Neurologic and idiopathic lower-urinary-tract symptoms (LUTS) affect more than half of the adult population and markedly reduce quality of life; over-active bladder (OAB) alone is seen in ≈ 33 % of women and 16 % of men. Sacral neuromodulation (SNM) is a guideline-recommended third-line treatment for OAB and an emerging option for neurogenic LUT dysfunction (NLUTD), yet no prospective outcome data have been published for Polish patients.

Fifty consecutive adults (74 % female) entered a single-centre, prospective study and underwent stage-I test stimulation with a tined lead (InterStim™). Mean age was 52 years (median 54, range 19–82) and mean BMI 26.3 kg m^{-2} (17.1–40.9). Indications were idiopathic OAB (24 pts, 48 %), neurogenic detrusor overactivity, NN (11 pts, 22 %) and neurogenic detrusor under-activity/urinary retention, NU (15 pts, 30 %). Sixty-six per cent had ≥ 1 comorbidity, most frequently hypertension (28 %), diabetes (20 %) or hypothyroidism (20 %). Implantation was performed under general anaesthesia in 72 % and local anaesthesia in 28 %; in 16 cases the mean lead depth was 20.5 mm (9–46 mm).

A positive trial was defined as ≥ 50 % subjective improvement or an equivalent reduction of the predominant diary variable. Thirty-four patients (68 %) met this criterion and received a permanent implant (stage II); the remaining 16 discontinued after the trial phase. Outcomes were assessed with validated questionnaires (OABSS by Homma and by Blaivas, UDI-6, IIQ-7, Incontinence Severity Index—ISI, Neurogenic Bladder Symptom Score—NBSS), post-void residual volume (PVR) and clean-intermittent catheterisation (CIC) frequency. Follow-ups were scheduled at 3, 6, 12 and 24 months.

In the 34 permanently implanted patients the mean OABSS-Homma dropped from 11.60 ± 3.28 to 7.20 ± 3.92 ($t(34)=6.45$, $p < 0.001$, 95 % CI 3.01–5.79, Cohen's $d = 1.09$), and OABSS-Blaivas from 22.69 ± 5.50 to 14.31 ± 7.27 ($t(34)=7.33$, $p < 0.001$, CI 6.05–10.69, $d = 1.24$) – both large effects. Among the 27 patients who completed all quality-of-life scales, UDI-6 improved from 45.62 ± 21.25 % to 17.19 ± 14.47 % ($t(24)=7.22$, $p < 0.001$, $d = 1.44$), IIQ-7 from 82.96 ± 23.29 % to 30.23 ± 24.72 % ($t(25)=8.72$, $p < 0.001$, $d = 1.71$) and ISI from 2.70 ± 1.44 to 1.44 ± 1.19 ($t(26)=5.79$, $p < 0.001$, $d =1.11$). In NLUTD the global NBSS fell by 16.3 points in NN and 11.9 points in NU (both $p < 0.02$). For NU patients median PVR declined from 300 ml to 150 ml ($p = 0.006$, $d = 1.49$) and mean CIC frequency from 5.0 to 2.5 times day^{-1} ($p =$

0.021, d = 0.90). Clinical benefit remained stable over 24 months (Spearman r = –0.07 for Homma, –0.19 for Blaivas). Peri-operative pain averaged 3.2 ± 1.4 on the NRS in general anaesthesia versus 4.6 ± 1.8 under local anaesthesia (p = 0.047); a single intra-operative opioid bolus reduced discomfort in the latter group. Complications occurred in 10/50 patients (20 %): Clavien I 12 %, IIIa 4 %, IIIb 4 %; serious adverse device effects (≥ IIIa) accounted for 8 %.

These first Polish data confirm that SNM provides a substantial and durable reduction of storage and voiding symptoms across idiopathic OAB and heterogeneous NLUTD phenotypes, with a favourable safety profile. A 68 % trial success rate positions our cohort between the pivotal ROSETTA (52 %) and INSITE (76 %) randomised trials, despite broader inclusion criteria. The persistence of benefit to 24 months and modelling studies indicating cost-parity with intradetrusor botulinum toxin after ~3 years argue for wider SNM utilisation. Limitations include single-centre design, small and heterogeneous sample, absence of a control arm, 24-month horizon and partial lack of Polish validation for some instruments. Multicentre prospective studies with longer follow-up are warranted to identify robust predictors of response and to refine long-term cost-effectiveness estimates for sacral neuromodulation.