Comparison of devices for delivery of Percutaneous Tibial Nerve Stimulation for overactive bladder symptoms in females

Project Dates

Project Start 01/07/2022

Project End 01/12/2023

Significant cost savings, whilst delivering effective treatment for patients, has been found in a comparison study of the therapy treatment for Percutaneous Tibial Nerve Stimulation (PTNS).

Overactive bladder patients who have tried conservative therapy, medication and second line interventions without effect (NICE 2013), would be offered PTNS. The Urgent PC machine uses expensive single use consumables, this was compared to the AS Super 4 machine with reusable leads. 10 females in each group were compared to assess if AS Super 4 was as efficacious as the Urgent PC to deliver PTNS therapy.

The comparison shows that the AS Super 4 machine is equivalent in its effectiveness as the Urgent PC. Based on this we want to adopt the AS Super 4 machine to deliver all treatments for PTNS at this centre. Equating to a significant cost saving initiative, whilst delivering an effective treatment for patients.

Contact Details

Colette Anderson - Gynaecology Specialist Nurse
South Tees Hospitals NHS Foundation Trust
Colette.anderson1@nhs.net
Alistair Renton-Levett - Principal Clinical Scientist
South Tees Hospitals NHS Foundation Trust
Alistair.levett-renton@nhs.net
Tony Alton - Clinical Technologist
South Tees Hospitals NHS Foundation Trust
Tony.alton@nhs.net

Challenge/Problem Identified

Challenge/problem identified (150 words maximum)

To reduce the cost of delivering the PTNS service whilst maintaining effectiveness of the treatment.

Urgent PC machine consumables are single use and each year the costs of these are increasing. The Trust pays £51.59 per treatment lead and treat an average of 25 patients per week. Urgent PC is the only device licensed for PTNS.

There are other needle stimulation devices that can be programmed to deliver the same continuous, square waveform, electrical stimulation of 200μs at a frequency of 20hz. These can be used to deliver PTNS or other nerve stimulation via acupuncture needles. One device is the AS Super 4, this utilises reusable leads and the consumables consist of an acupuncture needle and ECG electrode at a current cost of 43p per patient. We suggested a comparison of the two machines to assess if utilising the AS Super 4 could deliver the same effective treatment at a fraction of the cost.

Overview of innovation

We use Urgent PC to deliver PTNS, this utilises expensive single use consumables. The AS super 4 can deliver the same treatment with a lower consumable cost. We want to utilise AS super 4 to deliver PTNS without compromising on effectiveness, safety or quality. Our project shows the treatment effectiveness of both machines is comparable.

Action taken

Patients with overactive bladder were selected. Ten female patients completed a PTNS trial with the AS Super 4 machine and were compared to ten female patients who received a PTNS trial using the Urgent PC.

Four AS Super 4 machines were purchased. Initially the AS Super 4 treatment leads were not connecting well and subsequently did not deliver adequate stimulation. A decision was made to replace the crocodile clip with a hook clip, similar to that used with Urgent PC machine. After this the AS super 4 delivered good stimulation. Patients using the inadequate leads were not included in the evaluation.

Patients participating completed pre-treatment bladder diary and Electronic Patient Assessment Questionnaire – Pelvic Floor (EPAQ-Pf) recording how symptoms impacted on their quality of life. At the end of the trial the diary and EPAQ were repeated to assess the symptoms. We compared the data from ten patients treated with AS Super 4 to ten patients treated with Urgent PC and found no statistical difference between the effectiveness of the two machines.

Outcome

We found that the Urgent PC and AS Super 4 gave similar results. Both were effective at reducing patient symptoms of overactive bladder.

Results:

	Urgent PC Group	AS Super 4 Group	Statistically significant difference
>50% improvement in symptoms after 12 weeks of PTNS and continued with top up treatments	Six out of 10 patients	Seven out of 10 patients	
EPAQ-Pf mean score for overactive bladder	Reduced from 49.4 to 39	Reduced from 48.1 to 33.9	No
Mean urinary urgency episodes per day	Reduced from 7.4 to 4.2	Reduced from 7.3 to 3.2	No
Mean urinary incontinence episodes per day	Reduced from 21.6 to 6	Reduced from 6.3 to 2.9	No
Mean urinary frequency per day	Reduced from 10.5 to 8.6	Reduced from 13.2 to 10.5	No
Episodes of nocturia	Reduced from 1.3 to 1.1	Reduced from 2.1 to 1.5	No

Benefit

This comparison has shown that the AS Super 4 machine is equivalent in its effectiveness as the Urgent PC. Based on this comparison the AS Super 4 machine can be adopted to deliver all treatments for PTNS at this centre. This will equate to a significant cost saving initiative, whilst delivering an effective treatment for patients.

Sustainability

The Super AS 4 allows for the use of reusable leads which reduces waste in relation to treatment.

Support provided by HI NENC

South Tees Innovation team were approached by Colette Anderson, Specialist Nurse in Gynaecology, to help with her pursuit in adopting and evaluating the alternative nerve stimulator utilised by other Trusts to South Tees. Innovation utilised the Innovation Pathway to complete some basic research around the idea and purchased the necessary equipment for the evaluation to take place.

Due to our historic working relationship with HI NENC, we have had extensive exposure to their Innovation Pathway which is a 'how to' guide on innovation. In order to assess this device, we employed the department and our Clinical Measurement section to complete some basic research around the idea, and looked at the opportunities that were available. The findings through the market research and clinical expertise elements of the Pathway meant we could go forward and evaluate the machine and make informed decisions. This structure gives an opportunity to look at the relevant aspects of the project to move it forward to a conclusion.

Plans for the future / spread and adoption

The results from the comparison evaluation will be submitted to the Trust's Clinical Techniques, Policies & Procedures Approval Group to seek approval to continue the use of AS Super 4 for delivery of all the PTNS treatment.

Related links, references and further resources

NICE (2013) Clinical guideline 171 "Urinary incontinence: The management of urinary incontinence in women" guidance.nice.org.uk/cg171

Health Innovation NENC Suite A, 2nd Floor, 1 Citygate, Gallowgate, Newcastle upon Tyne NE1 4WH
T. 0191 607 6350 **E.** enquiries@healthinnovationnenc.org.uk 𝕏 @HI_NENC