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Narrow Band Imaging is More Cost-effective than PDD....

BAUS Section of Oncology
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Disclosures

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Bladder Cancer

- **Unlike improvement in outcomes for prostate and kidney cancers, the 5-year survival rate for bladder cancer since the 1980s has only improved by 1%.**

- **The field is characterised by a lack of scientific advancement.**

- **The cumulative cost of treating bladder cancer exceeds all other forms of human cancer.**

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Fillon M *JNCI* 2012; **18**: 1348-9. Lotan Y et al Cancer 2009; **115**: 4096-103. Stenzl A et al *Curr Opin Urol* 2008; **18**:488-492.

Mechanisms of Recurrence

- Kondas et al. described four mechanisms of recurrence:
  - Incomplete resection of the primary tumour
  - Growth of microscopic tumours present at the time of the primary resection
  - Tumour cell re-implantation
  - New tumour formation.

- The first three mechanisms probably cause the majority of recurrences for 2-3 years after the initial resection.

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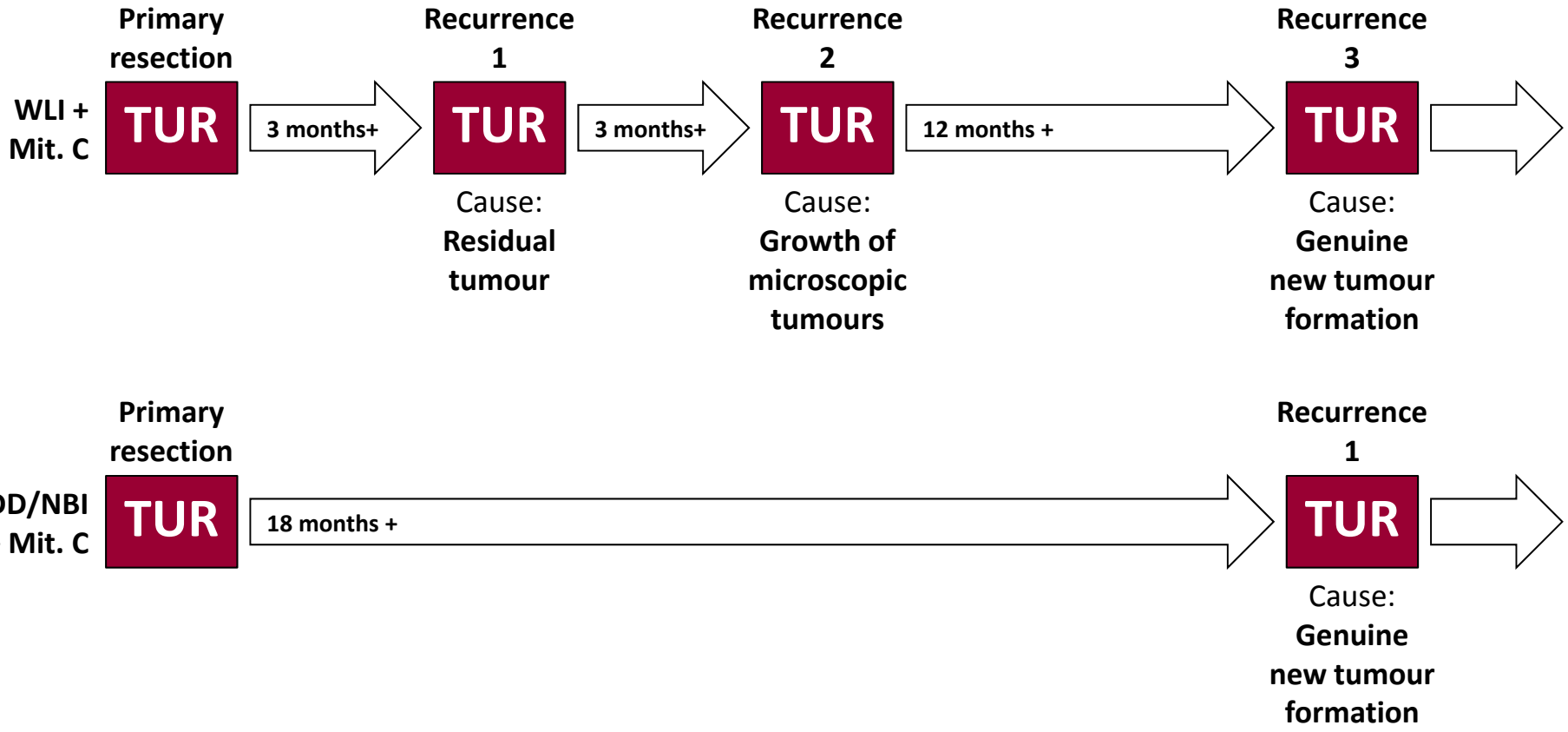
Kondas J et al. *Int Urol Nephrol* 1999; **31**: 451-6. Bryan RT et al. *Ann R Coll Surg Eng* 2010; **92**: 519-24

Mechanisms of Recurrence



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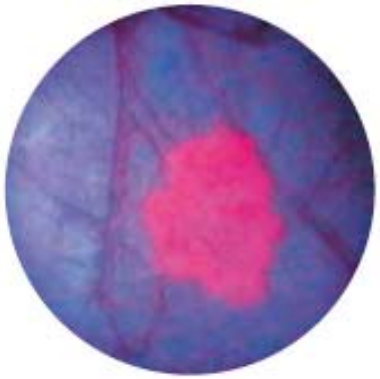
Photodynamic Diagnosis/Blue Light

- A photosensitising agent is instilled into the bladder (*Hexvix®*)
- Preferential intracellular accumulation of photoactive porphyrins (mainly Pp IX) in malignant versus non-malignant urothelial cells
- Following excitation with blue light illumination, neoplastic cells fluoresce red, enabling better visualisation of tumour.

Standard white light cystoscopy



Hexvix cystoscopy

HEXVIX®
HEXAMINOLEVULINATE

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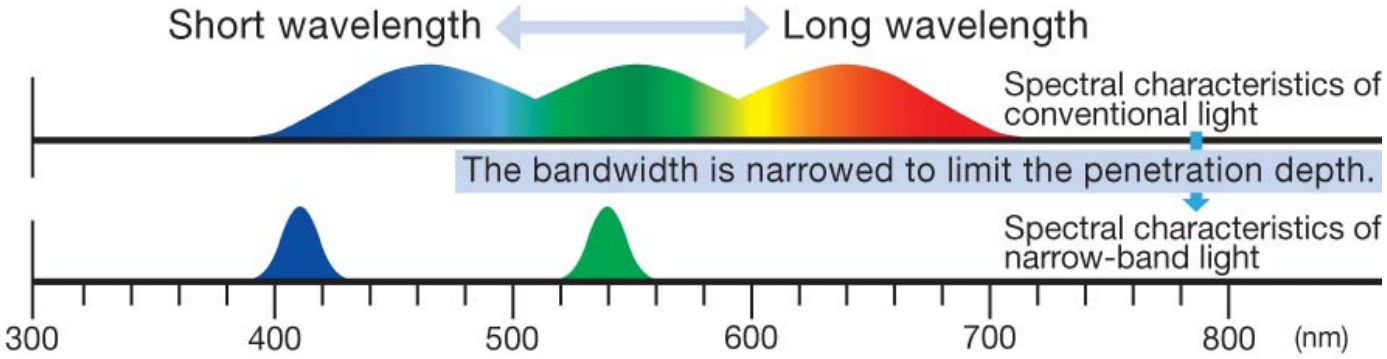
Narrow Band Imaging (NBI)

- An *Olympus®* optical image enhancement technology which narrows the bandwidth of light output to 415nm and 540nm.

- This narrow band of light is strongly absorbed by haemoglobin and penetrates only the surface of tissue, increasing the visibility of capillaries and other delicate tissue surface structures by enhancing contrast between the two.



NBI

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Economic Evaluation

- When different interventions are not expected to produce the same outcomes, both the costs and consequences need to be assessed – **cost-effectiveness analysis**, where costs are compared with outcomes.

- When the interventions produce the same or very similar outcomes, then attention can focus on costs to identify the least cost option – **cost-minimisation analysis**.

PDD vs. NBI – Outcomes

%	PDD	WLI	WLI	NBI
Tumour detection	91.8	90.9	**84.8***	**94.3***
CIS detection	10.6	9.1		92.7 / 76.8
False positives	**26.3***	**17.3***	13.0	15.3
Residual tumour	**10.3***	**25.4***	**30.5***	**15.0***
Recurrence-free survival	72.2	61.6	**48.6***	**68.4***
Progression-free survival	90.5	89.3	-	-

Zheng et al. *BJUI* 2012. **1022** pts.

Cauberg et al. *W J Urol* 2011. **160** pts.

Naselli et al. *Eur Urol* 2012. **148** pts.

Shen et al. *BJUI* 2012. **4078** patients.

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PDD vs. NBI TURBT – Costs

OLYMPUS

Item:	PDD (£)	NBI (£)
HD stack (processor, light source, monitor)	28,000	28,000
Camera head	10,000	13,000
Rigid 'scopes	10,000	n/a
Hexvix	375 / patient	n/a
TOTAL	**48,000 + *Hexvix***	**41,000**

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PDD vs. NBI Flexi – Costs

Item:	PDD (£)	NBI (£)
HD stack (processor, light source, monitor)	28,000	28,000
Flexi 'scope	18,000	21,000
Hexvix	375 / patient	n/a
TOTAL (4 'scopes + stack)	**100,000 + *Hexvix***	**112,000**

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Summary

- PDD and NBI appear equally effective.

- For TURBT, NBI is cheaper:
  - Lower equipment upgrade costs
  - No intravesical agent
  - No staff costs for administration of the agent.

- The hardware for PDD flexi is cheaper than NBI, **but:**
  - logistics and costs of administering *Hexvix* in the flexi clinic...

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Conclusion

“NBI is more cost-effective than PDD”

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Questions?

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