

Faure Walker N.¹, Bacon A.², **Teji M.**³, Solomon E.⁴, Stephens R.⁴, Sahai A.⁵, Okpii E.⁶, Dunford C.⁶, Wood S.⁶, Speck E.⁶, Doherty R.⁶, Rantell A.⁷, Araklitis G.⁸, Lilis L.⁹, Nitkunan T.⁹, Carey M.¹⁰, Biers S.¹⁰, Berry B.¹¹, Pakzad M.¹¹, Hashim H.¹²

1. King's College Hospital NHS Foundation Trust & King's College London, 2. Bristol Urological Institute, 3. King's College London, 4. Guy's & St Thomas NHS Foundation Trust, 5. Guy's & St Thomas NHS Foundation Trust & King's College London, 6. Norfolk & Norwich NHS Foundation Trust & Brunel University, 7. King's College Hospital NHS Foundation Trust, 8. King's College Hospital NHS Foundation Trust, 9. Epsom & St Helier NHS Foundation Trust, 10. Cambridge University Hospitals NHS Foundation Trust, 11. University College Hospitals NHS Foundation Trust, 12. Bristol Urological Institute & University of Bristol

HYPOTHESIS/AIMS OF STUDY

Multiple sclerosis (MS), affecting over **100,000 people** in the United Kingdom (UK), is the **commonest cause of neurological disability in young people** (1,2). Its worldwide prevalence is increasing (2).



Figure 1: Urinary symptoms are reported by **up to 99%** of MS patients (3).

Patients commonly report symptoms of urinary frequency (25–99%), urgency (32–86%), urgency urinary incontinence (UUI) (19–80%) and urinary retention (8.3–73.8%) (3). Studies that investigated urodynamics (UDS) findings in patients with MS have found neurogenic detrusor overactivity (NDO) is present in 22.5–99%, detrusor underactivity (DU) in 0–40%, loss of compliance in 2–10.3% and detrusor-sphincter-dyssynergia (DSD) in 5–82% (3).

UK Consensus on the management of the bladder : 2009

- Test for UTI + start intermittent self-catheterisation (ISC)
- Following that, anticholinergics are recommended
- **UDS is recommended** in patients with symptoms refractory to medication

Francophone Expert Study : 2007

- **UDS recommended** in any MS patient with urinary symptoms from presentation

EAU : 2023

- **VUDS is recommended as a baseline** assessment for all neuro-urology patients
- No specific recommendations for MS patients

NICE : 2012

- **UDS not recommended at baseline**
- UDS recommended prior to surgical or intravesical intervention in patients with MS

DIFFERENT GUIDELINES ON THE MANAGEMENT OF URINARY INCONTINENCE IN MS

Figure 2:

This study **aims** to establish the **current role of urodynamics** in the **treatment pathway of a patient with MS** related **neurogenic lower urinary tract dysfunction (NLUTD)**.

STUDY DESIGN, MATERIALS AND METHODS

Patients with **MS** who were **Botox-naïve** and had **undergone standard** or **VUDS** were identified from prospectively maintained databases in UK hospitals. Data was collected and analysed using Microsoft Excel version 16.83. The study was registered as an audit (reference NFW003).

RESULTS

157
PATIENTS

7 UK HOSPITAL DEPARTMENTS

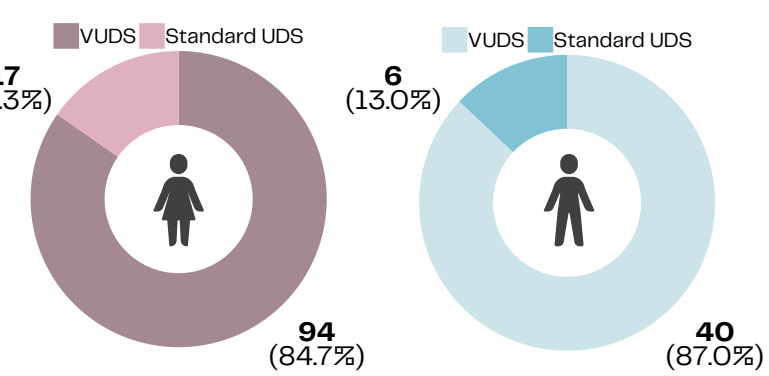


Figure 3: PROPORTION OF PATIENTS WHO UNDERWENT STANDARD UDS vs. VUDS

- 157 patients with MS were identified across 7 UK departments, with 111 female (70.7%) and 46 male (29.3%). Video urodynamics (VUDS) were performed in 94 (84.7%) females and 40 (87.0%) males. Standard UDS were performed in 17 (15.3%) females and 6 (13.0%) males.
- Of the 94 women and 36 men reporting pure overactive bladder (OAB), 66 (70.2%) women and 30 (83.3%) men showed neurogenic detrusor overactivity (NDO) or poor compliance on urodynamics.
- Of the 39 women reporting stress urinary incontinence (SUI), 22 (56.4%) demonstrated urodynamic SUI and 26 (66.7%) showed NDO.
- Of the 6 (5.41%) women who reported pure SUI, 5 (83.3%) showed urodynamic SUI without NDO and 1 (16.7%) showed NDO.
- Following urodynamics, 61 (72.6%) women and 25 (78.1%) men were offered oral medication, topical treatments or non-medical treatments such as pelvic floor physiotherapy, fluid or lifestyle advice; 30 (30.9%) women and 7 (18.9%) men were advised to start ISC.
- 16 (19.0%) women and 4 (12.5%) men were offered intra-vesical Botox (BTX-A)
- 2 (2.4%) women were offered surgery for SUI and 1 (3.1%) man was offered surgery for bladder outflow obstruction.

Table 1: Baseline Data

	n	Mean age / years (range)	IDC	ISC	OAB	UUI	SUI	Trialled AC	Trialled B3A	No previous AC or B3A
Female	111 (70.7%)	53.5 (23.6 - 84.0)	8 (7.2%)	21 (18.9%)	94 (85.5%)	86 (78.9%)	39 (45.9%)	33 (30.0%)	30 (27.3%)	64 (57.7%)
Male	46 (29.3%)	58.0 (25.0 - 84.3)	2 (1.8%)	10 (21.7%)	36 (78.3%)	25 (56.8%)	2 (4.5%)	6 (13.6%)	3 (6.8%)	36 (78.3%)
p		0.030	0.507	0.596	0.005	0.005	<0.001	0.035	0.191	0.053
Total	157		10 (9.0%)	31 (19.7%)	129 (83.2%)	111 (72.5%)	41 (31.8%)	39 (25.3%)	33 (21.4%)	100 (63.7%)

IDC = indwelling catheter; ISC = Intermittent self catheterisation ; OAB = overactive bladder; UUI = urgency urinary incontinence; SUI = stress urinary incontinence; AC = anticholinergics; B3A = Beta-3 agonists

Table 2: Urodynamics Findings

	n	NDO	Poor Compliance (<20ml/c hH2O)	EFP > 40cmH2O	MCC / ml (S.D.)	Reflux	PVR / ml (range)	Qmax / ml/s	Male BOOI > 40	Male BCI < 100
Female	111 (70.7%)	70 (63.1%)	11 (9.9%)	1 (0.9%)	368 (185)	0 (0%)	59.3 (0-800)	14.7	-	-
Male	46 (29.3%)	35 (76.1%)	8 (17.4%)	3 (6.7%)	391 (186)	2 (5.1%)	161.4 (0-489)	7.80	6 (31.6%)	13 (72.2%)
p		0.116	0.347	0.042	0.203	0.088	0.022	0.000	-	-
Total	157	105 (66.9%)	10 (12.1%)	4 (3.3%)	375	2 (2.0%)	101.5 (0-800)	12.4	-	-

NDO = neurogenic detrusor overactivity; PVR = post-void residual; EFP = end fill pressure; MCC = maximum cystometric capacity; Poor compliance = < 40ml/cmH2O; Qmax = maximum flow rate

INTERPRETATION OF RESULTS

Patients with **MS related NLUTD** undergoing urodynamics **mainly report storage symptoms** and **nearly half** of the **female** patients reported **SUI**.

5.4%
Women reported **PURE SUI**

Over 50% of patients underwent **UDS before medication** for OAB

0%
Women demonstrated **ureteric reflux** on VUDS

<1%
Women had endfill pressures **over 40cmH2O**

75% patients were **offered conservative/ oral medication following UDS**

CONCLUDING MESSAGE

- **UDS** provides very **helpful information** on the **underlying pathophysiology** of patients with **MS related NLUTD**.
- Many patients **underwent urodynamics earlier** in the pathway **than most guidelines recommend**
 - **potentially delaying non-invasive treatment**
- The role of fluoroscopy at the time of urodynamics in MS patients will need further evaluation but preliminary data suggests that **fluoroscopy is not required in female MS patients with pure OAB symptoms**.

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