Non-Invasive Bladder Analysis For Men

- Predicts outcomes from prostatectomies
- Accurately measures male bladder contractility
- Clinically proven results are easy to interpret
- Comfortable for the patient
- Simple, quick and inexpensive to perform
Treatment options for men with lower urinary tract symptoms (LUTS) due to benign prostatic enlargement have increased over the last 20 years. Surgical removal of tissue typically by transurethral resection (TURP) remains most effective. Men with bladder outlet obstruction (BOO) defined by invasive pressure flow studies (PFS) have success rates following TURP that are 15–29% higher than those without PFS. Invasive PFS are not commonly performed because of patient discomfort, infection risk, and cost associated with the need for skilled staff and specialised equipment. Most United Kingdom urologists therefore suggest surgery on the basis of bothersome LUTS that is unresponsive to drug therapy and associated with reduced urinary flow. 65–75% of men achieve satisfactory symptomatic benefit following surgery. The CT3000 improves the outcome to 87% for men who undergo surgery.
Fast, accurate, reliable testing

The CT3000 uses a method similar to that for blood pressure measurement. A penile cuff is fitted to the patient who is then asked to void in the normal way. An estimate of isovolumetric bladder pressure \( (P_{\text{cuff.int}}) \) and a measurement of maximum flow rate \( (Q_{\text{max.cuff}}) \) are obtained and plotted on a nomogram to allow categorisation into obstructed, not obstructed, or “diagnosis uncertain” groups. Men whose measurements fall in the obstructed area have an 87% probability of good outcome from TURP and those classified as not obstructed have a much-reduced probability of benefit and might prefer to persevere with their symptoms. For the 45% of men whose obstructive category remains uncertain, the probability of good outcome is intermediate and similar to that predicted by standard assessment. The choice for these men would be to accept the moderate risk of unsatisfactory symptom relief or undergo further testing, perhaps by invasive PFS, to clarify their urodynamic status.

How does the CT3000 compare to invasive PFS?

Studies have shown that an 87% success rate in men classified as obstructed was similar to that achieved by invasive PFS in previous studies (79–93%).

The financial benefits

In England, where 15,000 men undergo TURP for LUTS each year, good outcome could be predicted with greater certainty for 6,000 men, whereas, for the 3,000 men classified as not obstructed, the risk–benefit ratio would merit more careful consideration and a proportion might opt for continued surveillance. This represents a significant cost and time saving for the NHS. For a typical hospital the savings could be tens of thousands of pounds per year.

Helping correct diagnosis

Throughout the session, real-time results are displayed on the CT3000’s touch screen monitor, allowing the user to monitor the progress of the test. When the test is complete the results are printed out in a clear and concise manner that aids patient diagnosis.

High performance analysis

- Measures bladder contractility non-invasively
- Reduces the number of cystometry tests and associated risks
- Clinically proven
- Reduces waiting lists
- Saves time and money
- Increases the success rate from TURP
- Also functions as a conventional flow meter

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Interpreting the results

The CT3000 automatically produces two charts – the first (fig 1) shows the result and the second (fig 3), the Nomogram. The print-outs (fig 1) are easily interpreted with cuff pressure ($P_{\text{cuff}}$), flow rate ($Q_{\text{max}}$) and voided volume ($V_{\text{void}}$) displayed on the top half of the graph.

In addition, each individual cuff inflation cycle is represented using its own graph (fig 2) and the user simply has to estimate the point at which flow rate has reduced to zero, then combine this with $Q_{\text{max}}$ to establish the level of bladder contractility and Bladder Outlet Obstruction.

This information is plotted on the modified ICS nomogram (fig 3).

Patient classification

Fig 3 shows the Nomogram used to classify patients.

- **Obstructed** – 87% of patients who undergo a TURP will have successful outcome.
- **Not Obstructed** – Patients may require additional studies.
- **Diagnostic Uncertainty** – Top right – patients who fall into this quadrant are recommended for invasive pressure flow studies. Patients have a very high isovolumetric pressure, so there is a need to protect the upper urinary tract.

Bottom left – patients have poor bladder contractility, so may not have a successful outcome from TURP.
“The Mediplus CT3000 system offers greater accuracy in diagnosis of BOO than diagnosis based on flow rate measurement alone. Recent results suggest its prediction of outcome from surgery rivals that offered by invasive urodynamic studies… This approach may well reduce the number of ineffective surgical prostatectomies while also reducing the number of invasive studies, both of which carry associated costs and risks.”

NHS Purchasing and Supply Agency, Centre For Evidence Based Purchasing, August 2007
List of clinical publications and presentations:


BAUS 2004, Harrogate, UK Harding CK, Robson WR, Drinnan MJ, Griffiths CJ, Ramsden PD, Pickard RS. Is Non-invasive Cystometry Predictive of Outcome And Sensitive to Change Following Prostatectomy?


Additional studies are also available.

For further information please call Mediplus on +44 (0) 1494 551200

or visit the website www.ct3000.com

CT3000

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