Device Use Case : Cranial Electrotherapy Device

Turning Device On (UC1)

Primary Actor:
- Device User

Precondition:
- User has Device

Main success scenario:
1. User turns on the device by pressing "On" Button.
2. The device loads up the display elements and displays information to user.

Postcondition:
- Device has been turned on and waits for user input to start treatment.

Extensions:
2a. Device does not turn on.
2a1. Charge device to ensure the battery level is above 2%.
2b. Device detects current overload.
2b1. Device permanently disables device.
2b2. Contact manufacturer to repair device.

Related Information:
- Device will show a warning when the battery is less then 5% stating that " The battery is low"

Turning Device Off (UC2)

Primary Actor:
- Device User

Precondition:
- Device is turned on

Main success scenario:
1. User turns off the device by pressing "Off" Button.
2. The device shutdown and does not display information anymore.

Postcondition:
- Device has been turned off and doesn't consume power.

Related Information:
- Device will turn of after 30 minutes of being not in use.

Changing Treatment Time On Device (UC3)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User selects the wanted duration of therapy.
2. Device updates the view to new duration.
3. Device sets the settings to the new duration.

Postcondition:
- New settings now set to new duration of therapy.

Related Information:
- Treatment of time can only be set once the treatment is finish or cancelled.

Changing Frequency On Device (UC4)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User selects the wanted frequency.
2. Device updates the view to new duration.
3. Device sets the settings to the new duration.

Postcondition:
- New setting is now set to the new frequency.

Related Information:
- Frequency can be change anytime during the treatment.

Changing Waveforms On Device (UC5)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User selects the wanted waveforms.
2. Device updates the view to the new waveform.
3. Device sets the settings to the new waveform.

Postcondition:
- New setting is now set to new waveform.

Related Information:
- waveform can be change anytime during the treatment.

Decreasing Intensity on Device (UC6)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User presses "Decrease Intensity".
2. Device will decrease the intensity of the device by 1.
3. Device will use the new setting in the treatment.

Postcondition:
- The device has stored the new intensity in the settings and will run using it when treatment begins/while running.

Extensions:
2a. Intensity does not decrease
2a1. The intensity of the device is already the lowest, zero.

Related Information:
- The "Decrease Intensity" button is a cycle, pressing it once will decrease it by one until it is 0 where it will no longer go down and the button disables.
- Each intensity is 100 microampere on top of the previous one e.g., Intensity 3 is 300 microampere
- Intensity can be change at any time during the treatment.

Increasing Intensity On Device (UC7)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User presses "Increase Intensity".
2. Device will increase the intensity of the device by 1.
3. Device will use the new setting in the treatment.

Postcondition:
- The device has stored the new intensity in the settings and will run using it when treatment begins/while running.

Extensions:
2a. Intensity does not increase
2a1. The intensity of the device is already the highest , five.

Related Information:
- The "Increase Intensity" button is a cycle, pressing it once will increase it by one until it is 5 where it will no longer go up and the button disables.
- Each intensity is 100 microampere on top of the previous one e.g., Intensity 3 is 300 microampere
- Intensity can be change at any time during the treatment.

Viewing Treatment History On Device (UC8)

Primary Actor:
- Device User

Precondition:
- User has turn on the device and is in the main menu.

Main success scenario:
1. User presses "View History".
2. Device displays a list of all the history that ran on the device.

Postcondition:
- The device displays the stored history of all the treatments that was ran.

Related Information:
- Can be viewed after or during the treatment.

Returning to Main Menu from Treatment History Page On Device (UC9)

Primary Actor:
- Device User

Precondition:
- User is in the "View History" display.

Main success scenario:
1. User presses the "Back" button.
2. Device returns user to the main window.

Postcondition:
- Returns to main window.

Related Information:
- Back button is only used for returning from "view history" window.

Locking Settings Buttons On Device (UC10)

Primary Actor:

- Device user
Precondition:
- User is running a treatment.
Main success scenario:
1. User presses the "lock" button.
2. Device locks the device from any settings change.
Postcondition:
- Settings buttons become unresponsive.
Related Information:
- Lock is only the buttons that effect changes in the settings of the treatment. - Pressing it again will unlock the settings.

Record Treatment On Device (UC11)

Primary Actor:
- Device user
Precondition:
- User is running a treatment.
Main success scenario:
1. User presses the "Record" button.
2. Device stores all the settings of the treatment in the database.
Postcondition:
- Settings are stored for later viewing.
Related Information:
- Only records the settings that were set before pressing record, further changes after record is pressed does not get recorded in the history.

Applying Nodes to User's Skin (UC12)

Primary Actor:
- Device User
Precondition:
- User has turn on the device and is in the main menu.
Main success scenario:
1. Device user attaches electrodes to skin with proper contact.
Postcondition:
- Device detects that proper skin contact is achieved.
Extensions:
1a. Attach electrodes do not make proper contact.
1a1. Remove electrodes from skin
1a2. Clean surface of skin from any debris.
1a3. Apply pre-package oil to target area to ensure proper contact to skin.
Related Information:
- Treatment will only start when proper contact is made and intensity are set.

Removing Nodes From User's Skin (UC13)

Primary Actor:
- Device User
Precondition:
- User has turn on the device and is in the main menu.
Main success scenario:

1. Device user detaches electrodes from skin.
Postcondition:
- Device detects contact have been removed.
Extensions:
1a. Electrodes are detached from skin for longer than 5 seconds.
1a1. Device detects lost of contact to skin
1a2. Device terminates treatment and doesn't send current through.
Related Information:
- If the electrodes are removed for less than 5 seconds, current will still run through it.

Device Initiates Treatment (UC14)

Primary Actor:
- Device User
Precondition:
- User has turn on the device, attach the electrodes properly and set intensity to higher than 0.
Main success scenario:
1. Device starts treatment.
Postcondition:
- Device runs current through electrodes with the settings that were set.

Device Terminates Treatment (UC15)

Primary Actor:
- Device User
Precondition:
- User has turn on the device, set intensity to higher than 0 and detaches the electrodes while the treatment is running.
Main success scenario:
1. Device stops treatments.
Postcondition:
- Device stops sending current through the electrodes.
Relevant Information:
- Reattaching the electrodes will continue the treatment.

Device Update The Display (UC16)

Primary Actor:
- Device User
Precondition:
- User changes settings or activates a button on main menu while turn on with sufficient battery.
Main success scenario:
1. Device will update the appropriate sections with the newly selection option or settings
Postcondition:
- Display shows new information or request.

Cranial Electrotherapy Device Use Case

User

Device Processor

Turn On
Turn Off
Change Treatment Time
Decrease Intensity
Increase Intensity
View History
Record Treatment
Lock Buttons
Return from History View
Change Frequency
Change Waveform
Start Treatment
Stop Treatment
Apply Nodes to Skin
Remove Nodes From Skin
Update Display