagnosis

- *Photosensitiser   (porphyrins)*

  - *5-aminolevulinic acid (5-ALA)*

  - *Hexaminolevulinate*

- *Blue light 280-440 nm wavelength*

- *Red light emission*

PDD
PhotoDynamic Diagnosis

Advantages

- *Higher detection rate 20%*

- *CIS detection rate 23-39% higher*

- *More complete treatment/less residual tumours*

- *Longer recurrence free survival (15-27% higher in 1y)*

- *Multifocal and recurrent tumours benefit most*

- *PDD is cost neutral (al least) - "reimbursed" < 1y*

Tumour detection rate

Tumour	PDD	WL	Additional DR
All tumours	76-97%	46-78%	18-23%
Dysplasia	82-93%	48-64%	18-45%
CIS	91-97%	5-68%	26-69%
Ta	91-97%	83-90%	1-12%
T1	90-95%	86-91%	1-9%

Tumour recurrence free interval

after TURBT	PDD	WL
1y	57-90%	39-74%
2y	40-90%	28-66%
3y	41%	27%
4y	84-91%	64-69%
5y	41%	25%
6y	79%	54%
8y	71-80%	45-52%

Progression and PDD

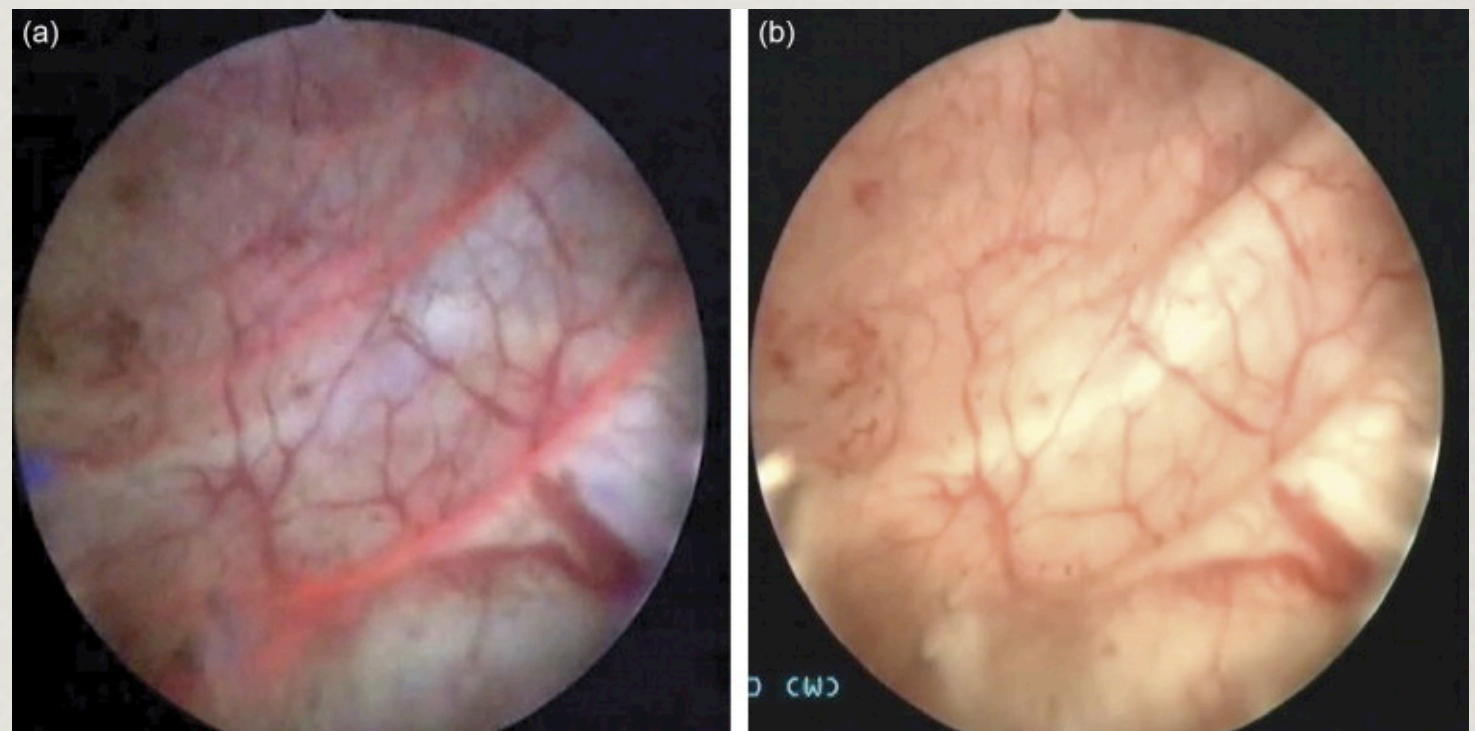normal
mucosa   NMIT   *recurrences*   MIT   *death*
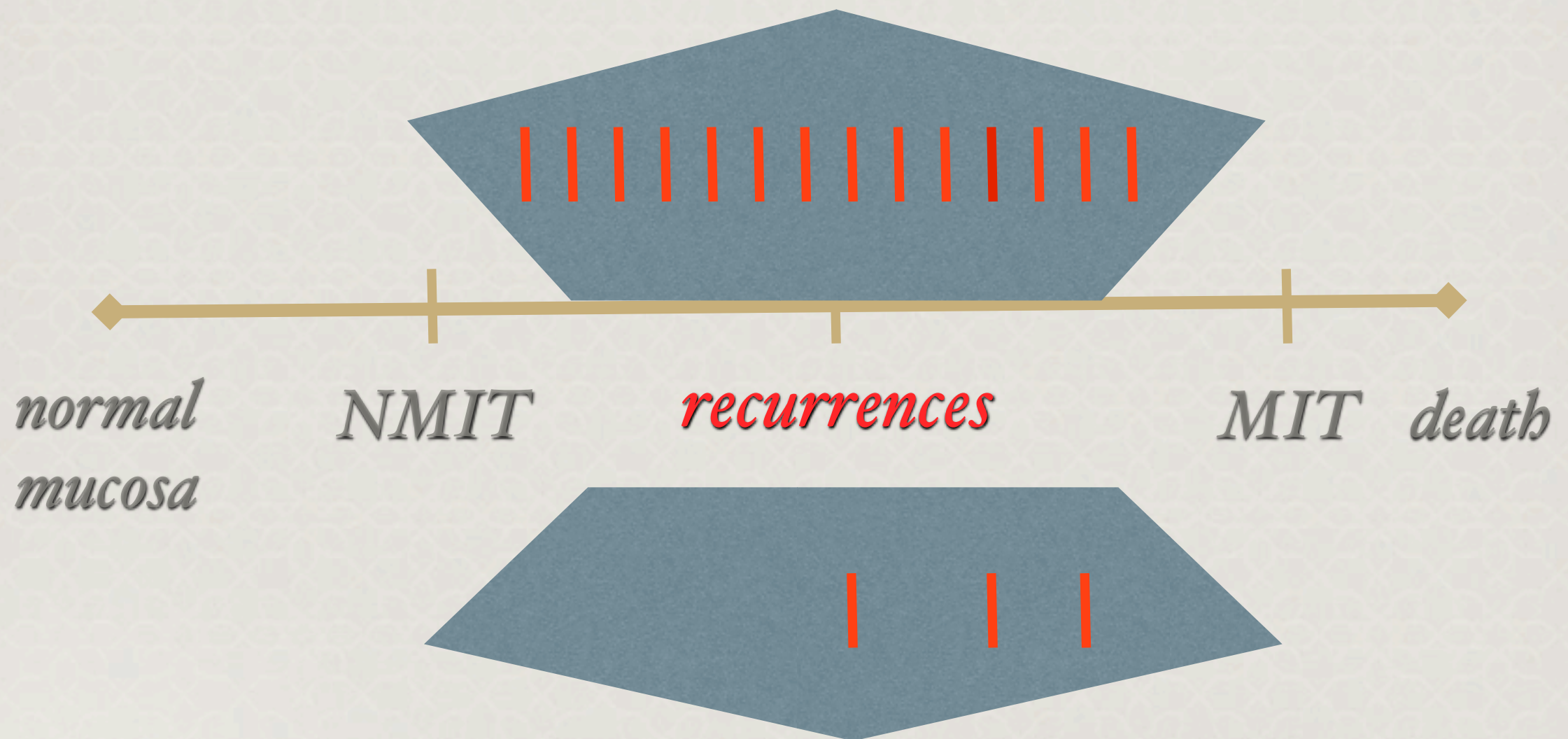
Disadvantages

- *Operator dependent technique (like WLC)*

- *Rigid PDD CS > flexible PDD CS > rigid WLC*

- *Historically limited specificity*

False positive biopsies PDD CS > WL CS (1%)

- Lack of operator experience (tangential beam)

- Hyperplasias

- Inflammation and scarring (6w)

- Previous BCG therapy (12-24w)

Recommendations

Indications

On suspicion of BT

- *Hexaminolevulinate-guided PDD - adjunct to WLC*

- *All non muscle invasive cancers*

- *Primary TURBT*

- *Recurrence not staged with PDD*

Indications

- *Positive cytology, negative WL cystoscopy*

- *Surveillance (not hard data)*

    - *possibly for CIS or multifocal*

- *Not for outpatient setting (with flex.instrument)*

- *Teaching tool (facilitating improved TURBT)*