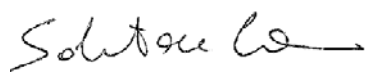



SACRAL TENS GUIDELINE


Version Number	V1
Date of Issue	March 2019
Reference Number	ST-03-2019-TFLBOK-V1
Review Interval	3 yearly
Approved By Name: Mr Salvatore Cascio Title: Consultant Urologist	Signature:  Date: March 2019
Authorised By Name: Tracey Wall Title: Director of Nursing	Signature:  Date: March 2019
Author/s	Tess Farrelly, CNS in Urology Liz Boyce, CNS in Urology Orlaith Keane, CNS in Urology
Location of Copies	On Hospital Intranet and locally in department

Document Review History

Review Date	Reviewed By	Signature
2021		


Document Change History

Change to Document	Reason for Change

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 2 of 11	

CONTENTS

	Page Number
1.0 Introduction	3
2.0 Definition of Guidelines	3
3.0 Applicable to	3
4.0 Objectives of the Guideline	3
5.0 Definition of terms	4
6.0 Guidelines	4
7.0 Implementation Plan	5
8.0 Evaluation and Audit	8
9.0 References	9
10.0 Bibliography	9
Appendices (as per necessary)	
Appendix 1 - Quick Reference Guide	10

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: ST-03-2019-TFLBOK-V1	Version Number: V1	
Date of Issue: March 2019	Page 3 of 11	

1.0 Introduction

Overactive bladder is a medical condition characterized by the presence of urinary urgency and is commonly accompanied with urinary frequency and nocturia, with or without urge incontinence (Austin *et al.*: 2014). OAB is associated with constipation, urinary incontinence, lower urinary tract infections and vesicoureteral reflux; with a potential risk of causing renal scarring in children (Lordelo *et al.*2010).

Daytime urinary incontinence in children is a common condition which occurs in 3.5% of boys and 6% in girls at age 7 years, with 20% of the children studied showing symptoms of urgency (Lordelo *et al.*2010). Daytime incontinence can lower a child's self-esteem leading to social discomfort and psychological stress.

Urotherapy and antimuscarinics are frequently used as clinical treatments in managing OAB (Barroso *et al.*: 2013). However, long term administration, poor compliance, and drug related side effects challenge the successfulness in resolution of symptoms by using this combination approach (Barroso *et al.* 2011).

Neuromodulation was introduced as an alternative therapeutic option to treat OAB in children (Barroso *et al.* 2013). Parasacral TENS proved effective in 3 randomised clinical trials, with complete resolution of symptoms in 55.1%, 56.6% and 70% respectively of patients with OAB (Veiga *et al.* 2016, Hoffmann *et al.* 2018 and Barroso *et al.* 2013).

2.0 Definition of Guidelines

Overactive Bladder is defined by the International Children's Continence Society as:

"Urinary Urgency, usually accompanied by frequency and nocturia, with or with urgency urinary incontinence, in the absence of urinary tract infection (UTI) or other obvious pathology".

3.0 Applicable to


The clinical staff in the Urology Department

4.0 Objectives of Guidelines

To guide the nursing staff in the urology department with the process of delivering Transcutaneous Electrical Nerve Stimulation therapy in treating children with overactive bladders following evidence based/best practice guidelines.

Following initial urotherapy consultation and review of Frequency volume charts. Patient criteria of TENS therapy are children over 4 years of age and are displaying symptoms of OAB, in which uroflow studies show bell to tower shaped uroflowmetry patterns, and post void residuals less than 10% of expected capacity for age and/or less than 20ml (Veiga *et al.* 2016). TENS therapy may be prescribed to children who have failed a trial of conservative management, bladder retraining and a trial of anticholinergic medication.

Objective Outcome measures should be used routinely, voiding and bowel diaries, visual analogue scales, post void residual measurements and uroflows (Barroso *et al.* 2011)

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 4 of 11	

5.0 Definition / Terms


- FVC –Frequency Volume Chart
- OAB-Overactive Bladder
- PSTENS- Parasacral Transcutaneous Electrical Nerve Stimulation
- TENS-Transcutaneous Electrical Nerve Stimulation

6.0 Guidelines

There are limited research findings available on the use of Parasacral Transcutaneous Electrical Nerve Stimulation therapy in Paediatrics. The most recent and extensive systematic review of published literature was in 2011 by Barroso *et al.* Protocols for treatment i.e. duration and number of sessions per week varied among the studies reviewed. These ranged from 20-120minutes daily and 3 times weekly with treatment duration from 6 weeks to 6 months. The collective findings show that PSTENS Therapy is an effective treatment option with complete resolution of OAB symptoms in 31% to 84% of children studied. A resolution of OAB symptoms was noted in some patients after just 3 sessions (Veiga *et al.* 2016). It is well tolerated with mild to rare side effects (Barroso *et al.* 2011).

The protocol treatment plans used by Lordelo *et al.* (2010), Barroso *et al.* (2013) and Veiga *et al.* (2016) will be followed in this guideline.

The Initial treatment plan consists of 20 sessions, of 30 minutes duration for two days per week. This may be altered depending on the individual child's response in resolution of the OAB symptoms presented. Where the child lives and how often they can attend the Urodynamic department will also be a feature.

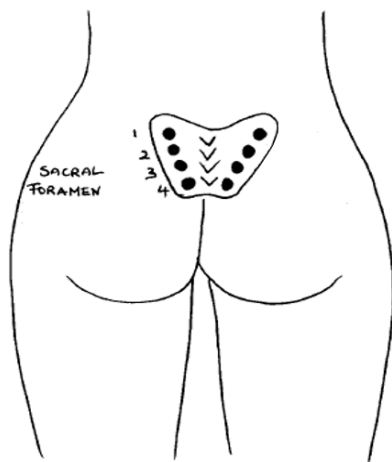
Our Lady's Children's Hospital, Crumlin		 Ospidéal Mhuire na Leanaí, Craghtlin Our Lady's Children's Hospital, Crumlin
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 5 of 11	

7.0 Implementation Plan

ACTION	RATIONALE & REFERENCE
<p>CONSULTATION / ASSESSMENT Prior to commencing PSTENS therapy, the child must have had a clinical diagnosis of OAB.</p> <p>Information obtained from;</p> <ul style="list-style-type: none"> • Frequency Volume chart recorded for 3 days including functional bladder capacity • Structured interview • Uroflow x 3 (ideally with voided volumes 50% of expected bladder capacity) • Post void residual volumes measured using bladder ultrasound <ol style="list-style-type: none"> 1. Dysfunctional Voiding Symptom Score (DVSS) 2. Pediatric Urinary Incontinence Quality Of Life Score (PIN-Q) 3. Visual Analogue Scale (VAS) 	<p>To determine Symptoms of overactive bladder</p> <p>Specific child and programme goals are established from the history provided.</p>
<p>INITIATION</p> <ul style="list-style-type: none"> • Explain the process to the child and parent, recommended treatment programme and duration • Educate child and parent on bladder anatomy and physiology with particular focus to nerve conduction, how “electrical currents can modulate excitatory and inhibitory components of LUT function”. • Provide child and parent with Information leaflet on TENS therapy • Individualize the programme’s timing/frequency to accommodate the needs of the child and family • Decontaminate hands prior to and following all patient contact 	<p>This will assist with understanding of the therapy proposed</p> <p>Ensure compliance with the prescribed programme</p> <p>SARI 2005a</p>
<ul style="list-style-type: none"> • Attach the lead wires. Insert into the jack sockets located at the top of the unit. (Holding the insulated portion of the connector, push the plug end of the wires into the jack sockets).After connecting the wires to the 	

stimulator, attach each wire to an electrode.

- Ensure the skin is clean and dry before attaching electrodes, ensure the skin is intact.
- Place the electrodes over S2/S3 dermatomes, placed by anatomical markings (lateral border of each electrode over the posterior iliac crest, inside border 1 finger width from midline)




- Set mode function to Continuous (C) Apply pulse rate at 10Hz, pulse width at 300 continuously for 30minutes
- Turn off device at control knob at top of unit. Adjust current from 2- 6, until it feels tingly but not painful, reduce as necessary.
- When treatment is completed, clean TENS device by wiping gently with Alcohol wipes. Remove battery from the unit before storing the TENS unit in the carry case.


De Gennaro et al: 2011

Slovak et al: 2015

Hoffman et al: 2018

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 7 of 11	

<p>Maintenance</p> <ul style="list-style-type: none"> Reassessment should be performed at <u>5 weeks</u> into the TENS therapy treatment programme <ol style="list-style-type: none"> Dysfunctional Voiding Symptom Score (DVSS) Pediatric Urinary Incontinence Quality Of Life Score (PIN-Q) Visual Analogue Scale (VAS) <p>Outcome</p> <ul style="list-style-type: none"> Repeat FVC's should be obtained with functional bladder capacity at 5 weeks and on completion of the programme. Repeat uroflows with post void residual measurements using bladder ultrasound, at 5 weeks and on completion of the programme. When the programme is completed, treatment should be reassessed and options discussed. 	
<p>Evaluation (20Sessions/10 weeks)</p> <p>Response can be defined in accordance with the ICCS criteria of:</p> <ol style="list-style-type: none"> Dysfunctional Voiding Symptom Score (DVSS) Pediatric Urinary Incontinence Quality Of Life Score (PIN-Q) Visual Analogue Scale (VAS) <p>Short term outcomes as a change in symptoms noted at interview, dairy and investigations</p> <ol style="list-style-type: none"> Non response (0% to 49% reduction in wetting episodes) Partial response (50% to 89%) Significant response (90% or greater) or full response (100%) in decreasing symptoms. <p>Long Term outcomes are defined as:</p>	<p>International Children's Continence Society: ICCS i-c-c-s.org</p>


Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 8 of 11	

<ol style="list-style-type: none"> 7. Relapse (symptom recurrence more than monthly) 8. Continued success (No relapse at 6 months after treatment) 9. Complete success (no relapse at 2 years after treatment) 	
---	--

The use of this document will be part of the implementation plan.

8.0 Evaluation and Audit

This document will be used as guidance for this procedure. However, it is not possible to monitor all procedures. Consideration needs to be given here as to the risk presented should this procedure not be complied with.

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: ST-03-2019-TFLBOK-V1	Version Number: V1	
Date of Issue: March 2019	Page 9 of 11	

9.0 References

Austin PF, Bauer SB, Bower W, Chase J, Franco I, Hoebeke P, Rittig S, Vande Walle J, von Gontard A, Wright A, Yang SS & Nevés T (2014) The standardization of terminology of lower urinary tract function in children and adolescents: update report from the Standardization Committee of the International Children's Continence Society. *The Journal Of Urology*. **191**(6), 1863-1865.e13.

Barroso U Jr, Tourinho R, Lordêlo P, Hoebeke P & Chase J (2011) Electrical stimulation for lower urinary tract dysfunction in children: a systematic review of the literature. *Neurourology And Urodynamics*. **30**(8), 1429-1436.

Barroso U Jr, Viterbo W, Bittencourt J, Farias T & Lordêlo P (2013) Posterior tibial nerve stimulation vs parasacral transcutaneous neuromodulation for overactive bladder in children. *The Journal Of Urology*. **190**(2), 673-677.

De Gennaro M, Capitanucci ML, Mosiello G & Zaccara A (2011) Current state of nerve stimulation technique for lower urinary tract dysfunction in children. *The Journal Of Urology*. **185**(5), 1571-1577.

Hoffmann A, Sampaio C, Nascimento AA, Veiga ML & Barroso U (2018) Predictors of outcome in children and adolescents with overactive bladder treated with parasacral transcutaneous electrical nerve stimulation. *Journal Of Pediatric Urology*. **14**(1), 54.e1-54.e6.

<http://i-c-c-s.org>

Lordêlo P, Teles A, Veiga ML, Correia LC & Barroso U Jr (2010) Transcutaneous electrical nerve stimulation in children with overactive bladder: a randomized clinical trial. *The Journal Of Urology*. **184**(2), 683-689.

SARI Infection Control Sub-Committee (2005a) *Guidelines for Hand Hygiene in Irish Health Care Settings*, Health Services Executive and the Health Protection Surveillance Centre, Dublin.


Slovak M, Chapple CR & Barke, AT (2015) Non-invasive transcutaneous electrical stimulation in the treatment of overactive bladder. *Asian Journal Of Urology*. **2**(2), 92-101.

Veiga ML, Queiroz AP, Carvalho MC, Braga AANM, Sousa AS & Barroso U Jr (2016) Parasacral transcutaneous electrical stimulation for overactive bladder in children: An assessment per session. *Journal Of Pediatric Urology*. **12**(5), 293.e1-293.e5.

Bibliography

Barroso U Jr, de Azevedo AR, Cabral M, Veiga ML & Braga AANM (2018) Percutaneous electrical stimulation for overactive bladder in children: a pilot study. *Journal Of Pediatric Urology*. doi: 10.1016/j.jpuro.2018.10.001.

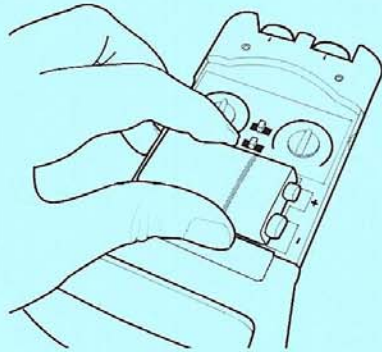
Fernandez N, Chua ME, Ming JM, Silangcruz JM, Zu'bi F, Dos Santos J, Lorenzo AJ, Braga LH & Lopes RI (2017) Neurostimulation Therapy for Non-neurogenic Overactive Bladder in Children: A Meta-analysis. *Urology*. **110**, 201-207.

Our Lady's Children's Hospital, Crumlin		
Document Name: Sacral Tens Guideline		
Reference Number: <i>ST-03-2019-TFLBOK-V1</i>	Version Number: V1	
Date of Issue: March 2019	Page 10 of 11	

Appendix 1

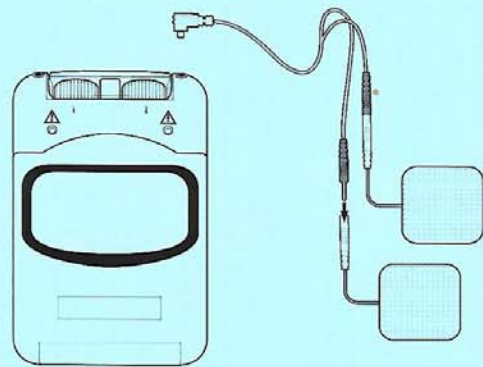
Quick Reference Guide

When you are very familiar with the operation of the TENS device(s), use the following steps as a quick reference to operate the device. For more information, refer to the Operation section in this guide.



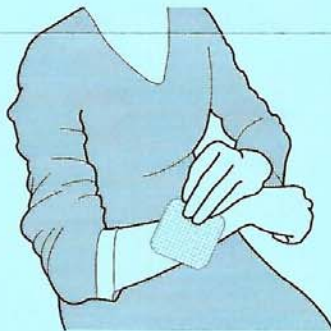
Step 1:

- * The device is switched off.
- * Insert 9V battery, taking care to match up the symbols(+/-).



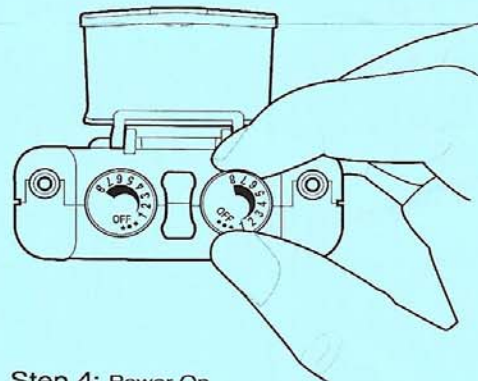
Step 2:

- Connecting the cable to the electrodes and the device

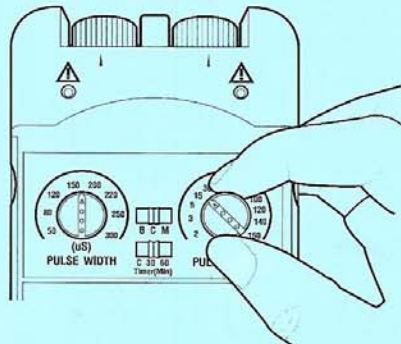


Step 3:

- Place the electrodes on the skin as recommended by your physician / clinician

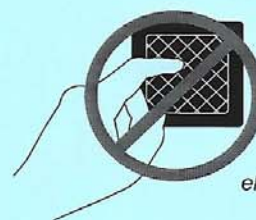


Step 4: Power On



Step 5:

- Choose program / Timer / Pulse width / Pulse rate
- Adjusting Channel Intensity level.



do not touch the underside of electrode after turning on the unit.

Warnings:

- * Do not use this system if you have a cardiac pacemaker, implanted defibrillators or any other Implanted metallic or electronic device.
- * If pregnant, consult with physician prior to use.
- * Do not use this system if you have undiagnosed Chronic pain.

IM-SA-052 RevB17