

# Iontophoresis use in physical therapy ( therapeutic modalities)

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Iontophoresis Use in Physical Therapy INDICATION Iontophoresis is indicated in delivering ionized drugs (Cameron, 236). Depending on the ionized drugs being administered, the indications of iontophoresis vary. For instance, lidocaine is indicated for local anesthetic, dexamethasone for inflammation, and hyaluronidase for edema reduction.

#### CONTRAINDICATIONS

To establish safety and ensure the best clinical practice and application of transdermal drug delivery (iontophoresis), a number of contraindications have been noted. Iontophoresis is contraindicated in patients with cardiac pacemaker or arrhythmia, patients with electrodes placed over carotid sinus, areas with venous or arterial thrombosis or thrombophlebitis, and pregnant patients (Cameron, 237).

In iontophoresis, electrical stimulation is applied; thus, applying iontophoresis in patients with demand pacemaker may interfere with the function of the pacemaker and eventually could alter the heart rate. In addition, electrical stimulation produced by iontophoresis may aggravate the condition of patients with unstable arrhythmia. Patients are also contraindicated to have the electrodes placed over the anterior or lateral neck as these areas the location of the carotid sinuses which when stimulated may cause a rapid fall in blood pressure, leading to fainting. Areas with venous or arterial thrombosis or thrombophlebitis are also contraindicated to iontophoresis because electrical stimulation may increase circulation and the risk of releasing emboli. Lastly, pregnant patients are also contraindicated to receive iontophoresis due to the undetermined effect of the electrical current to the developing fetus.

## PRECAUTIONS

To protect possible danger, failure, or injury in the future, precautions in applying iontophoresis must be observed and implemented at all times in patients with cardiac diseases, patients with impaired mentation or in areas with impaired sensation, patients with malignant tumor, patients with areas of skin irritation or open wounds, and iontophoresis after other physical agents (Cameron, 238).

Iontophoresis may alter the unstable heart rate and blood pressure of patients with cardiac diseases. Patient's sensation and reports of pain must also be carefully monitored as it sets the limit for the intensity of safe current to be applied in iontophoresis. Mentation is another status to be monitored as patients with impaired mentation are often agitated and are trying to pull of the stimulation electrodes. Although iontophoresis is occasionally used to control pain in patients with known malignancy, precaution is still necessary as it is known that electrical stimulation may enhance tissue growth and metastasis of tumors beyond the areas they are found or known to be. Iontophoresis can be used to treat the wound but beyond this purpose, electrical stimulation should be avoided to prevent the risk of delivering too much current in the area as skin with irritations or open wounds have lower impedance and less sensation than intact skin. Furthermore, iontophoresis is also not recommended after application of any physical agent (heat, ice, and ultrasound) because it alters skin permeability and heat will cause vasodilation and increased blood flow, leading to acceleration of drug dispersion from the treatment area.

## PHYSIOLOGICAL EFFECTS

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Iontophoresis may result to skin irritation of allergic response to surface electrode, foam, or rubber. Skin becomes high in impedance which may lead to burn when electrical stimulation is applied. Some patients experienced pain when undergoing iontophoresis, increasing the amplitude slowly until pain becomes tolerable is necessary. If not, other modes of treatment must be considered.

#### TREATMENT MODALITY

**Purpose.** Iontophoresis aims to promote the maximum efficacy of muscles, to control low back pain, to retard or reduce acute edema, and to promote tissue healing.

**How it works.** By placing the drug delivery electrode over the area of pathology or the dispersive return electrode at least 6 inches away, iontophoresis is achieved. This works when the drug delivery electrode has the same polarity with the active ion of the drug to be delivered. Current density is important for efficiency and is suggested not to exceed 0.5 mA/cm<sup>2</sup> (for cathode) and 1.0 mA/cm<sup>2</sup> (for anode) (Cameron, 243-244).

Patient should feel or experience. Patient will be able to notice a sensation under the electrodes once iontophoresis is initiated.

#### TYPICAL PARAMETERS

Parameters of iontophoresis such as treatment time, intensity, frequency, and duration depend upon the parameter settings or treatment goal (Cameron, 246). In the typical or conventional parameters, the pulse frequency should be 100-150 pps with pulse duration of 50-80 μs. Treatment time may last up to 24 hours or as needed to control pain. Amplitude applied must be enough to produce tingling and the modulation of frequency,

duration or amplitude is used only if available.

#### Work Cited

Cameron, Michelle H. Physical Agents in Rehabilitation: From Research to

Practice, 2nd ed. Missouri:

SAUNDERS, 2003, pp. 236-246.