Electrotherapy
1. Introduction to Electrotherapy
2. History of Electrotherapy
3. Benefits and Precautions
4. Types of Devices
5. Electrotherapy Supplies
6. Brand Units
7. Billing Codes
8. Utilization
Learning Objectives

- Discuss electrotherapy history, types of units and supplies.
- Understand benefits and precautions of electrotherapy.
- Distinguish between different brand devices.
- Review electrotherapy billing codes.
- Review common diagnoses.
- Discuss stock and bill programs, concerns and Ancillary solutions.
Electrotherapy is the use of electrical signals to help relieve pain and other problems caused by surgery, injury or a chronic condition.

Electrotherapy devices work by transmitting signals to nerves and muscles via adhesive pads placed on the skin.
Electrical stimulation for pain control was used in ancient Rome, 63 A.D.

It was reported by that pain was relieved by standing on an electrical fish at the seashore.

In the 16th through the 18th century various electrostatic devices were used for headache and other pains.

Benjamin Franklin was a proponent of this method for pain relief.

The development of the modern TENS unit is generally credited to Dr. C. Norman Shealy.
History of Electrotherapy

• The first modern, patient-wearable TENS was patented in the United States in 1974.

• A number of companies began manufacturing TENS units after the commercial success of the Medtronic device became known.

• Today many people confuse TENS with Electro Muscle Stimulation (EMS).

• TENS is for blocking pain, where EMS is for stimulating muscles.
Benefits and Precautions

**Benefits**

- Alternative to prescription pain medication
- Patient stays fully functional during treatment
- Simple administration may reduce need for OT or PT
- Patient control over schedule
- Non-invasive
Precautions

• Can affect the operation of pacemakers
• Should not be applied over neck/carotid sinus area
• Unknown effects on pregnant women
• Skin irritation in 2-3% patients
Types of Devices

• **TENS** *(Transcutaneous Electrical Nerve Stimulation)*
  - TENS is actually a general term for all electrical stimulation
  - Most commonly used to refer to the standard TENS unit.
  - Reduce the transmission of pain stimuli
  - Release a hormone that reduces the activation of pain sensory pathways

• **NMES** *(Neuromuscular Electrical Stimulation)*
  - Often used in patients who demonstrate difficulties in voluntary muscle movement
  - NMES are prescribed for muscle rehabilitation after injury or surgery
  - Works by exciting motor nerves, thereby producing muscle contractions.

• **IF** *(Interferential Current)*
  - Used for the same purpose as a TENS unit
  - Relieve pain over a higher volume (deeper level) of muscle tissue.
  - Uses a higher frequency (speed) current than a TENS unit so deeper muscles can be affected.
Common Injuries

TENS (Pain relief)

1. Arthritis (osteo, rheumatoid)
2. Phantom limb
3. Cancer pain
4. Sprains, strains
5. Spinal disorders
6. Whiplash
7. Postoperative pain
8. Fractures
Common Injuries

NMES (Muscle rehab)

1. Muscle tears, weakness, spasm, atrophy
2. Sprains, strains
3. Joint replacement
4. Bell’s Palsy
5. Stroke
Utilization

Common Injuries
IF (Deep pain relief)
1. Multiple sclerosis (MS)
2. Migraines
3. Arthritis (osteo, rheumatoid)
4. Phantom limb (after amputation)
5. Cancer pain
6. Sprains, strains
7. Spinal disorders
8. Whiplash
9. Postoperative pain
10. Fractures
Types of Devices

- **HVPC (High Volt Pulsed Current)**
  - Referred to as *galvanic stimulation*,
  - HVPC is used primarily to reduce edema (swelling) and increase blood circulation.
  - *Pain relief is a side effect* of this primary purpose.
  - Works by using a direct current instead of alternating current.
  - The positive end of the lead will *constrict blood vessels to reduce swelling*.
  - The negative end will dilate blood vessels to *increase circulation*.

- **MENS (Micro-current Therapy)**
  - MENS devices are the least noticeable to the patient
  - Used to *accelerate tissue repair and reduce pain and muscle spasms* by increasing the body’s natural defenses
  - Uses a low-voltage current that mimics the body’s natural bioelectric currents.
  - The current increases the production of ATP, the chemical that powers all the body’s natural processes.
Common Injuries

HVPC (Swelling reduction)
1. Postoperative pain
2. Arthritis
3. Carpal tunnel
4. Sprains, strains
5. Spinal disorders
6. Edema/swelling (chronic or acute)
7. Plantar fasciitis
8. Wound healing
Common Injuries

MENS (Tissue repair/pain relief)

1. Multiple sclerosis (MS)
2. Sprains, strains
3. Postoperative pain
4. Physical therapy
Electrotherapy supplies include:

- Electrodes
- Conductive garments
- Lead wires
- Batteries and chargers
- Skin products
  - Wipes
  - Lotions
Electrodes are the adhesive pads that are placed on the skin to transfer current from the device into the body. They vary in many ways.
Patient should always confirm with their treating physician or therapist on the placement of electrodes.
Size and Shape

- Electrodes come in many sizes, usually measured in inches.
- Come in squares, rectangles, circles and ovals.
Electrotherapy Supplies: Electrodes

Material (Backings)

- Electrodes are made with various backing materials, including cloth/fabric, foam, rubber and gel.
- Electrode backing has no bearing on conductivity mostly ordered due to patient preference.
- Occupation and Environment play a role in conductivity & reusability.
Electrotherapy Supplies: Electrodes

Material (Surface)

Electrodes can be made with a number of conductive surface materials, including:

- **Carbon** (most common)
- **Silver and Platinum** (better conductivity than carbon, used in brand electrodes)
- **Hypoallergenic**
Attachment Type

- **Lead wire**: electrodes have a short length of wire attached to connect to a longer lead wire (most common)
- **Snap**: Lead wire snaps directly into the electrode (usually found in conductive garments)
Electrotherapy Supplies: Electrodes

Wire Arrangement

- Single (one wire under electrode)
- Pigtail (two wires under electrode)
Conductive Garments:

- Braces or wraps which are fitted for electrode placement.
- Garments eliminate the need for complicated electrode placement, especially in hard to reach areas.
Electrotherapy Supplies: Garments

Types of Garments

• Low back
• Full back
• Vest
• Arm/wrist/glove
• Leg/ankle/foot
**Lead wires** carry current from the electrotherapy device to the electrode. They are all fairly comparable.
Electrotherapy Supplies: Batteries

Batteries:

• Most units use a 9V battery.
• Other units may use AA
• Internal battery which must charge in a wall
• Rechargeable Batteries Recommended
Skin products:

• Used with electrotherapy devices for a variety of reasons related to the prevention and treatment of skin irritation

• Preparation for electrode placement
  • Aloe
  • Vit-E
  • Wipes
Electrotherapy Supplies: Skin Products

Lotions

TENS Prep / Conductive Gel:
• **Used on skin prior to treatment** to help electrodes stick better and increase conductivity

Vitamin E / Aloe:
• **Used after treatment to soothe skin** and reduce irritation caused by electrodes
Wipes

Alcohol wipes:
• Used for **cleaning the skin before treatment**, help electrodes stick better and last longer

Adhesive remover wipes:
• If patient uses conductive gel, these wipes are used **after treatment to clean the skin**
Brand Units

Brand Electrotherapy Units:

• More technically and clinically advanced than standard units.

• Can provide a more custom treatment, provide multiple forms of electrotherapy and conduct currents more evenly and effectively.

• Some come equipped with monitoring chips to keep track of patient use.
Stock and Bill: Concerns

Stock and bill programs can create numerous concerns for payers, including:

• High prices
• Unauthorized distribution
• Auto-shipment of electrotherapy supplies
Stock and Bill: Distribution

• TENS devices are often subject to stock and bill distribution.
• Manufacturers will partner with a physician’s office or therapy clinic to stock supply closets with brand devices.
• Doctors will dispense these products to patients.
<table>
<thead>
<tr>
<th>Brand</th>
<th>Units</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS Medical</td>
<td>RS-4i®&lt;br&gt;RS-TENS Plus™</td>
<td>IF/NMES TENS</td>
</tr>
<tr>
<td></td>
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<tr>
<td>EMPI</td>
<td>Select TENS™&lt;br&gt;Infinity Plus®&lt;br&gt;IF 3WAVE®&lt;br&gt;300PV™&lt;br&gt;SporTX®</td>
<td>TENS&lt;br&gt;IF/NMES/HVPC&lt;br&gt;IF/NMES&lt;br&gt;NMES&lt;br&gt;HVPC</td>
</tr>
<tr>
<td>H-Wave</td>
<td>H-Wave Home Model</td>
<td>(Multi-Use)</td>
</tr>
<tr>
<td>Zynex</td>
<td>TruWave TENS&lt;br&gt;ValuTENS&lt;br&gt;IF8100&lt;br&gt;E-Wave&lt;br&gt;NeuroMove NM900&lt;br&gt;PGS-123&lt;br&gt;NuTrac Pelvator</td>
<td>TENS&lt;br&gt;TENS&lt;br&gt;IF&lt;br&gt;NMES&lt;br&gt;NMES&lt;br&gt;HVPC&lt;br&gt;NMES</td>
</tr>
<tr>
<td>VQ</td>
<td>SurgiStim4™&lt;br&gt;OrthoStim4™&lt;br&gt;FastStart® EMS&lt;br&gt;FastStart® HVPC&lt;br&gt;VQ™ Vector</td>
<td>IF/NMES/HVPC&lt;br&gt;IF/NMES/HVPC&lt;br&gt;NMES&lt;br&gt;HVPC&lt;br&gt;IF/NMES</td>
</tr>
</tbody>
</table>
## Brand Units

<table>
<thead>
<tr>
<th>RS Medical Units</th>
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<tr>
<td>RS-4i®</td>
<td>IF NMES</td>
<td>Multi-stage stimulation delivers IF current and muscle stimulation. Incorporates a Data Card to monitor patient usage.</td>
</tr>
<tr>
<td>RS-TENS Plus ™</td>
<td>TENS</td>
<td>Intensity can be adjusted by changing frequency and impulse strength for patients with different levels of pain.</td>
</tr>
<tr>
<td>RS-FBG™ RS-LB™</td>
<td>Garments</td>
<td>Full back and low back garments available for electrotherapy treatment.</td>
</tr>
<tr>
<td><strong>Empi Units</strong></td>
<td><strong>Type</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Select TENS™</td>
<td>TENS</td>
<td>Includes preset treatment programs that deliver appropriate currents for patient. Includes a compliance monitor to measure patient use.</td>
</tr>
<tr>
<td>Infinity Plus®</td>
<td>IF NMES HVPC</td>
<td>Delivers multiple waveforms for customizable treatment. Can program and store multiple treatments to assure continuity of care.</td>
</tr>
<tr>
<td>IF 3WAVE®</td>
<td>IF NMES</td>
<td>Includes preset programs for treatment and compliance monitoring.</td>
</tr>
</tbody>
</table>
## Brand Units

<table>
<thead>
<tr>
<th>Empi Units</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td><strong>300PV™</strong></td>
<td>NMES TENS HVPC</td>
<td>Multi-function unit used in homes and clinics. Comes with multiple preset programs for treatment and program locks for ensured application.</td>
</tr>
<tr>
<td><strong>SporTX®</strong></td>
<td>HVPC TENS</td>
<td>Aimed at athletes to reduce swelling from injury and at patients who suffer repetitive stress disorders.</td>
</tr>
<tr>
<td><strong>EasyWear™</strong></td>
<td>Garment</td>
<td>Low back conductive wrap for easy electrode placement for Empi devices.</td>
</tr>
</tbody>
</table>
### Brand Units

<table>
<thead>
<tr>
<th>H-Wave Units</th>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>H-Wave Home Model</td>
<td>Multi-Use</td>
<td>Unique electronic treatment that focuses on fluid shifts and pressures to promote tissue healing and pain relief. So effective that it is approved as an electronic anesthetic for dentistry.</td>
</tr>
</tbody>
</table>
What is H-Wave?

- A unique electrotherapy device... to deal with pain, spasm, swelling and ROM issues.
- Electrotherapy device that can provide more rehabilitative and measurable results.
- A unique medical device that can help patients reduce medication usage, increase function and control pain.

What exactly does H-Wave do, or how does it work, or how is it different from other e-stim devices?

- Specifically designed to stimulate circulation and the lymphatic system to reduce the waste and congestion that is often at the root of symptoms.

Is H-Wave like a TENS?

- No
- TENS masks pain signals while the device is hooked up and turned on. H-Wave is a treatment that patients use at home for about an hour a day.
- Lasting pain relief between treatments is provided
- Other underlying issues are addressed: range of motion, compromised circulation, muscle atrophy, muscle spasms.
## Brand Units

<table>
<thead>
<tr>
<th>Zynex Units</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TruWave TENS</td>
<td>TENS</td>
<td>Programmable unit with compliance meter. Marketed as the most safe and accurate brand of unit.</td>
</tr>
<tr>
<td>ValuTENS II</td>
<td>TENS</td>
<td>Programmable unit with compliance meter. Not as powerful as the TruWave TENS</td>
</tr>
<tr>
<td>IF8100 IC</td>
<td>IF NMES</td>
<td>Comes with five pre-programmed modes and additional safety features such as automatic shut-off.</td>
</tr>
</tbody>
</table>
## Brand Units

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>E-Wave Muscle Stimulator</td>
<td>NMES</td>
<td>Tested to maintain waveform integrity under extreme conditions. Includes safety features such as electrode alarm and level locking.</td>
</tr>
<tr>
<td>NeuroMove NM900</td>
<td>NMES</td>
<td>Unit measures electric signals from the brain to muscles to set new goals for muscle movement and rewards goals with electrical impulses.</td>
</tr>
<tr>
<td>PGS-123 Pulsed Galvanic Stimulator</td>
<td>HVPC</td>
<td>Fairly classic HVPC unit, used to increase ROM, improve blood flow, decrease muscle spasm and aid in soft tissue repair.</td>
</tr>
<tr>
<td>Zynex Units</td>
<td>Type</td>
<td>Notes</td>
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<tr>
<td>---------------------</td>
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<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>NuTrac Pelvator</td>
<td>NMES</td>
<td>Pelvic floor stimulator specially designed for electrical stimulation of pelvic muscles in women to treat urinary incontinence.</td>
</tr>
</tbody>
</table>
## VQ OrthoCare Units

<table>
<thead>
<tr>
<th>Brand</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SurgiStim™</strong></td>
<td>IF NMES HVPC</td>
<td>Multi-modality system provides relief for 24 hours. Includes customized protocols and compliance reporting. Geared towards surgery recovery.</td>
</tr>
<tr>
<td><strong>OrthoStim™</strong></td>
<td>IF NMES HVPC</td>
<td>Multi-modality system provides relief for 24 hours. Includes customized protocols and compliance reporting. Geared towards injury recovery and pain relief.</td>
</tr>
<tr>
<td><strong>FastStart® EMS</strong></td>
<td>NMES</td>
<td>Includes compliance timer, custom and standard presets, a pause feature, compliance meter and a belt clip.</td>
</tr>
</tbody>
</table>
## Brand Units

<table>
<thead>
<tr>
<th>VQ OrthoCare Units</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FastStart® HVPC</strong></td>
<td>HVPC</td>
<td>Includes custom and standard presets, ability to link presets and compliance meter.</td>
</tr>
<tr>
<td><strong>VQ™ Vector</strong></td>
<td>IF NMES</td>
<td>Multimodality unit with custom and standard presets, ability to link presets and compliance meter.</td>
</tr>
<tr>
<td><strong>Sock</strong></td>
<td>Garments</td>
<td>Conductive garments for evenly distributed treatment over a large area or extremity.</td>
</tr>
<tr>
<td><strong>Glove</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sleeves</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Back Brace</strong></td>
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</tbody>
</table>
## Billing Codes: Devices

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>TENS</td>
<td>TENS, two lead, localized stimulation</td>
<td>E0720</td>
</tr>
<tr>
<td>TENS</td>
<td>TENS, four or more leads, for multiple nerve stimulation</td>
<td>E0730</td>
</tr>
<tr>
<td>NMES</td>
<td>Neuromuscular stimulator, electronic shock unit (NMES)</td>
<td>E0745</td>
</tr>
<tr>
<td>Electrotherapy Device</td>
<td>Functional electrical stimulator, transcutaneous stimulation of nerve and/or muscle groups, any type, complete system, not otherwise specified</td>
<td>E0770</td>
</tr>
</tbody>
</table>
## Billing Codes: Supplies

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrodes</td>
<td>Electrodes (e.g., apnea monitor), per pair</td>
<td>A4556</td>
</tr>
<tr>
<td>Lead wires</td>
<td>Lead wires (e.g., apnea monitor), per pair</td>
<td>A4557</td>
</tr>
<tr>
<td>Batteries</td>
<td>Replacement batteries, medically necessary, transcutaneous electrical stimulator, owned by patient</td>
<td>A4630</td>
</tr>
<tr>
<td>Battery Charger</td>
<td>Durable medical equipment, miscellaneous</td>
<td>E1399</td>
</tr>
<tr>
<td>Conductive Garments</td>
<td>Form fitting conductive garment for delivery of TENS or NMES</td>
<td>E0731</td>
</tr>
</tbody>
</table>
## Billing Codes: Skin Products

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductive Gel</td>
<td>Functional electrical stimulator, transcutaneous stimulation of nerve and/or muscle groups, any type, complete system, not otherwise specified</td>
<td>E0770</td>
</tr>
<tr>
<td>Vitamin E (Aloe)</td>
<td>Skin sealants, protectants, moisturizers, ointments, any type, any size</td>
<td>A6250</td>
</tr>
<tr>
<td>Adhesive Remover Wipes</td>
<td>Adhesive remover, wipes, any type, each</td>
<td>A4455</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A4456</td>
</tr>
<tr>
<td>Alcohol Wipes</td>
<td>Skin barrier, wipes or swabs, each</td>
<td>A5120</td>
</tr>
</tbody>
</table>
### Billing Codes: Supply Kits

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
</table>
| **First Month Supply** | Electrical stimulator supplies, 2 lead, per month (e.g. TENS, NMES)  
  - Electrodes: 4  
  - Lead wires: 2  
  - Battery: 1  
  - (Customizable to include wipes or lotions) | A4595 |
| **Texas Supply Kit**  | Electrical stimulator supplies, 2 lead, per month (e.g. TENS, NMES)  
  *Texas mandates that TENS supplies be billed per kit and that patients can only receive two per month*  
  - Electrodes: 4  
  - Alcohol wipes: 1 box  
  - Vitamin E / Aloe: 1  
  - (Lead wires sold separately) | A4595 |
Utilization Management

In order to manage these concerns for payers, benefit managers have established some processing procedures to limit brand utilization, including:

• Requiring current Rx
• Monthly authorization calls
• Monthly verification of patient need (no auto-ship)
• Controlled brand distribution
Utilization Management: (Continued)

• Mandated conversion to generic products
• Business models to drive brand-specific requests through network partnerships to drive down costs
• Conversion of supply orders to in-network suppliers
Questions?

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(615) 358-5351