Tumor Treating Fields: An Innovative Therapy for Glioblastoma and Other Solid Tumors

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Authors' disclosures of conflicts of interest are found at the end of this article.

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Abstract

Tumor Treating Fields (TTFields) therapy specifically disrupts cellular processes necessary for cancer cell viability and tumor progression through the delivery of electric fields from a portable medical device. Patients with solid tumors such as glioblastoma experience significantly improved overall survival when receiving TTFields therapy concomitant with other standard-of-care therapies. TTFields therapy is also well tolerated and allows patients to maintain their quality of life. It is currently approved for the treatment of newly diagnosed and recurrent glioblastoma, pleural mesothelioma, and metastatic non–small cell lung cancer. Advanced practice providers (APPs), such as nurse practitioners, physician assistants, pharmacists, and other advanced oncology professionals, play key roles in the multidisciplinary team when implementing TTFields therapy. Advanced practice providers with prescribing authority can prescribe TTFields therapy after completing a one-time certification training. During the treatment decision-making process, APPs are poised to have in-depth conversations with patients and caregivers about TTFields therapy to help them grasp key concepts regarding efficacy and safety, how to properly use and integrate the device into their daily lives, cost of therapy, and how to get help using the various patient assistance programs. In addition, APPs play important roles in supporting optimal patient adherence and managing adverse events to ensure improved survival outcomes.

Glioblastoma is the most common primary malignant central nervous system tumor in adults and is highly invasive (Nabors et al., 2020; Ostrom et al., 2023). Over 12,000 new cases are estimated to be diagnosed each year in the US, with a poor 5-year survival rate of 6.9% (Ostrom et al., 2023). Until recently, radiation therapy (RT) and temozolomide (Temodar) were the only standard-of-care (SOC) options for newly diagnosed glioblastoma depending on age and performance status. Surgery and

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systemic chemotherapy or reirradiation were recommended for recurrence (Nabors et al., 2015). Limitations of these therapies include the difficulty of achieving gross total resection; the inability of most systemic agents to cross the blood–brain barrier (National Comprehensive Cancer Network [NCCN], 2024); poor tolerability and increased risks for adverse events (AEs), especially among older adults and those with poor functional status; and the high rate of recurrence despite optimal treatment (NCCN, 2024; Rong, Li, & Zhang, 2022). Despite promising advancements with immunotherapy in other solid tumor types, issues with this modality in glioblastoma include limited efficacy (Reardon et al., 2020) and multiple mechanisms of tumor-mediated immune suppression and resistance (Jackson et al., 2019; Nduom et al., 2015). Given these limitations, there is a strong need for new treatment approaches that extend survival and preserve quality of life (QOL) without additional systemic toxicity in patients with aggressive tumors.

Tumor Treating Fields (TTFields; Optune Gio) are electric fields delivered noninvasively to the tumor site via a portable electric field generator and skin-placed arrays that disrupt cellular processes necessary for cancer cell viability and tumor progression (Kirson et al., 2004; Mun et al., 2018; Novocure Inc, 2019b, 2021; Voloshin et al., 2020a). Personalized TTFields array layouts for glioblastoma are generated for each patient using the proprietary NovoTAL treatment planning software (Novocure Inc, 2023d). TTFields therapy is well tolerated and is approved for newly diagnosed glioblastoma concomitant with SOC chemotherapy, recurrent glioblastoma, pleural mesothelioma concomitant with pemetrexed (Alimta) and platinum-based chemotherapy, and metastatic non–small cell lung cancer (NSCLC) following progression on or after platinum-based therapy concomitant with PD-1/PD-L1 inhibitors or docetaxel (Novocure Inc, 2019b, 2021, 2024). TTFields therapy is Conformité Européenne marked for grade 4 glioma and is also being investigated for use in other solid tumors such as pancreatic cancer (Rivera et al., 2019). In this review, we will describe TTFields therapy mechanisms of action, available efficacy and safety data in glioblastoma, administration and financial considerations, and the clinical implications of its use in the treatment of solid tumors for the advanced practice provider (APP).

MECHANISM OF ACTION

TTFields exerts physical forces on polar cellular components (e.g., tubulin and septin) to disrupt important cancer cell processes such as cell division and movement (Mun et al., 2018; Voloshin et al., 2020a), targeting cancer cells via multiple mechanisms (Figure 1) while sparing healthy, nondividing cells (Karanam et al., 2017; Rominiyi et al., 2021). TTFields therapy has been shown to disrupt mitotic cancer cell division by impairing microtubule assembly, leading to aberrant mitotic spindle formation in metaphase, and impairing the arrangement of septin molecules, thereby inducing cytoplasmic membrane blebbing, mitotic failure, and asymmetric chromosome segregation (Giladi et al., 2015; Kirson et al., 2004; Mun et al., 2018). TTFields also interferes with cancer cell motility by disrupting the organization and dynamics of the microtubule network (Voloshin et al., 2020a), downregulating DNA damage response genes (Karanam et al., 2017), and enhancing downstream antitumor immune responses (Voloshin et al., 2020b).

Edema may decrease electric field strength in and around the tumor, potentially impacting the delivery of TTFields (Lang et al., 2020). Based on modulation data, vasogenic edema may alter the electric field distribution (Lok et al., 2023). Cytotoxic edema can increase the electric field strength of TTFields within the gross tumor volume and surrounding edema regions, while interstitial edema can reduce this field strength (Lok et al., 2023). Additionally, peritumoral edema may decrease the electric field magnitude of TTFields within the tumor (Lang et al., 2020). While modulation data suggest that the presence of edema can impact TTFields therapy, further research is needed to fully understand the effects that different edema types have on TTFields therapy in clinical practice.

CLINICAL EFFICACY

TTFields therapy efficacy in glioblastoma has been demonstrated in two pivotal (phase III) studies (Table 1, Figure 2; Stupp et al., 2017; Stupp

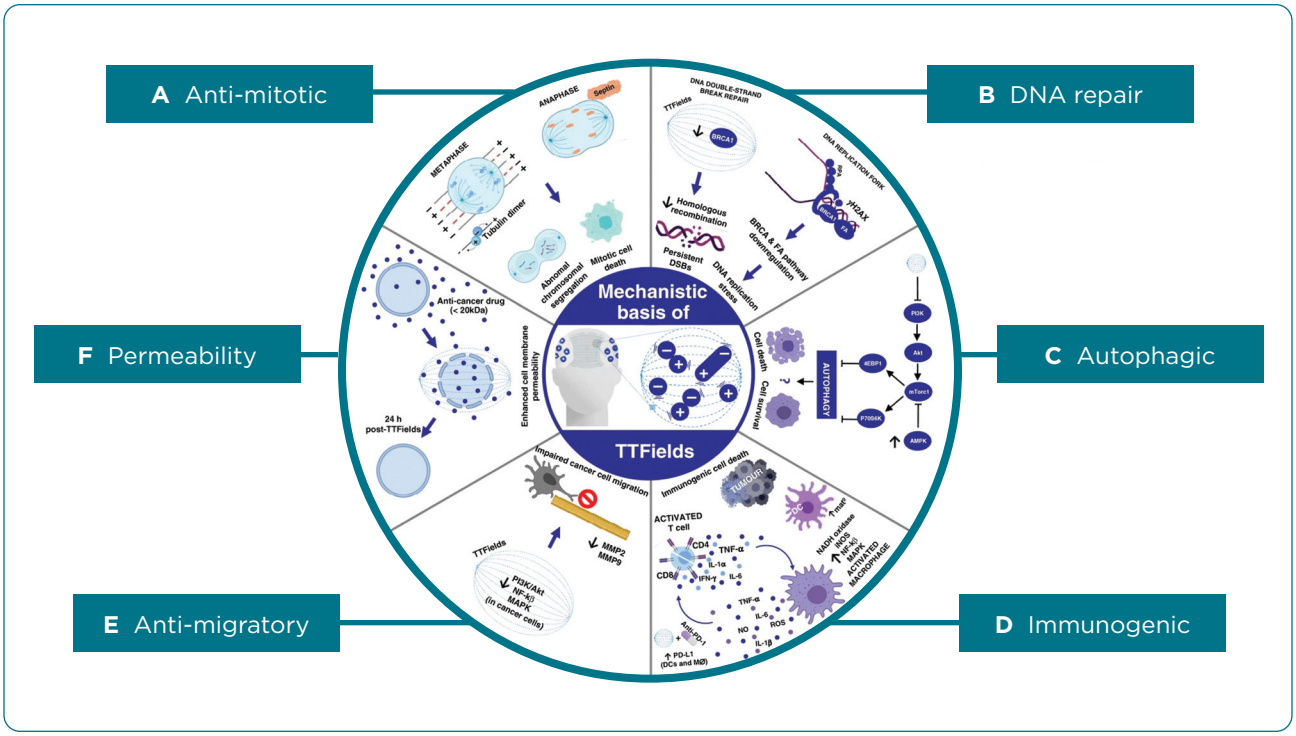


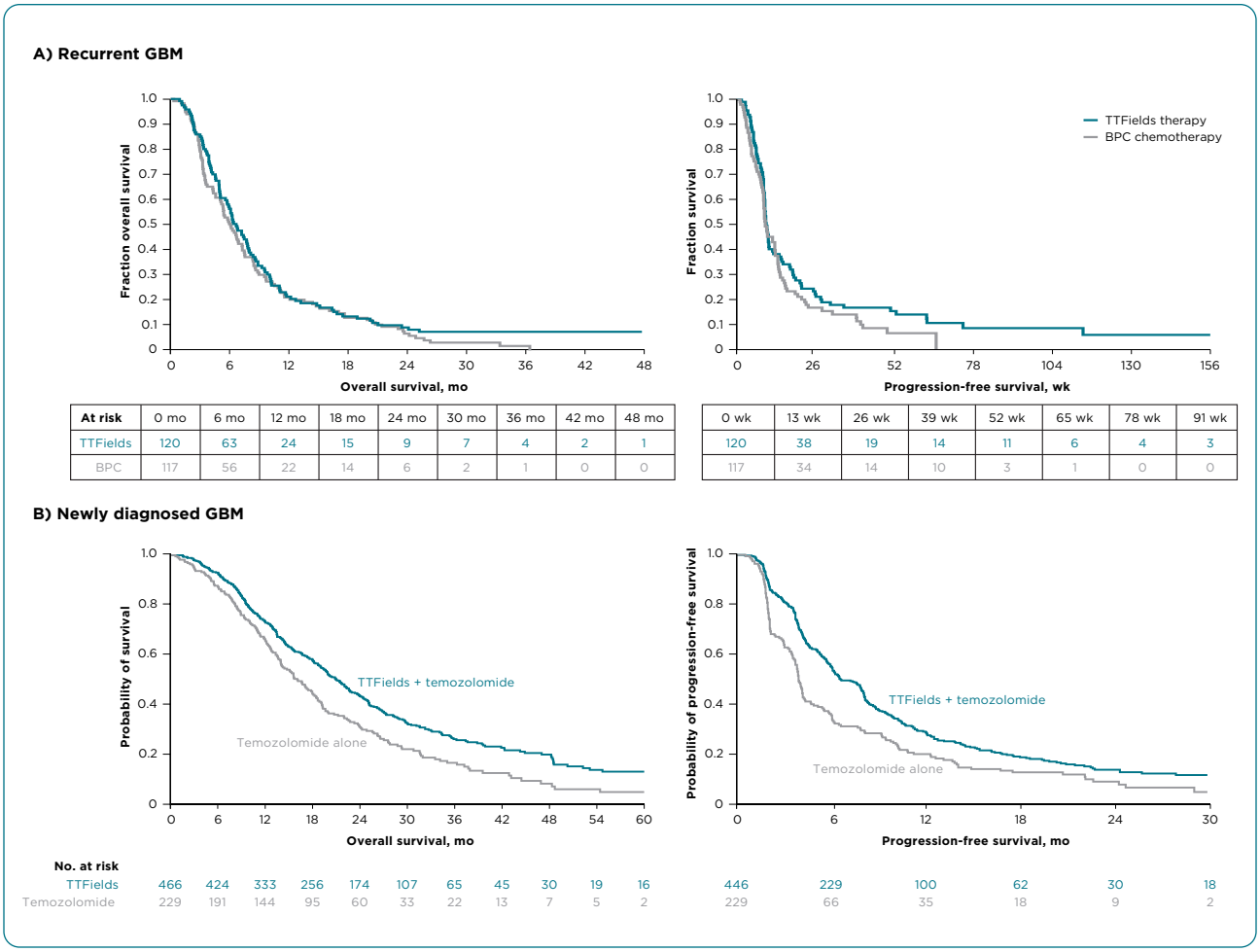
Figure 1. Multi-mechanistic approach of TTFields therapy to disrupt processes necessary for cancer cells. TTFields disrupts microtubule spindle formation during mitosis, limits cancer cell motility by disrupting the microtubule network, downregulates DDR genes in cancer cells, and enhances antitumor immune responses. Information from Karanam et al. (2017); Kirson et al. (2004); Mun et al. (2018); Voloshin et al. (2020a). 4EBP1 = 4E-binding protein 1; AMPK = AMP-dependent kinase; DC = dendritic cell; DDR = DNA damage response; DSB = double-strand break; FA = Fanconi anemia; HRR = homologous recombination repair; IFN = interferon; IL = interleukin; iNOS = inducible nitric oxide synthase; Mø = macrophages; MAPK = mitogen-activated protein kinase; mat = maturation; MMP = matrix metalloproteinase; mTorc1 = mTOR complex 1; NADH = nicotinamide adenine dinucleotide hydride; NF = nuclear factor; NO = nitric oxide; P70S6K = 70-kDa ribosomal protein S6 kinase; PI3K = phosphatidylinositol 3-kinase; ROS = reactive oxygen species; TNF = tumor necrosis factor; TTFields = Tumor Treating Fields. Figure reprinted from Rominiyi et al. *British Journal of Cancer*. 2020;124:697–709 (Open access under CC-BY license: http://creativecommons.org/licenses/by/4.0/).

et al., 2012). In EF-11, TTFields therapy yielded comparable overall (OS) and progression-free survival (PFS) vs. physician's choice of chemotherapy in recurrent glioblastoma (Stupp et al., 2012). Patients with newly diagnosed glioblastoma who received temozolomide with TTFields therapy in EF-14 experienced significant PFS and OS improvements compared with temozolomide alone. Additionally, 5-year survival rates were 13% among patients who received temozolomide with TTFields therapy vs. 5% with temozolomide alone (Stupp et al., 2017). These data led to the US Food and Drug Administration (FDA) approvals and incorporation into the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) as a category 1 option with RT and temozolomide (preferred for age ≤ 70 years) and a category 2B option for recurrent glioblastoma (NCCN, 2024). In EF-19, a post-approval registry study from EF-11, TTFields monotherapy showed efficacy and tolerability with no new safety signals or systemic effects reported in recurrent glioblastoma (Zhu et al., 2022). Pilot study results from ICH-1 demonstrate TTFields therapy with temozolomide and RT was safe and feasible in patients with newly diagnosed glioblastoma (Bokstein et al., 2020). Further research to evaluate TTFields therapy with temozolomide and RT in newly diagnosed glioblastoma (EF-32, TRIDENT) and TTFields therapy alone in recurrent glioblastoma (EF-33)

Table 1. Summary of Registrational Studies Evaluating TTFields Therapy in Glioblastoma

Study	EF-11 (NCT00379470)	EF-14 (NCT00916409)	EF-14 post hoc analysis
Population	Recurrent glioblastoma	Newly diagnosed glioblastoma	Newly diagnosed glioblastoma
Treatments	TTFields therapy (n = 120) vs. chemotherapy (physician's choice; n = 117)	TTFields therapy with temozolomide (n = 466) vs. temozolomide alone (n = 229)	TTFields with second-line therapy (n = 144) vs. second-line therapy alone (n = 60)
Follow-up	Median: 39 months	Median: 40 (IQR, 34–66) months	Median: 12.6 months
Outcomes			
Median OS	6.6 vs. 6.0 months (HR, 0.86; 95% CI = 0.66–1.12; p = 0.27; primary endpoint) 1-year rate: 20% vs. 20% 2-year rate: 8% (95% CI = 4–13) vs. 5% (95% CI = 3–10) 3-year rate: 4% (95% CI = 1–8) vs. 1% (95% CI = 0–3)	20.9 vs. 16.0 months (HR, 0.63; 95% CI = 0.53–0.76; p < .001) 2-year rate: 43% (95% CI = 39–48) vs. 31% (95% CI = 25–38); p < .001 3-year rate: 26% (95% CI = 22–31) vs. 16% (95% CI = 12–23); p = .009 5-year rate: 13% (95% CI = 9–18) vs. 5% (95% CI = 2–11); p = .004	After first disease recurrence: 11.8 vs. 9.2 months (HR, 0.70; 95% CI = 0.48–1.00; p = .049)
PFS	Median: 2.2 vs. 2.1 months (HR, 0.81; 95% CI = 0.60–1.09; p = 0.16)	Median (primary endpoint): 6.7 vs. 4.0 months (HR, 0.63; 95% CI = 0.52–0.76; p < .001)	
AEs	TTFields therapy: grade 1–2 scalp irritation (16%) Chemotherapy: systemic AEs (e.g., gastrointestinal, hematologic, and infectious); grade 3–4 (3%)	No difference: systemic AEs (48% vs. 44%; p = 0.58); overall incidence, distribution, or severity of AEs; seizures TTFields therapy: mild to moderate skin irritation (52%); grade 3 skin irritation (2%)	Grade 3–4: 49% vs. 33% (no seizures) Higher with TTFields therapy: thrombocytopenia, convulsion, hemiparesis, headache, and mental status changes; skin reaction (13%; none were severe) Higher with chemotherapy alone: epilepsy (2% vs. 3%)
HRQOL	Favoring TTFields therapy: cognitive and emotional functioning, role functioning, symptoms (appetite loss, diarrhea, constipation, nausea, vomiting, pain, and fatigue) Favoring chemotherapy: physical functioning (slightly) No meaningful differences: global health and social functioning	Treatments: TTFields therapy with temozolomide (n = 437) vs. temozolomide alone (n = 202) up to 12 months **Change from baseline** Stable (< 10-point change from baseline) in both arms through 12 months: 8 of 9 predefined scales (global health status, physical functioning, cognitive functioning, role functioning, social functioning, emotional functioning, pain, and weakness of legs) Deterioration with TTFields therapy: itchy skin (mean at 3 months, −10.4 [SD, 30.1] vs. 2.3 [SD, 24.4] points [p = .005]; mean at 6 months, −8.1 [SD, 31.6] vs. 4.2 [SD, 31.4] points [p = .008]; mean at 9 months, −5.3 [SD, 28.0] vs. 5.2 [SD, 29.6] points [p = .04]); no difference at 12 months (mean, −4.6 [SD, 32.8] vs. 1.9 [SD, 36.9] points; p = .66) Deterioration-free survival favoring TTFields therapy: global health status (4.8 vs. 3.3 months; p < .01), physical functioning (5.1 vs. 3.7 months; p < .01), emotional functioning (5.3 vs. 3.9 months; p < .01), pain (5.6 vs. 3.6 months; p < .01); weakness of legs (5.6 vs. 3.9 months; p < .01) **Time to deterioration** Favoring TTFields therapy: pain (13.4 vs. 12.1 months; p < .01) Favoring temozolomide: itchy skin (8.2 vs. 14.4 months; p < .001)	

Note. Information from Stupp et al. (2012, 2017); Kesari et al. (2017); Taphoorn et al. (2018). AE = adverse event; HR = hazard ratio; HRQOL = health-related quality of life; IQR = interquartile range; OS = overall survival; PFS = progression-free survival; TTFields = Tumor Treating Fields.



At risk	0 mo	6 mo	12 mo	18 mo	24 mo	30 mo	36 mo	42 mo	48 mo
TTFields	120	63	24	15	9	7	4	2	1
BPC	117	56	22	14	6	2	1	0	0

0 wk	13 wk	26 wk	39 wk	52 wk	65 wk	78 wk	91 wk
120	38	19	14	11	6	4	3
117	34	14	10	3	1	0	0

No. at risk											
TTFields	466	424	333	256	174	107	65	45	30	19	16
Temozolomide	229	191	144	95	60	33	22	13	7	5	2

446	229	100	62	30	18
229	66	35	18	9	2

Figure 2. Overall survival and progression-free survival rates with Tumor Treating Fields therapy concomitant with standard-of-care therapy vs. standard-of-care therapy alone in patients with (A) recurrent and (B) newly diagnosed glioblastoma. BPC = best physicians' choice; GBM = glioblastoma. Reprinted with permission from Stupp R et al. *Eur J Cancer*. 2012;48(14):2192-2202 (2A) and Stupp R et al. *JAMA*. 2017;318(23):2306-2316 (2B).

is ongoing (Novocure GmbH, 2023; Novocure Ltd, 2023; Shi et al., 2023).

Advanced practice providers are integral to communicating these long-term efficacy data to patients and caregivers. They are poised to have in-depth conversations with patients and caregivers and provide counsel during the decision-making processes to help determine if TTFields therapy is the right treatment for them. TTFields therapy with an immune checkpoint inhibitor or docetaxel has demonstrated efficacy and safety in metastatic NSCLC following progression on or after platinum therapy (Leal et al., 2023), supporting FDA approval of TTFields therapy in this patient population (Novocure Inc, 2024). While a phase III randomized, double-blind, placebo-controlled trial enrolling patients with platinum-resistant ovarian cancer did not meet its primary endpoint, exploratory post hoc subgroup analyses suggest TTFields therapy with paclitaxel improves overall survival compared with paclitaxel alone in pegylated liposomal doxorubicin-naive patients (Vergote et al., 2024).

TTFields therapy daily usage is an independent predictor of outcomes. Post hoc analyses of EF-14 showed patients with the highest usage of TTFields therapy (usage levels > 90%) achieved the greatest median PFS and OS independent of other prognostic predictors (Toms et al., 2019). There is a common misconception that patients only need to wear

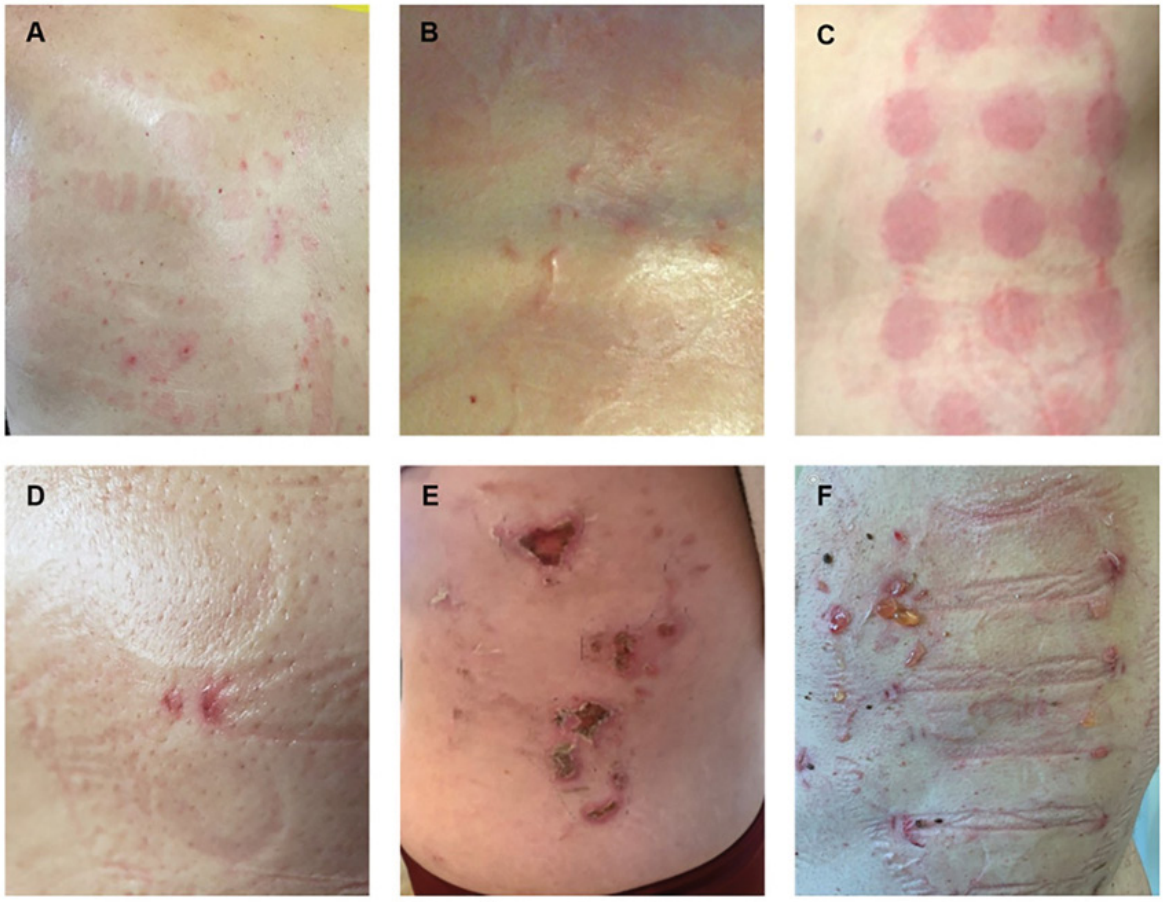


Figure 3. Potential Tumor Treating Fields therapy-associated skin adverse events. (A) Pruritus, (B) hyperhidrosis, (C) contact dermatitis, (D) skin erosion, (E) pressure necrosis, (F) contact dermatitis and infection. Figure reprinted from Anadkat MJ et al. *Front Oncol.* 2023;12:975473 (Open access under CC-BY license: http://creativecommons.org/licenses/by/4.0/).

the device for up to 18 hours per day. During discussions with patients and caregivers, APPs should emphasize that increased usage leads to better survival outcomes (Toms et al., 2019) and advise that patients wear the device as much as possible. It can also help to highlight the mechanisms of TTFields therapy: TTFields therapy selectively targets actively dividing cells during mitosis (Karanam et al., 2017; Mun et al., 2018), so wearing the device as long as possible will allow the greatest number of mitotic cancer cells to be targeted by the device (Murphy et al., 2016). This provides an opportunity for APPs to instill a sense of ownership in patients to actively contribute to their own extended survival by maximizing usage of TTFields therapy.

ADVERSE EVENTS

TTFields therapy is well tolerated from a QOL perspective (Table 1) and has a low risk of additional systemic toxicity (Novocure Inc, 2019b). Global post-marketing surveillance data from > 25,000 patients treated with TTFields therapy showed a favorable safety and tolerability profile across subgroups with no new safety signals identified (Mrugala et al., 2024). Mild to moderate skin irritation is the most common AE associated with TTFields therapy (Table 1 and Figure 3; Mrugala et al., 2024). Advanced practice providers are well situated to help educate patients and caregivers about, monitor for, and manage these toxicities, similar to other cancer therapies. Patients and caregivers should

be counseled to follow established guidelines for preventing skin toxicity, including following optimal shaving techniques, shifting arrays at reapplication, and replacing arrays approximately every 3 days (Lacouture et al., 2020).

If skin irritation occurs, APPs should encourage patients and caregivers to report these events immediately. Open lines of communication will aid in swift AE management and limit interruptions in therapy. This is not unique to TTFields therapy because other oncolytic therapies also require similar management (ASCO, 2023), and the responsibility is often delegated to oncology APPs. Specific recommendations for dermatologic AE management have been published and are summarized in Table 2 (Lacouture et al., 2020). Thoracic dermatologic AE guidelines are available (Anadkat et al., 2023).

Other rare AEs that may be related to TTFields therapy for glioblastoma include falls, headaches, and mild psychiatric symptoms (e.g., anxiety, insomnia, and confusion), all likely due to the need to carry, wear, and incorporate the device into daily life. Proper education and support from APPs can help improve integration of TTFields therapy into patients' daily lives (Murphy et al., 2016), which in turn improves patient acceptance and adherence to therapy (Kilias & Pellet, 2017).

ADMINISTRATION CONSIDERATIONS

Advanced practice providers play important roles in patient and caregiver device training. As previously mentioned, longer therapy usage is associated with prolonged median OS and 5-year survival (Ballo et al., 2023; Toms et al., 2019); thus, patients should be advised to wear the device as long as they can tolerate. Advanced practice providers can reiterate the relationship between adherence and long-term survival to help motivate patients to meet this goal. Additionally, assertive prevention and swift management of AEs will help improve the patient experience and therefore maintain patient adherence and usage.

Advanced practice providers should counsel patients to keep up with their usual daily activities while wearing the TTFields device and remind patients to contact their Novocure device support specialists (DSSs) for access to extra power supplies, batteries, or arrays as needed to minimize disruptions (Murphy et al., 2016). For successful administration of TTFields therapy, patients should recharge the batteries as necessary, connect their device to an external power supply overnight, replace the arrays every few days, and keep their skin at the treatment site shaved (Novocure Inc, 2019b). Although the therapy can seem overwhelming for patients at first, survey data demonstrate most patients feel very satisfied after TTFields therapy initiation (Batzianouli et al., 2023). Novocure has many available resources for patients, caregivers, and providers to make the initiation and continuation of therapy as easy as possible (Batzianouli et al., 2023). Through MyNovocure, a DSS will provide in-person or virtual education and assistance to patients in applying and operating the device. MyNovocure team is also available 24/7 for support with insurance, travel information with Optune Gio, reordering supplies, device assistance, and treatment information (Novocure Inc, 2023c). Additionally, the Optune Gio Buddy Program provides a support network to connect patients with glioblastoma or caregivers with other users who have firsthand experience with the device (Novocure Inc, 2023a). The American Brain Tumor Association also offers many resources on brain tumors, including monthly virtual support groups.

FINANCIAL CONSIDERATIONS

An analysis from a US payer perspective found that adding TTFields therapy to temozolomide for glioblastoma was cost effective, with an estimated incremental 1.25 life years and incremental cost-effectiveness ratio (ICER) of $197,336 per quality-adjusted life year gained (Guzauskas et al., 2019). The cost of the TTFields device is not unlike that for other cancer treatments: ICERs for temozolomide plus radiotherapy range from $89,000 to $761,000 (Chen et al., 2021), bevacizumab regimens are approximately $340,000 (Barrington et al., 2022), and immune checkpoint and poly(adenosine diphosphate-ribose) polymerase (PARP) inhibitors range from $219,000 to $416,000 (Cherla et al., 2020).

The actual cost of TTFields therapy to patients will vary depending on multiple factors, including insurance coverage and income. Through the MyNovocure patient support program, Novocure

Table 2. Dermatologic Adverse Event Management

Reaction	Symptoms	Intervention
Hyperhidrosis	Excessive sweating	Use aluminum chloride antiperspirant or topical glycopyrrolate when replacing arrays. Avoid ointments and medications that may cause sweating. Consider botulinum toxin injections.
Pruritus	Dry, itchy, flaky skin	Use fragrance-free or anti-dandruff shampoo. Limit use of alcohol-based products. Use topical corticosteroids as necessary for inflammation and remove irritant.
Contact dermatitis	Contact: red, itching rash with papules, may resemble a burn, blisters, localized but more diffuse than irritant dermatitis Irritant: skin redness, mild edema, scaling, itchy or painful rash, local dermatitis	Immediately remove irritant/allergen and array. Apply topical corticosteroid and/or a barrier film. Consider trimming adhesive if causing a reaction. Apply cold, moist compress for blistering. Consider systemic corticosteroids or treatment breaks for persistent reaction.
Erosion/ulcer	Erosion: epidermal breakdown, possibly with delineated moist/depressed lesion, mild bleeding, pain, or burning Ulcer: open skin defects with potential for bleeding, oozing, scarring, and pustules	Remove array. Keep wound clean with dressing and treat with topical antibiotic. Consider wound culture. Consider oral antibiotic or treatment break for persistent reaction.
Dermatitis and infections	Inflammation of skin or hair follicle potentially with pus, itching, or burning	Assess and treat with topical antibiotic. Use warm compresses with saltwater or Burow's solution. Consider wound culture and dermatology referral. Consider oral antibiotic or treatment break for persistent reaction.

Note. Information from Lacouture et al. (2020)

will advocate with insurance on behalf of patients (Novocure Inc, 2023c) and assist with the prior authorization and appeals process. Regardless of a patient's financial situation, MyNovocure will help minimize costs and provide other support services as needed.

IMPLICATIONS FOR THE ADVANCED PRACTICE PROVIDER

Advanced practice providers, including nurse practitioners, physician assistants, pharmacists, and other advanced oncology professionals, play crucial roles within the wider multidisciplinary team encompassing MyNovocure team members, DSSs, caregivers, and other clinicians. In addition to helping manage their patients' disease and treatment, they can facilitate increased communication with patients and caregivers and present TTFields therapy to them using a patient-centered approach. Despite regulatory approval and proven efficacy across multiple tumor types, along with post-marketing safety data from > 25,000 treated patients (Ceresoli et al., 2019; Leal et al., 2023; Mrugala et al., 2024; Novocure Inc, 2019a, 2021, 2024; Stupp et al., 2017), TTFields therapy remains underutilized, likely owing to limited awareness among clinicians and patients, as well as limited access to certified oncology providers who can prescribe and manage its use.

Advanced practice providers play an important role in increasing awareness of TTFields therapy, thereby facilitating its broader implementation in clinical practice. Advanced practice providers should provide consistent communication on treatment plans, survival benefits, administration considerations, AE monitoring and management, and optimal adherence. Ensuring that patients and caregivers understand these important TTFields therapy implications will help facilitate adherence and ultimately improve patient outcomes (Mrugala et al., 2014). Additionally, because TTFields therapy is an innovative treatment modality that people may be unfamiliar with, multiple repeated conversations on these topics may be necessary for patients and caregivers to fully understand the treatment option and become more comfortable with it. Surveys

have demonstrated that only 26% of patients recall conversations related to TTFields therapy and long-term survival in glioblastoma even though ≥ 90% of providers reported discussing this topic often or always (Frongillo et al., 2022). Advanced practice providers should therefore strive to reinforce key aspects of TTFields therapy at subsequent visits and remind patients and caregivers about all the resources available to them (Novocure Inc, 2023b).

Advanced practice providers with prescribing authority who want to prescribe TTFields therapy are required to complete a one-time training course and certification process provided by Novocure (Novocure Inc, 2023b). Advanced practice providers who have completed this training are well positioned to serve as champions for the device, developing expertise in TTFields therapy and creating a niche to help empower patients and caregivers.

CONCLUSIONS

Survival rates for glioblastoma remain low despite recent advancements, and most available therapies are often associated with poor treatment tolerability (NCCN, 2024; Ostrom et al., 2023). TTFields therapy is an innovative, noninvasive, and well-tolerated therapy that has been shown to significantly improve median OS with a low risk of additional systemic toxicity when used concomitantly with other SOC therapies (Kirson et al., 2004; Novocure Inc, 2019b; Stupp et al., 2017). As part of the multidisciplinary team, APPs can educate and counsel patients and caregivers on TTFields therapy, help monitor and manage the treatment and AEs, and provide support to help them incorporate the device into their daily lives. Advanced practice providers are crucial to leading the way when initiating TTFields therapy for solid tumors, communicating treatment plans, facilitating adherence, connecting the patient and caregivers with resources, and empowering patient use of TTFields therapy to ensure optimal clinical outcomes.

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Ms. Serventi has served as a speaker for Novocure, Inc. Dr. Netwon has received honoraria and is a speaker for Caris Life Sciences and GT Medical.

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