



 **OPTUNE**[®]
Elevate Expectations

PATIENT INFORMATION
AND OPERATION MANUAL

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2 Glossary of Medical Terms

Cancer – abnormal cell division that spreads without control

Chemotherapy – medication used to destroy cancer cells

Clinical trial – a research study that involves people

Contraindications – situations when a treatment should not be used

Glioblastoma Multiforme (GBM) – a type of brain cancer; other medical names for GBM are “glioblastoma”, “grade IV glioma” or “grade IV astrocytoma”

Local – in one part of the body

MRI scan – a procedure that uses a magnet to create pictures of areas inside the body

Electric Field Generator (the device) – a portable device for delivering TFields to the brain of patients with recurrent and newly diagnosed GBM

Optune® Treatment Kit – the Electric Field Generator and other parts including batteries, charger, connection cable, transducer arrays, power supply and carrying case

Radiation – a treatment involving x-rays used to kill tumor cells

Recurrence/Recurrent – when cancer comes back after removal

Steroids – when taken by mouth or IV (through the vein), a medication used to lower swelling around a brain tumor and help with symptoms related to the brain. When used on the skin, a medication that can reduce inflammation

Systemic – throughout the body

Temozolomide (TMZ) – a type of cancer drug used to treat newly diagnosed GBM

Topical – on the surface of the skin

Transducer Array – adhesive bandages that hold insulated ceramic discs that deliver TFields to the scalp

TFields – Tumor Treating Fields: Alternating electric fields, delivered using transducer arrays to the part of the body with a solid tumor. The fields have been shown to destroy tumor cells

Tumor – an abnormal growth of tissue

3 What Is Optune® and How Does It Work?

Your doctor has prescribed Optune because you are a good candidate for the device.

Optune is a treatment for adult patients (22 years of age or older). Optune is used after surgery and radiation with chemotherapy have been used if possible. A discussion of brain cancer and treatment options is found at the end of this Patient Manual in Section 29.

A doctor may use Optune to treat a patient with newly diagnosed brain cancer (called glioblastoma multiforme, or "GBM") in the higher parts of the brain, together with temozolomide (a type of cancer drug).

A doctor may also use Optune to treat a patient with GBM that reappears after they have had chemotherapy (cancer drugs). When Optune is used after it reappears it is used alone, instead of standard medical therapy for GBM.

Optune is a portable device. It produces electric fields, called tumor treatment fields ("TTFields"). Transducer arrays connected to the device deliver TTFields to your head. The TTFields are intended to destroy brain cancer cells. The device and battery are carried in a shoulder bag. You should use them all the time.

In this manual, the term "Optune Treatment Kit" refers to the Electric Field Generator (also called "the device"), connection cable, transducer arrays, power supply, battery and battery charger.

4 Contraindications, Warnings and Precautions

Contraindications

Do not use Optune® if you have an active implanted medical device, a skull defect (such as, missing bone with no replacement) or bullet fragments. Examples of active electronic devices include deep brain stimulators, spinal cord stimulators, vagus nerve stimulators, pacemakers, defibrillators and programmable shunts. Use of Optune together with implanted electronic devices has not been tested and may lead to malfunctioning of the implanted device.

Use of Optune together with skull defects or bullet fragments has not been tested and may possibly lead to tissue damage or render Optune ineffective.

Do not use Optune if you are known to be sensitive to conductive hydrogels like the gel used on electrocardiogram (ECG) stickers or transcutaneous electrical nerve stimulation (TENS) electrodes. In this case, skin contact with the gel used with Optune may commonly cause increased redness and itching, and rarely may even lead to severe allergic reactions such as shock and respiratory failure.

Warnings

Warning – Use Optune only after receiving training from qualified personnel, such as your doctor, a nurse, or other medical personnel who have completed a training course given by the device manufacturer (Novocure). Ask to see a certificate signed by Novocure that says they completed a training course. Your training will include a detailed review of this manual and practice in the use of the system. In addition, you will be trained in what to do if there are problems with treatment. Use of Optune without receiving this training can result in breaks in treatment and may rarely cause increased scalp rash, open sores on your head, allergic reactions or even an electric shock.

Warning – Optune is not intended to be used as a substitute for chemotherapy but rather as an adjunct to treatment with TMZ for newly diagnosed GBM.

Warning – Do not use Optune if you are 21 years old or younger. It is unknown what side effects the device may cause in these cases or if it will be effective.

Warning – Do not use Optune if you are pregnant, think you might be pregnant, or are trying to get pregnant. If you are a woman who is able to get pregnant, you must use birth control when using the device. Optune was not tested in pregnant women. It is unknown what side effects the device may cause if you are pregnant or if it will be effective.

Warning – In case of skin irritation, which appears as redness under the transducer arrays (a mild rash), use high potency topical steroids (your doctor can prescribe this for you) when replacing transducer arrays. This will help relieve your skin irritation. If you do not use this cream, the skin irritation can become more serious and may even lead to skin break down, infections, pain and blisters. If this happens, stop using the topical steroid cream and contact your doctor. Your doctor will supply you with an antibiotic cream to use when replacing transducer arrays. If you do not use this cream, your symptoms may continue and your doctor may ask you to take a break from treatment until your skin heals. Taking a break from treatment may lower your chance to respond to treatment.

Warning – All servicing procedures must be performed by qualified and trained personnel. If you attempt to open and service the system alone you may cause damage to the system. You could also get an electric shock by touching the inner parts of the device.

4 Contraindications, Warnings and Precautions

Precautions

Caution – Keep Optune® out of the reach of children. If children touch the device, they could damage the device. This could cause a break in treatment. Breaks in treatment may lower your chance to respond to treatment.

Caution – Do not use any parts that do not come with the Optune Treatment Kit, or that were not sent to you by the device manufacturer or given to you by your doctor. Use of other parts, manufactured by other companies or for use with other devices, can damage the device. This may lead to a break in treatment. Breaks in treatment may lower your chance to respond to treatment.

Caution – If your doctor used plates or screws to close your skull bone during your surgery, be careful when placing the transducer arrays. Make sure the round disks that make up the transducer arrays are not on top of the areas where you can feel the screws or plates under your skin. In other words, make sure the screws or plates under your skin are in between the round disks that make up the transducer arrays.

If you do not do this, you may have increased skin damage which may lead to a break in treatment. Breaks in treatment may lower your chance to respond to treatment.

Caution – Tell your doctor before using the device if you have an inactive implanted medical device in your brain (such as a stent, plastic drug delivery reservoir, aneurysm clip or coil or device lead). Use of Optune in subjects with inactive implanted medical devices in their brain was not tested and could lead to tissue damage or lower your chance to respond to treatment.

Caution – Do not use Optune if any parts look damaged (torn wires, loose connectors, loose sockets, cracks or breaks in the plastic case). Use of damaged components can damage the device, and cause a break in treatment. Breaks from treatment may lower your chance to respond to treatment.

Caution – Do not wet the device or transducer arrays. Getting the device wet may damage it, preventing you from receiving treatment for the right amount of time. Getting the transducer arrays very wet is likely to cause the transducer arrays to come loose from your head. If this happens, the device will turn off and you will need to change the transducer arrays.

Caution – Before connecting or disconnecting the transducer arrays, make sure that the Optune power switch is in the OFF position. Disconnecting transducer arrays with the device power switch in the ON position may cause a device alarm to go off, and could damage the device.

Caution: If you have an underlying serious skin condition on the scalp, discuss with your doctor whether this may prevent or temporarily interfere with Optune treatment.

Notices

Notice! The Optune device and transducer arrays will activate metal detectors.

Notice! Do not use Optune if your tumor is located in the lower parts of the brain close to the spinal cord. Ask your doctor if your tumor is located in this part of your brain. Optune has not been tested in patients with tumors in these locations. It is unknown whether these tumors will respond to treatment.

Notice! You should use Optune for at least 18 hours a day to get the best response to treatment. Using Optune for less than 18 hours a day lowers the chances that you will respond to treatment.

Notice! Do not stop using Optune before you finish at least four full weeks of therapy to get the best response to treatment. Stopping treatment before four weeks lowers the chances that you will respond to treatment.

Notice! Do not stop using Optune even if you have used it less than the recommended 18 hours per day. You should stop using the device only if your doctor tells you to. Stopping treatment could lower the chances that you will respond to treatment.

4 Contraindications, Warnings and Precautions

Notice! If you plan to be away from home for more than 2 hours, carry an extra battery and/or the power supply with you in case the battery you are using runs out. If you do not take a spare battery and/or the power supply you may have a break in your treatment. Breaks in treatment may lower your chance to respond to treatment.

Notice! Make sure you have at least 12 extra transducer arrays at all times. This will last you until the next transducer array shipment arrives. Remember to order more transducer arrays when there are at least 12 extra transducer arrays left. If you do not order transducer arrays in time you may have a break in your treatment. Breaks in treatment may lower your chance to respond to treatment.

Notice! Batteries may weaken over time and need to be replaced. You will know this has happened when the amount of time the device can run on a fully charged battery begins to shorten. For example, if the low battery indicator light flashes within only 1.5 hours from the start of treatment, replace the battery. If you do not have replacement batteries when your batteries run out, you may have a break in your treatment. Breaks in treatment may lower your chance to respond to treatment.

Notice! You should carry the Troubleshooting Guide (Section 26) at all times. This guide is necessary to ensure Optune® works properly. If you do not work the system correctly you may have a break in your treatment. Breaks in treatment may lower your chance to respond to treatment.

Notice! Do not block the device vents located on the front and back of the Electric Field Generator. Blocking the vents may cause the device to overheat and turn off, leading to a break in treatment. If this happens, unblock the vents, wait 5 minutes and restart the device.

Notice! Do not block the battery charger vents located on the sides of the battery chargers. Blocking the vents may cause the charger to overheat. This could prevent your batteries from charging.

Notice! Before using a transducer array, make sure its package is sealed by gently rubbing the package between thumb and pointer finger on all four sides. The package should be closed on all sides. There should be no openings in the package seal. If the package is not sealed, the transducer array may be damaged. A damaged transducer array will not work properly and may cause the device to turn off.

Notice! The transducer arrays are for single use and should not be taken off your head and put back on again. If you put a used transducer array back on your head again, it may not stick well to your skin and the device could turn off.

5 What Are the Risks of Treatment with Optune®?

Skin irritation is often seen under the transducer arrays when using Optune. This will look like a red rash, small sores or blisters on your scalp. In general, this will not cause skin damage that cannot be fixed. The irritation can be treated with steroid cream or by moving the transducer arrays. If you do not use steroid cream, the skin irritation could become more serious. This may lead to open sores, infections, pain and blisters. If this happens, stop using the steroid cream and contact your doctor.

In the clinical study of Optune in GBM that reappeared after chemotherapy, headaches, weakness, convulsions and thinking changes were seen. In the device group, 18 out of 116 patients had headaches, 10 out of 116 patients had weakness, 11 out of 116 patients had convulsions and 6 out of 116 patients had thinking changes. These events are also seen in patients with recurrent GBM who do not use Optune. However, there was a higher rate of these problems overall in Optune patients (43.1%) compared to patients on cancer drugs (36.3%). Only skin redness and open sores are related to Optune treatment itself.

By using Optune instead of cancer drugs, patients would avoid many of the side effects due to cancer drugs. These include infections, nausea, vomiting, loss of appetite, and tiredness. Three times as many patients who used cancer drugs had these side effects compared to patients who used Optune.

The table below shows the occurrence of medical problems in patients using Optune after cancer drugs compared to patients on cancer drugs.

Occurrence of Medical Problems in Patients Using Optune Compared to Patients on Cancer Drugs

Medical Problem	Optune	Cancer Drugs
Lower white and red blood cell counts	5 out of 116 subjects (4%)	17 out of 91 subjects (19%)
Vomiting, nausea and diarrhea	9 out of 116 subjects (8%)	27 out of 91 subjects (30%)
General disorders	15 out of 116 subjects (13%)	14 out of 91 subjects (15%)
Infections	5 out of 116 subjects (4%)	11 out of 91 subjects (12%)
Rash under device transducer arrays and other injuries	21 out of 116 subjects (18%)	1 out of 91 subjects (1%)
Nutrition disorders	9 out of 116 subjects (8%)	12 out of 91 subjects (13%)
Brain disorders	50 out of 116 subjects (43%)	33 out of 91 subjects (36%)
Behavioral disorders	12 out of 116 subjects (10%)	7 out of 91 subjects (8%)
Breathing disorders	7 out of 116 subjects (6%)	10 out of 91 subjects (11%)

5 What Are the Risks of Treatment with Optune®?

The table below shows the occurrence of certain events when Optune was used correctly and incorrectly in the clinical study in patients whose tumor reappeared after cancer drugs.

Occurrence of Certain Problems with Correct and Incorrect Use of Optune

Event	Likelihood of Event	Outcome/Harm	Likelihood of Outcome
Correct use			
Skin reaction	18 out of 116 subjects (16%)	Mild scalp redness (rash)	17 out of 18 subjects (95%)
Skin reaction	18 out of 116 subjects (16%)	Moderate scalp redness (rash with little sores and blisters)	6 out of 18 subjects (33%)
Incorrect use			
Skin reaction	1 out of 116 subjects (1%)	Open sore on scalp	1 out of 1 subjects (100%)
Use in a patient with a pacemaker	1 out of 121 subjects (1%)	Heart problems	0 out of 1 subject (0%)
Use in patients 21 years or younger	0 out of 120 subjects (0%)	Unknown	Unknown
Use in pregnant women	0 out of 120 subjects (0%)	Unknown	Unknown
Use in patients with implanted electronic devices or bullet fragments	0 out of 120 subjects (0%)	Unknown	Unknown
Known allergic reaction to electrode gels	0 out of 120 subjects (0%)	Increased redness and itching, (rarely may even lead to severe allergic reactions such as shock and breathing failure)	Unknown
Opening the device for service by untrained personnel	0 out of 120 subjects (0%)	Damage to the device and risk of electric shock	Unknown
Incorrect uses not predicted	Unknown	Unknown	Unknown

5 What Are the Risks of Treatment with Optune®?

In a clinical study of Optune together with temozolomide (before the tumor reappeared), the device led to skin irritation in about half of the patients (53%). Most of these cases were not severe and were treated with topical creams. Only a handful of patients (2%) had severe skin irritation.

The table below shows the occurrence of severe medical problems in patients using Optune together with temozolomide compared to patients on temozolomide alone.

Medical Problem	Optune with Temozolomide	Temozolomide
Lower white and red blood cell counts	59 out of 456 subjects (13%)	23 out of 216 subjects (11%)
Vomiting, nausea and diarrhea	23 out of 456 subjects (5%)	8 out of 216 subjects (4%)
General disorders	42 out of 456 subjects (9%)	13 out of 216 subjects (6%)
Infections	32 out of 456 subjects (7%)	10 out of 216 subjects (5%)
Rash under device transducer arrays and other injuries	24 out of 456 subjects (5%)	7 out of 216 subjects (3%)
Muscle disorders	21 out of 456 subjects (5%)	9 out of 216 subjects (4%)
Nutrition disorders	16 out of 456 subjects (4%)	10 out of 216 subjects (5%)
Brain disorders	109 out of 456 subjects (24%)	43 out of 216 subjects (20%)
Behavioral disorders	17 out of 456 subjects (4%)	6 out of 216 subjects (3%)
Breathing disorders	24 out of 456 subjects (5%)	11 out of 216 subjects (5%)
Bleeding and clotting disorders	19 out of 456 subjects (4%)	5 out of 216 subjects (2%)
Heart disorders	5 out of 456 subjects (1%)	3 out of 216 subjects (1%)

The table below shows the occurrence of certain events when Optune was used correctly and incorrectly together with temozolomide in the clinical study in patients whose tumor has not yet reappeared.

Occurrence of Certain Problems with Correct and Incorrect Use of Optune Together with Temozolomide

Event	Likelihood of Event	Outcome/Harm	Likelihood of Outcome
Correct use			
Skin reaction	235 out of 456 subjects (52%)	Mild or moderate scalp redness (rash with little sores or blisters)	235 out of 242 subjects (97%)
Use in patients with implanted shunts in the brain	4 out of 437 patients	Shunt malfunction or infection	0 out of 4 subjects (0%)
Incorrect use			
Skin reaction	7 out of 437 subjects (2%)	Open sores on scalp leading to treatment breaks and hospitalization	7 out of 7 subjects (100%)
Use in a patient with a pacemaker	0 out of 437 subjects (0%)	Heart problems	Unknown
Use in pregnant women	0 out of 437 subjects (0%)	Unknown	Unknown
Use in patients with implanted electronic devices or bullet fragments	0 out of 437 subjects (0%)	Unknown	Unknown
Known allergic reaction to electrode gels	0 out of 437 subjects (0%)	Increased redness and itching, (rarely may even lead to severe allergic reactions such as shock and breathing failure)	Unknown
Opening the device for service by untrained personnel	0 out of 437 subjects (0%)	Damage to the device and risk of electric shock	Unknown
Incorrect uses not predicted	Unknown	Unknown	Unknown

6 What Are the Benefits of Treatment with Optune®?

Patients using Optune after their tumor reappeared lived a similar amount of time compared to patients using cancer drugs. In the clinical study, half of the patients in both groups lived for more than 6.4 months. 22 out of each 100 patients lived for one year or longer.

Patients using Optune after their tumor reappeared had a better quality of life (see Section 7).

Below is a table showing the effects on the benefit of the device, when it is used correctly or incorrectly after the tumor reappeared.

Benefit from Correct and Incorrect Use of Optune

Event	Likelihood of Event	Outcome	Likelihood of Outcome
Correct use			
Use of the device for at least 18 hours a day	85 out of 98 subjects (87%)	Survival 3 months longer compared to subjects treated less than 18 hours a day	81 out of 85 (95%)
Incorrect use			
Use of the device for less than 18 hours a day	13 out of 98 subjects (13%)	Survival 3 months shorter compared to subjects treated at least 18 hours a day	12 out of 13 (92%)
Wetting the device or soaking the transducer arrays	Unknown	Treatment break	Unknown
Handling of the device by children	Unknown	Treatment break	Unknown

In the clinical study using Optune with temozolomide before patients' tumors reappeared, the time from the start of treatment to death was measured when half of the patients had joined the study as well as at the time when all of the total 700 patients had joined the study. The table below shows the amount of time that patients who used Optune with temozolomide were observed to be alive longer than patients who used temozolomide alone.

	Benefit of Optune + Temozolomide	
	Half of Patients in Study	All Patients in Study
Correct use	Almost 5 months longer	Almost 7 months longer
All subjects	3 months longer	Almost 5 months longer

In addition, more patients who used Optune with temozolomide were alive after 2 years than patients using temozolomide alone:

	Patients Alive 2 Years after the Start of Treatment (Optune + Temozolomide vs. Temozolomide Alone)	
	Half of Patients in Study	All Patients in Study
Correct use	48% vs. 32%	43% vs. 25%
All subjects	48% vs. 34%	43% vs. 31%

7 What Studies Have Been Conducted with Optune®?

A clinical study tested Optune against the best standard of care chemotherapy (cancer drugs). The study included 237 subjects with recurrent GBM (120 Optune subjects and 117 cancer drugs subjects).

Subjects who used Optune lived a similar amount of time compared to subjects who were taking cancer drugs. Optune subjects and cancer drugs subjects lived for an average of 6.4 months after treatment was started. In addition, the same portion of subjects who used Optune or cancer drugs were alive one year after starting treatment. That is, 22 out of every 100 subjects were alive at one year when using Optune or cancer drugs. Finally, when subjects used Optune, the tumor shrank to at least half of its original size in 14 out of 100 (14%) Optune subjects compared to 7 out of 73 (10%) cancer drugs subjects. Optune was similar to cancer drugs in other measures of treating GBM. Quality of life was better in Optune subjects compared to cancer drugs subjects.

The number of subjects with digestive problems, blood problems, or infections was three times lower in the Optune group than in the cancer drugs group. That is, 17 out of 91 subjects on cancer drugs had blood problems compared to 5 out of 116 subjects using Optune. 27 out of 91 subjects on cancer drugs had digestive problems compared to 9 out of 116 subjects using Optune. 11 out of 91 subjects on cancer drugs had infections compared to 5 out of 116 subjects using Optune.

18 out of 116 Optune subjects had mild or moderate skin reaction under the transducer arrays (red rash, small sores or blisters). This was expected. None of these cases of skin irritation caused damage to the skin that could not be fixed. The reaction went away after being treated with steroid cream and moving the transducer arrays. In all cases, the rash went away after stopping treatment. One subject had a larger open sore under his transducer arrays, which healed after moving the transducer arrays to another place.

The clinical study found that Optune was similar in effectiveness to cancer drugs in treating recurrent GBM. Optune subjects as a group had a better quality of life without many of the side effects of cancer drugs.

7 What Studies Have Been Conducted with Optune®?

A second clinical study tested Optune together with temozolomide compared to temozolomide alone. The study included 695 subjects with newly diagnosed GBM (466 subjects with Optune and temozolomide and 229 subjects with only temozolomide).

In the clinical study using Optune with temozolomide before patients' tumors reappeared, the time from the start of treatment to death was measured when half of the patients had joined the study as well as at the time when all of the total 695 patients had joined the study. The table below shows the amount of time that patients who used Optune with temozolomide were observed to be alive longer than patients who used temozolomide alone.

	Benefit of Optune + Temozolomide	
	Half of Patients in Study	All Patients in Study
Correct use	Almost 5 months longer	Almost 8 months longer
All subjects	3 months longer	Almost 5 months longer

In addition, more patients who used Optune with temozolomide were alive after 2 years than patients using temozolomide alone:

	Patients Alive 2 Years After the Start of Treatment (Optune + Temozolomide vs. Temozolomide Alone)	
	Half of Patients in Study	All Patients in Study
Correct use	48% vs. 32%	44% vs. 25%
All subjects	48% vs. 34%	43% vs. 31%

The number of subjects with digestive problems, blood problems, or infections was similar in the group treated with Optune and temozolomide compared to the group treated with temozolomide alone.

235 out of 456 Optune subjects had mild or moderate skin reaction under the transducer arrays (red rash, small sores or blisters). This was expected. None of these cases of skin irritation caused damage to the skin that could not be fixed. The reaction went away after being treated with steroid cream and moving the transducer arrays. In all cases, the rash went away after stopping treatment. Seven out of 456 Optune subjects had a larger open sore under their transducer arrays, which needed surgery to fix.

The clinical study in patients using Optune with temozolomide before their tumor reappeared found that Optune was more effective than temozolomide alone in treating GBM. Treatment with Optune increased the time until the tumor reappeared and also increased the time patients lived.

Ask your doctor for more details about the clinical studies of Optune. For more information, visit our website: www.Optune.com

8 About Optune®

Optune is a portable medical device. It delivers electric fields called “TTFields” to the brain using transducer arrays. TTFields are intended to kill cancer cells.

Your doctor has prescribed Optune for use at home. You may be able to use Optune on your own, or you may need help from a doctor, family member, or other caregiver. Use Optune as many hours per day as possible. Only take short breaks for personal needs. Use the device for at least four weeks. When starting treatment at your doctor’s clinic, your doctor will tell you how to use the device, replace transducer arrays, recharge and replace batteries, and plug in the device. Your doctor will also teach you what to do if an alarm beeps and will give you a telephone number to call for technical support. After this short training at the doctor’s office, with the help of a family member or care provider if needed, you will be able to properly work Optune. You will also be able to change the batteries, charge the batteries and replace the transducer arrays as needed.

The device can be carried when you are using a battery. You can continue your normal daily life while carrying the device in a shoulder bag. The Optune Treatment Kit includes four rechargeable batteries. Each battery will last for two to three hours. For sleeping, or other times when you plan to stay in the same place for a while, plug the device into a standard wall outlet.

Optune does not need regular maintenance. Optune also does not have any settings for you to change. The only things you need to do are check that the device has a power supply (a charged battery, or is plugged into the wall) and turn it on and off. If the device is not working, an alarm will beep. A simple Troubleshooting Guide is provided in this manual (Section 26). You can also call the 24-hour technical support telephone number (Section 27). Shave your scalp and change the transducer arrays at least twice a week. Keep treatment breaks to a minimum. Interrupt treatment only for personal needs such as bathing, exercise, or any time where the device may be a distraction. Stop treatment to replace the transducer arrays. To take a shower, unplug the transducer arrays from the device (leave the transducer arrays on your head) and put a shower cap on your head so it does not get wet. You can take a full shower and wet your head when you are not wearing the transducer arrays (for example, when you have taken them off but before replacing them with a new pair). You can wear a wig or hat over the transducer arrays, if you wish.

9 Overview of Optune® Treatment Kit



1. Electric Field Generator (the device)
2. Portable Batteries
3. Charger for Portable Batteries
4. Plug In Power Supply
5. Connection Cable and Box (CAD)
6. Transducer Arrays
7. Power Cords
8. Shoulder Bag and Strap
9. Portable Battery Case

10 Overview of Transducer Arrays

The transducer arrays are adhesive bandages that hold insulated ceramic discs that are needed to deliver treatment. The transducer arrays should be used with Optune® only.

Four transducer arrays are used at one time. There are two different color transducer arrays, one type has a white connection end and one has a black connection end. You will need two transducer arrays with white connection ends, and two transducer arrays with black connection ends every time you change your arrays. In the clinical study in subjects whose tumor reappeared after cancer drugs, half of the patients used at least 36 transducer arrays each month. Most patients (95%) used between 20 and 60 transducer arrays each month. Put the transducer arrays on a clean, shaven scalp. Put them on your scalp in the place where your doctor told you, based on the location of your tumor.

The transducer arrays are disposable. Change them at least two times per week (every 4 days at most). Your hair growth will prevent good contact between the transducer arrays and your scalp. Shave the scalp again before you apply a new set of transducer arrays.

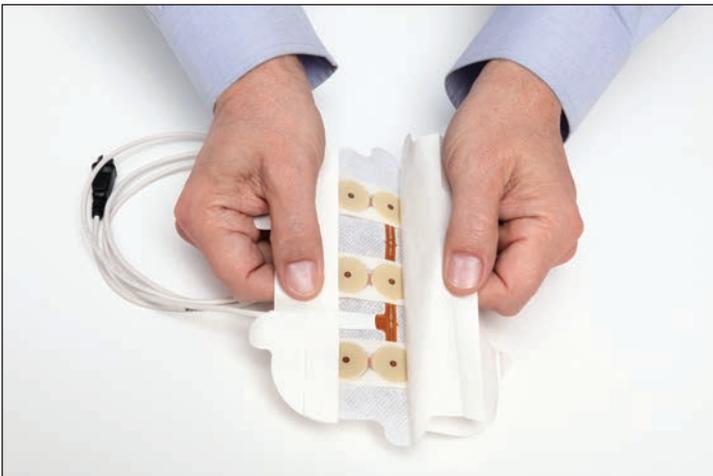
Please contact Novocure to arrange for proper disposal of used transducer arrays. Do not dispose of your used transducer arrays in household trash.

11 Before You Put on the Transducer Arrays

You will need to use four transducer arrays (two black and two white arrays) each time you change the arrays. The black arrays are placed on the front and back of your head, and the white arrays are placed on the sides of your head. Remember: Black goes on the back, white goes on the right. Change the four (4) transducer arrays at least two times per week (every 4 days at most) to continue treatment with Optune®. You may change the transducer arrays with the help of a doctor or caregiver if needed.

12 Removing the Transducer Arrays from the Package

Open the envelope of four transducer arrays by gently pulling apart the edges of the envelope (see the picture below).



13 Prepare Your Head for Transducer Array Placement

Wash your head with a gentle shampoo.

If this is the first time you have used the transducer arrays, ignore this step and skip ahead to the next step (shaving). If you are replacing transducer arrays, you, or your doctor or caregiver if needed, should wipe the skin with baby oil to remove any old adhesive from other transducer arrays. Baby oil is used to remove old adhesive. It will not stop the device from working.

Shave your entire scalp using an electric shaver. Do not leave any stubble.

Wipe your scalp with 70% alcohol (available at your local pharmacy without a prescription).

Use a high potency steroid cream if your scalp is red (your doctor will prescribe this for you). Treat open sores on your scalp following your doctor's instructions. If you use a cream or ointment, apply it to the scalp, wait at least 15 minutes and wipe your scalp again with 70% alcohol. Apply the transducer arrays after your scalp is dry.



14 Place the Transducer Arrays on Your Head

After you prepare your scalp (Section 13), put the transducer arrays on your head with the help of a doctor or caregiver if needed. Every 4 days (at most), remove the transducer arrays, prepare the scalp (as outlined in Section 13) and put on a new set of transducer arrays. You will know it is time to change transducer arrays when the device alarm beeps more often. This means that the device is not able to work properly because of hair growth. Hair growth keeps the transducer arrays from making good contact with your scalp.

To place the transducer arrays on your head, with the help of a caregiver or doctor if needed, follow the steps below.

Note, if this is the first time you have used the transducer arrays, ignore the first step (removal).

Remove the transducer arrays from your head by peeling the medical tape away from your scalp.

Note which color transducer array goes where on your head. The two black arrays are placed in the front and back of the head and the two white arrays are placed on the sides.

Prepare your skin for the transducer arrays, as described in Section 13.

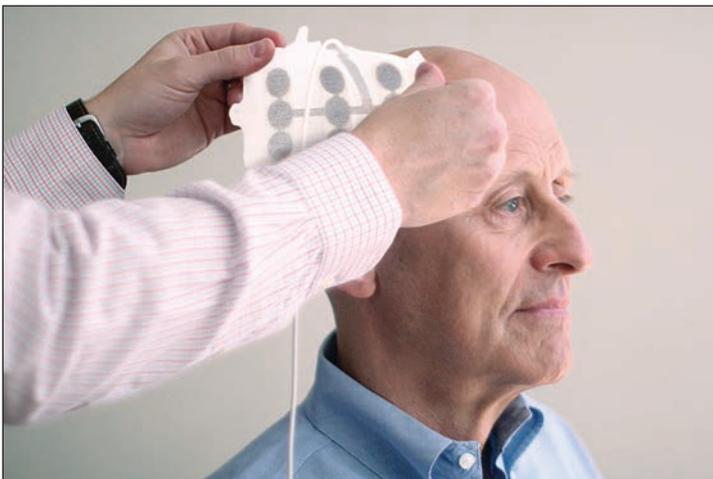
Peel off the white layer (liner) covering the gel from the first transducer array.

If this is the first time you have used the transducer arrays, put the transducer arrays on your head as shown in the transducer array layout or the "map" that your doctor gave you. Placement is based on the location of your tumor. When changing the transducer arrays, place the transducer arrays on your head in the same general location as before, but shift the transducer arrays less than an inch in the direction of the arrow on your transducer array layout or "map." To reduce skin irritation under the transducer arrays, move the transducer arrays a small amount. Shifting the transducer arrays is not required for the device to work properly.

Place the other three transducer arrays in the same way.

Pull the tabs on each side of the transducer arrays and press them firmly to your scalp.

Press the entire edge of the transducer array tape to your scalp.



15 Connect the Transducer Arrays to the Device

Connect each of the four transducer array connectors with black and white connection ends to the matching sockets on the connection cable. Plug the transducer array connectors with the black connection ends into the two black sockets (there will be one labeled "P1" and one labeled "N1") and the two white connection ends into the white sockets (there will be one labeled "P2" and one labeled "N2") (see diagram).

Press firmly to be sure the connectors are pushed in all the way. Hold the transducer array wires together. Wrap them with a small piece of tape, if you wish.



16 Disposal

Please contact Novocure to arrange for proper disposal of used transducer arrays. Do not throw them in the trash.

17 Connecting & Disconnecting the Portable Battery

The Optune® Treatment Kit comes with 4 rechargeable batteries. Batteries slide into the device. The battery should be inserted until you hear a “click”, indicating the battery is in place. Take care not to drop the battery in place or force it into the battery slot. Optune uses one battery at a time. The other three batteries should stay in the battery charger. Each battery lasts 2 to 3 hours. Replace the battery each time it runs out (when the yellow low Battery indicator light is on, as described in Section 22). If you plan to be away from home for more than 2 hours, carry extra batteries or a power supply.



Gently press down to lock the battery in place. Make sure the battery latch is fully engaged.



To remove the battery from the slot, press both blue buttons on the side of the battery and lift up.

Recharge the batteries in the charger (see Section 18) for two to four hours. The batteries will keep most of their charge after being removed from the charger for several days but eventually will lose their charge. It will not hurt the batteries to keep them in the charger after they are fully charged so you can leave them there if they are not needed. You can charge and use the batteries many times for about six to nine months. Over time, the length of time that the batteries can run the device (before the yellow low battery indicator light illuminates and the alarm beeps) will get shorter. If the time from treatment start with a full battery to low battery alarm falls below 90 minutes contact technical support (see Section 27) to get replacement batteries.

The battery light will turn from green to yellow when the battery charge falls below a threshold. This is an indication that the battery should be changed soon. The treatment will continue to run while the yellow low battery indicator is illuminated until the audible alarm sounds and the red error light illuminates. Once this happens the treatment will stop and the device must be turned off and the battery replaced.

When the yellow low Battery indicator light lights up, there are two ways you can replace the depleted battery with a charged battery

Option One: (to be used if near the direct wall power supply) allows you to change the battery without interrupting therapy. This can be used before the battery is completely depleted, and before the device has alarmed. Please follow these steps:

1. Plug in the wall power supply to bottom of the Optune device. (See Section 19).
The lights on the display panel will indicate you are no longer running on battery power.
2. Remove the battery from the battery slot by pressing the blue buttons on the side of the battery and lifting the battery cartridge out of the slot.
3. Select a fully charged battery from the charger or device bag.
4. Slide the fully charged battery in the battery slot, gently push down to lock the battery in place.
5. Remove the power cord from the bottom of the device.

The battery light on the display panel will illuminate indicating you are no longer running on wall power.

See the next section to check the battery gauge.

17 Connecting & Disconnecting the Portable Battery

Option Two: If you are not near the wall power supply, or if the battery has totally depleted please replace the battery using these steps:

1. Press the TTFields button to stop the treatment.
2. Turn off the device using the power switch (on the bottom of the device).
3. Remove the battery from the battery slot by pressing the blue buttons on the side of the battery and lifting the battery cartridge out of the slot.
4. Select a fully charged battery from the charger.
5. Slide the fully charged battery in the battery slot, gently push down to lock the battery in place.
6. See the next section to check the battery gauge.
7. Turn ON the device using the power switch and wait for the system to run a self-check (this takes about 10 seconds). To start treatment press the TTFields button (see Section 22).
8. Insert the used battery into the charger for recharging (see Section 18).

18 Charging the Portable Battery

Checking the Battery Gauge

While you are using Optune®, you may want to check how much energy is left in your battery. Checking the battery will not interfere with or stop your treatment.

To check the battery life, press the button once on the top of the battery cartridge. The battery life will be indicated by the lighted gauge to the right of the button. The gauge reads from full to empty, like a gas gauge in a car.



18 Charging the Portable Battery

The battery charger recharges used batteries. The battery charger uses power from a standard wall outlet. Each battery sits in a slot that connects it directly to the charger.

Before charging the batteries, plug the charger power cord into a standard wall outlet and turn on the power button at the back of the charger. The front lights of the charger will come on during a self-check then the small light in the center of the front panel will light up green indicating power is applied.

To recharge a used battery:

1. Place the used battery in one of the three openings in the top of the charger. Slide the battery in until it is fully in place.
2. The light directly in front of the opening where the battery is plugged in will illuminate flashing green. This indicates the battery is charging. The green light will flash faster once the battery has been charged to 95% of its capacity. You can also check the battery gauge while charging to get information regarding the amount of charge in the battery.
3. When the battery is fully charged (about 2 to 4 hours), the charge light will turn from flashing green to solid green. The solid green light will disappear upon removal of the battery or the disconnection of the charger from the standard wall outlet.

If a light on the front panel turns red, this indicates that there is a fault with the battery or charger and you should contact technical support for assistance. Do not use a battery if it creates a red light on the charger.

Keep the batteries in the charger even after they are fully charged. This will not harm the batteries.



1. Charger Power Cord
2. Power Switch

Back View of the Battery Charger Showing the Power Switch and Where the Power Cord Connects

18 Charging the Portable Battery



1. Battery Charging Slot
2. Battery Charge Indicator
3. Charger Power Indicator

Front view of the battery charger showing how the batteries are inserted into the charger

Notice: The charger is not intended for use in the presence of flammable mixtures.

19 Using the Plug-In Power Supply

When you plan to stay in one place for a while, like when you are sleeping, you may use the plug-in power supply instead of the batteries. Unlike the batteries, there is no limit to how long the device can work when you use the plug-in power supply. The plug-in power supply will work with either U.S. (120V AC) or European (230V AC) outlets.

Note: It is normal for the power supply to become warm when in use. If the power supply becomes too hot to touch, unplug it and contact technical support (Section 27).

When the device has a battery and is also connected to the wall power supply, the device will utilize the wall power supply as the preferred power source. When the wall power cord is plugged in while the device is running on battery, the device will automatically switch from battery power to wall supply power.

Connecting the Plug-In Power Supply

1. Plug in the power supply to a standard wall outlet using the power cord that comes with it.
2. You do not need to remove the battery from the device to use the wall power supply. Please note that a battery in the device will not charge while the device is plugged into the wall power supply. Depleted batteries must be placed on the battery charger to recharge. If the TTFields are activated you do not need to turn them off to plug in the wall power supply.
3. Plug the connector of the wall power supply into the AC port on the back panel of the device (next to the power switch).
4. If the TTFields are running, the device will automatically switch to wall power supply without interruption of the TTFields. If the device is not turned on, turn on the power switch and wait for the self-check to be completed (about 10 seconds). Push the TTFields button to start the device (as described in Section 22).

To Disconnect the Plug-In Power Supply and Go Back to Battery Power

1. Ensure that a charged battery is properly inserted in the device before removing the wall power supply. If the TTFields are running, you do not need to turn them off before removing the wall power supply. The device will automatically switch to battery power once the power supply is removed.
2. Remove the connector of the plug-in power supply from the back panel of the device.
3. If the device is not turned on, turn on the power switch and wait for the self-check to be completed (about 10 seconds). Push the TTFields button to start the device.
4. Store the plug-in power supply for future use.

20 The Connection Cable & Connection Box

The connection cable is the coiled, stretchy cord that runs from the device to the connection box. The four black (2) and white (2) transducer array connectors plug into the connection box. The black and white coding matches with the transducer array position on the head.

The connection cable plugs into the device in the port on the left of the front panel. The connection cable port has a picture of a person next to it. The connection cable plugs into the socket with the arrows facing up. Push in the connector until you hear a click. The click means it is secure.



There are two ways to unplug from the device to take a break from treatment (after turning off the device):

1. Unplug the connection cable from the device.
2. Unplug the transducer arrays from the connection cable.

To Unplug the Connection Cable from the Device:

Stop treatment by pressing the TTFields button.

Turn off the device using the power button.

Unplug the connection cable from the socket by holding the gray collar and pulling back. Do not pull on the cord.

You may now move around without the device, but you will still be connected to the connection cable and box. To start treatment again after your break:

1. Plug the connection cable into the port with the arrows pointing up.
2. Turn on the device using the power button. Wait for self-check to be completed (about 10 seconds).
3. Turn on the TTFields using the TTFields button.

20 The Connection Cable & Connection Box

To Unplug the Transducer Arrays from the Connection Cable:

To take a break from treatment and completely disconnect from the device, unplug the transducer arrays from the connection cable box. The four transducer arrays are plugged into the connection cable box as described in Section 15. The connection cable is plugged into the device at the P1 (patient) socket.

1. Stop treatment by pressing the TTFields button.
2. Turn off the Optune® device using the power button.
3. Unplug the transducer array connectors from the connection box by pulling as shown in the picture below. You may have to wiggle the transducer array cables to remove them.

To restart treatment, plug the transducer arrays into the connection box. Plug each transducer array into its matching color (black or white) that goes with the transducer array's position on the head (as described in Section 15).

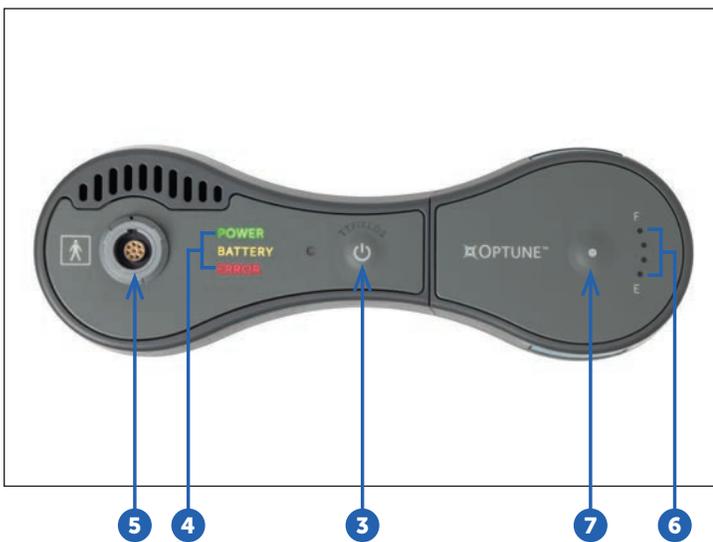
1. When all 4 transducer arrays are plugged in, turn on the power switch and wait for self-check to be completed (about 10 seconds). Push the TTFields button to restart treatment.



21 The Electric Field Generator

Keep the TTFields treatment on all the time, as much as possible, when awake and when sleeping. Keep breaks from treatment as short as possible.

The picture below shows the device controls to work the system. You do not need to adjust any settings. You only need to turn the device and the therapy off and on.



1. Optune® Power Switch
2. Power Supply Port
3. TTField Therapy ON/OFF Button
4. Power ON/ Battery/ Error Indicators
5. Connection Cable (CAD) Port
6. Battery Gauge
7. Battery Charge Indicator Button

22 To Start & Stop the Device

To Start Treatment,

1. Put the transducer arrays on the scalp (with the help of a caregiver if needed). Plug the transducer arrays into the connection cable box (Sections 14 and 15).
2. Plug the connection cable into the device with the arrows on the connector up (as described in Section 20).
3. Insert a charged battery into the device (see Section 17) or attach the wall power supply (Section 19).
4. Turn the power button on the bottom or the back of the device to the ON position.



5. Allow about 10 seconds for the self-check to be completed. The "Power" indicator on the front panel of the device will illuminate green.



If a charged battery is installed and there is no wall power supply plugged in, the "Battery" indicator will also illuminate green.



22 To Start & Stop the Device

If a wall power supply is plugged into the device the device will run using the wall power supply and the "Battery" indicator will not illuminate.

6. Press the TTFIELDS therapy button once – this will start treatment.



The "TTFIELDS" above the TTFIELDS therapy button will illuminate blue and stay on while the treatment is on. If the blue words are not illuminated, then the treatment is not running and you should check the setup and restart the procedure. If, after this, the indicator lights do not light up, consult the Troubleshooting Guide (Section 26). If you still have problems, contact technical support (Section 27).

Note: The green, blue and yellow indicators will dim in a dark room and will brighten in a light environment. The red error indicator light will not be dimmed in any case.

If the therapy button is not pressed within 10 minutes after the device is turned ON, an alarm will sound, indicating that the device is ON but the therapy is OFF. This is a reminder to start the therapy. The therapy button should be pressed once to silence the alarm and again to start the therapy. "TTFIELDS" will be illuminated blue when the patient is receiving treatment.

You may **stop treatment** if the following happens:

A. If the Device is Running Properly, But You Need to Stop Treatment to Take a Break:

Press the TTFIELDS button. The blue "TTFIELDS" lights around the button will turn off. This turns the TTFIELDS therapy off, but the device power is still on.

Then, turn off the device by turning the power button on the bottom or the back of the device to the OFF position.



22 To Start & Stop the Device

B. If an Error Occurs:

If an error occurs, the device will turn off the TTFields and make a loud beeping noise. The red Error light will light up (as shown below). In this case, once the red Error light illuminates, the treatment has stopped.

To turn off the device:

1. Press the TTFields button on the front of the device to stop the alarm. The red Error light will turn off. (If this does not silence the alarm, proceed to the next step of turning off the power switch to silence the alarm. A small number of alarm conditions cannot be silenced by the pushing the TTFields button).
2. Turn off the device by turning the power button to the OFF position.
3. See the Troubleshooting Guide (Section 26) for instructions on fixing problems. Restart the device and restart treatment if no problem is found. If the alarm continues, contact technical support (Section 27).



C. If the Low Battery Indicator Light Lights Up:

When your battery runs out (after about 2-3 hours), an alarm will beep, the TTFields therapy will stop and both the yellow low Battery light and red Error light will light up. This alarm sound is the same alarm sound the device makes for an error. However, in this case both the yellow and red lights will light up instead of just the red light.

To turn off the device:

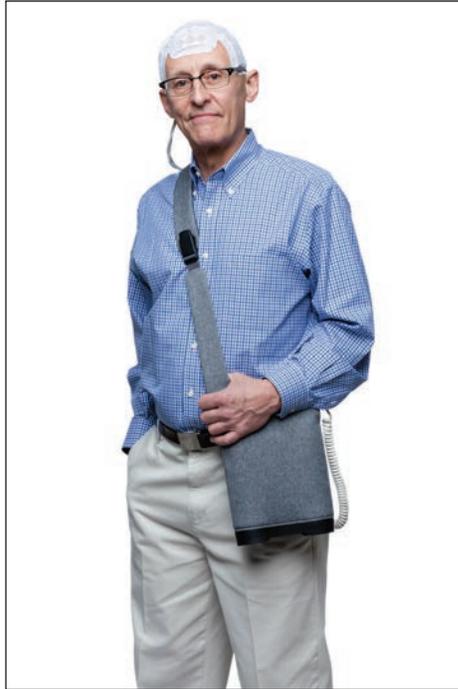
1. Press the TTFields button on the front of the device to stop the alarm. The red Error and the yellow low Battery lights will turn off.
2. Replace the battery using the steps in Section 17.



23 Carrying the Device

Both the electric field generator and the battery fit in a carrying bag. The bag can be carried in one of two ways: by the handle on top or over the shoulder/ cross-body with a carrying strap attached.

Note: Do not place the device in a different bag. Optune® has a fan on the inside that needs air flow. The bag that comes with the device is designed to allow for proper air flow. If you put the device in a bag without proper air flow, it could overheat and stop the treatment. If this happens, you will hear an alarm.



24 Glossary of Graphic Symbols



Attention – consult accompanying documents



Date of Manufacturing



Fragile – handle with care



Do not enter rooms with high humidity or danger of direct exposure to water while wearing the device
Do not carry the device outdoors if not within its carrying bag
Do not expose the device to direct rain



Batteries are lithium ion. Contact technical support to arrange for proper disposal of batteries that are used up or no longer in use



Optune® should be kept away from extreme heat and sources of radiation

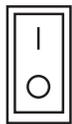


CAD9100

BF type applied part – symbolizes the part which comes in contact with the patient
Specifies the P/N of the applied part to be used with this device



Expiration date – do not use beyond this date



Power ON / OFF switch for the electric field generator and portable battery charger:
When the switch is in the | position the device is ON. When the switch is in the O position the device is OFF



Do not use the transducer arrays if their packaging is breached



The transducer arrays are for single use and should not be re-used



The transducer arrays are sterilized by gamma irradiation

25 Storage and Transportation by the Distributer

Storage Conditions

Temperature range: 23°F to 104°F for the device and additional parts

Temperature range: 41°F to 81°F for the transducer arrays

Relative humidity range: 15-75% for the device and additional parts

Relative humidity range: 35-50% for the transducer arrays

Transport Conditions

Transportation of the device and additional parts is possible using air/ground transportation in weather protected conditions as specified below:

- Temperature range: -13°F to 104°F
- Maximal relative humidity 15-75%
- No direct exposure to water

Transportation of the transducer arrays is possible using air/ground transportation in weather protected conditions as specified below:

- Temperature range: 32°F to 104°F
- Maximal relative humidity 15-75%
- No direct exposure to water

26 Troubleshooting

Note, when calling your device support specialist or the technical support line, please have the serial number of the equipment accessible.

Problem	Possible Causes	Actions to be Taken
Device power indicator light does not light up after turning ON the device	<ol style="list-style-type: none"> 1. Device not connected to power source 2. If Battery – battery depleted 3. Battery malfunction 4. If power supply – not properly plugged into the wall 5. Device malfunction 6. Power supply malfunction 	<ol style="list-style-type: none"> 1. If on battery – check battery gauge to verify it is not depleted. If it is – replace with a charged battery or the power supply 2. Verify both the device and the power source are properly connected and re-try 3. Evaluate the integrity of all connectors. Nothing should appear to be damaged or broken in any way 4. If device cannot be powered on by either the battery or the wall power supply or if anything appears to be damaged do not use the device 5. Call technical support at 855.281.9301
Any cable detached from transducer array/ connection cable/ device	<ol style="list-style-type: none"> 1. Too much physical force to cables 2. Device malfunction 	<ol style="list-style-type: none"> 1. Silence the notification signal by pressing the TTFields button 2. Evaluate the connectors. If intact – reconnect and re-start therapy 3. If anything appears damaged or cannot be properly connected do not try to use the device 4. Call technical support at 855.281.9301
Device dropped or wet	Incorrect use	<ol style="list-style-type: none"> 1. Press TTFields button to stop therapy 2. Turn OFF power switch 3. Call technical support at 855.281.9301
Device alarm on	<ol style="list-style-type: none"> 1. Low battery 2. Cable loose or disconnected 3. Device is too hot – vents on the device are blocked 4. Local hot spot on transducer array from laying on a pillow, for example 5. Poor transducer array contact due to hair growth or other reason 6. Device malfunction 7. Device is turned ON, but the therapy has not been activated 	<p>If low Battery light is yellow:</p> <ol style="list-style-type: none"> 1. Replace battery as described above in Section 18 2. Turn on treatment <p>If the Error light lights up but the low Battery light is not lit:</p> <ol style="list-style-type: none"> 1. Press the TTFields button to stop the alarm 2. Wait a few seconds then press the TTFields button again 3. If the blue lights around the TTFields therapy button light up – the therapy has now been activated <p>If the notification signal recurs within a few minutes:</p> <ol style="list-style-type: none"> 1. Silence the notification signal and power the device down completely 2. Disconnect all equipment and make sure that nothing appears to be damaged or broken. If something is – replace the damaged item before trying to power the device back 3. Re-connect all equipment in proper order and power the device back up. Verify the self-test is completed and press the TTFields button 4. Check vents on device to make sure they are not blocked 5. If lying down, move your head 6. Make sure transducer arrays are well stuck to the head, add tape if needed 7. Restart treatment 8. If alarm keeps going, turn off the device and call technical support at 855.281.9301

26 Troubleshooting

Problem	Possible Causes	Actions to be Taken
Notification alarm sounds 10 minutes after the device was powered on	1. Therapy Timeout	The notification alarm on the device will sound if it is powered on for 10 minutes, but therapy is not initiated. This is a reminder to start therapy and does not indicate a malfunction. <ol style="list-style-type: none"> 1. Silence the notification alarm by pressing the TTFields button then wait a few seconds and press the TTFields button again to initiate treatment. The blue indicator around the TTFields button will illuminate to indicate therapy is now on 2. If you encounter further alarms please review the general "notification signal" section below
Low Battery indicator light remains on after battery replaced	<ol style="list-style-type: none"> 1. Charger malfunction 2. Battery malfunction 3. Device malfunction 	<ol style="list-style-type: none"> 1. Replace battery with an additional charged battery 2. If problem is not fixed – call technical support at 855.281.9301
When powering on the device a continuous notification alarm sounds and all lights remain on indefinitely. Device does not complete the self-test	<ol style="list-style-type: none"> 1. Device is too hot 2. Device malfunction 3. Power Source Malfunction 	<ol style="list-style-type: none"> 1. Power the device off completely using the power switch 2. Verify the device is not hot to the touch 3. Connect the device to a different power source and try powering on again 4. If device cannot be powered on by either the battery or the wall power supply or if anything appears to be damaged please contact technical support
Redness of the skin under the transducer arrays	Common side effect	Use over-the-counter 0.1% hydrocortisone cream when switching transducer arrays. Shift transducer arrays 3/4 of an inch from the last location (so the adhesive gel is between the red marks). If the redness gets worse: <ol style="list-style-type: none"> 1. See your doctor
Blisters under the transducer arrays	Rare side effect	See your doctor for a prescription antibacterial cream. Use as your doctor tells you.
Itching under the transducer arrays	Rare side effect	<ol style="list-style-type: none"> 1. Use over-the-counter 0.1% hydrocortisone cream when switching transducer arrays 2. Shift transducer arrays over 3/4 of an inch from the last location (so the adhesive gel is between the red marks) If the itching gets worse: <ol style="list-style-type: none"> 1. See your doctor
Pain under the transducer arrays	Rare side effect	Stop treatment. See your doctor.

27 Assistance & Information

Technical Support:

For technical support call at 1-855-281-9301 (toll free) or email support@novocure.com.

Call or email technical support for help with operation of the system, troubleshooting alarms, or to get replacement parts or transducer arrays.

Medical Support:

If you feel any change in your health or any side effects from the treatment call your doctor right away.

28 Traveling with Optune®

Optune's portable batteries contain lithium ion material and are restricted from being checked as luggage for passenger aircraft travel. They can be carried in the passenger cabin. Please contact Novocure Support if you have questions related to travel restrictions.

Note: The Optune device and transducer arrays will activate metal detectors.

29 Brain Cancer

What Is Brain Cancer?

In simple terms, brain cancer is a growth of cells that form a tumor in the brain. Just like any other form of cancer, brain tumors can spread to other parts of the brain. They do not usually spread outside of the brain. Even before the brain cancer grows and spreads, the tumor could cause problems inside the brain. The brain controls the functions of the body. Any problem in the brain will affect normal functioning. Therefore, symptoms of brain cancer depend on where and how big the tumor is.

Close to 10,000 patients in the U.S. are diagnosed with GBM every year. It is still unknown what causes GBM. GBM is a very serious disease. Less than 10% of patients with GBM are alive after 5 years even using the best available treatments.

Can Brain Cancer Be Treated?

There are currently five main options to treat GBM:

- Operation – Treatment of patients with GBM usually begins with taking out all or some of the tumor
- Radiation – Following an operation, many patients have radiation therapy
- Stereotactic radiosurgery – This is a type of radiation therapy that uses focused radiation beams coming from different angles to deliver radiation to a specific area of the brain while sparing surrounding tissues
- Local Chemotherapy – During the operation, the surgeon can put a wafer that delivers cancer drugs to the site where the tumor was taken out
- Systemic Chemotherapy – Many GBM patients take cancer drugs. There are several approved drugs to treat GBM
- Optune® together with systemic chemotherapy

Radiation therapy and cancer drugs can allow patients to live longer than if they had no treatment. Adding Optune to temozolomide can allow patients to live even longer than with temozolomide alone. Radiation and cancer drugs have side effects. These side effects include hair loss, skin irritation, possible hearing problems, nausea, vomiting, loss of appetite, effects related to the brain, and tiredness.

When Brain Cancer Returns (Recurrence of Brain Cancer)

GBM can come back even with operations and the treatments described above. In these cases, some of the above treatments (operation, radiation and cancer drugs) may still work to treat the cancer. However, in some cases, operations and radiation will no longer work for the patient. In those cases, doctors may use a systemic cancer drug treatment, or, alternatively once a patient has had treatment with a cancer drug, Optune.

30 Emitted Radiation & Electromagnetic Compatibility

The Optune® Treatment Kit and the accompanying battery charger (ICH9100) and power supply (SPS9100) need special precautions regarding EMC and need to be installed and put into service according to the EMC information provided below.

Portable and mobile RF communications equipment can affect the Optune Treatment Kit System and the accompanying battery charger.

The Optune device should be used with the following cables and additional parts only:

1. CAD9100 connection cable
2. INE9000 INE transducer array (Sterile)
3. IBH9100 battery
4. SPS9100 power supply
5. ICH9100 charger
6. Unshielded AC mains cables for indoor use only with a maximal length of less than 3.0 m

The use of accessories, parts and cables other than those specified, may result in increased EMISSIONS or decreased IMMUNITY of the Optune Treatment Kit.

Table 1 – Guidance and MANUFACTURER’S declaration – ELECTROMAGNETIC EMISSIONS – for all ME EQUIPMENT and ME SYSTEMS

Guidance and Manufacturer’s Declaration – Electromagnetic Emissions		
Optune Treatment Kit is intended for use in the electromagnetic environment specified below. The customer or the user of Optune Treatment Kit should ensure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	Optune Treatment Kit uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	Optune Treatment Kit is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and Manufacturer’s Declaration – Electromagnetic Emissions		
The ICH9100 charger and the SPS9100 power supply are intended for use in the electromagnetic environment specified below. The customer or the user of the ICH9100 charger and the SPS9100 power supply should ensure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The ICH9100 charger and the SPS9100 power supply use RF energy only for their internal function. Therefore, their RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The ICH9100 charger and the SPS9100 power supply are suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

30 Emitted Radiation & Electromagnetic Compatibility

Warning: The Optune® Treatment Kit, the ICH9100 charger and the SPS9100 power supply should not be used adjacent to or stacked with other equipment

Table 2 – Guidance and MANUFACTURER’S declaration – electromagnetic IMMUNITY – for all ME EQUIPMENT and ME SYSTEMS

Guidance and Manufacturer’s Declaration – Electromagnetic Immunity			
Optune Treatment Kit is intended for use in the electromagnetic environment specified below. The customer or the user of Optune Treatment Kit should ensure that it is used in such an environment.			
Emissions test	IEC 60601 Test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD)	±6 kV contact	±6 kV contact	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
IEC 61000-4-2	±8 kV air	±8 kV air	
Electrical fast transient/burst	±2 kV for power supply lines	±2 kV	
IEC 61000-4-4	±1 kV for input/output lines	N/A	
Surge	±1 kV line to line	N/A	
IEC 61000-4-5	±2 kV line to earth		
Voltage dips, short interruptions and voltage variations on power supply input lines	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles	N/A	
IEC 61000-4-11	<5% UT (>95% dip in UT) for 5 s		
Power frequency (50/60 Hz) magnetic field	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
IEC 61000-4-8			
NOTE UT is the AC mains voltage prior to application of the test level.			

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Guidance and Manufacturer's Declaration – Electromagnetic Immunity

The **ICH9100 charger** and the **SPS9100 power supply** are intended for use in the electromagnetic environment specified below. The customer or the user of the ICH9100 charger and the SPS9100 power supply should ensure that it is used in such an environment.

Emissions test	IEC 60601 Test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD)	±6 kV contact	±6 kV contact	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
IEC 61000-4-2	±8 kV air	±8 kV air	
Electrical fast transient/burst	±2 kV for power supply lines	±2 kV	Mains power quality should be that of a typical commercial or hospital environment.
IEC 61000-4-4	±1 kV for input/output lines	N/A	
Surge	±1 kV line to line	±1 kV line to line	Mains power quality should be that of a typical commercial or hospital environment.
IEC 61000-4-5	±2 kV line to earth	±2 kV line to earth	
Voltage dips, short interruptions and voltage variations on power supply input	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT	Mains power quality should be that of a typical commercial or hospital environment.
Power frequency (50/60 Hz) magnetic field	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE UT is the AC mains voltage prior to application of the test level = 120V and 230V			

Normal operation: The Optune® Treatment Kit is working properly when the blue LED surrounding the TTFields button are lit and no notification signal sounds. The ICH9100 charger is working properly when all the LEDs are lit. The SPS9100 power supply is working properly when the blue LEDs surrounding the TTFields button on Optune Treatment Kit are lit and no notification signal sounds.

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Table 3 – Guidance and MANUFACTURER’S declaration – electromagnetic IMMUNITY – for ME EQUIPMENT and ME SYSTEMS that are not LIFE-SUPPORTING

Guidance and Manufacturer’s Declaration – Electromagnetic Immunity			
Optune® Treatment Kit is intended for use in the electromagnetic environment specified below. The customer or the user of Optune Treatment Kit should ensure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of Optune Treatment Kit including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1,21\sqrt{P}$ 80 MHz to 800 MHz $d = 1,21\sqrt{P}$ 800 MHz to 2,5 GHz $d = 1,21\sqrt{P}$ where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, a) should be less than the compliance level in each frequency range. b) Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m	
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which Optune Treatment Kit is used exceeds the applicable RF compliance level above, Optune Treatment Kit should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating Optune Treatment Kit b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m			

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Table 4 – Recommended separation distances between portable and mobile RF communications equipment and the ME EQUIPMENT or ME SYSTEM – for ME EQUIPMENT and ME SYSTEMS that are not LIFE-SUPPORTING

Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and Optune® Treatment Kit			
Optune Treatment Kit is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of Optune Treatment Kit can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and Optune Treatment Kit as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2,5 GHz
0,01	0.116	0.116	0.233
0,1	0.368	0.368	0.736
1	1.16	1.16	2.33
10	3.68	3.68	7.36
100	11.6	11.6	23.2

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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