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Wolters Kluwer

# Functional neurological symptom disorder (conversion disorder) in adults: Treatment

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Literature review current through: **Oct 2023**.

This topic last updated: **Aug 01, 2023**.

## INTRODUCTION

Functional neurological symptom disorder (conversion disorder) is characterized by neurologic symptoms such as weakness, abnormal movements, or nonepileptic seizures, which involve abnormal nervous system functioning rather than structural disease [1]. In addition, clinical findings on examination provide evidence of incompatibility between the symptoms and recognized neurologic disease. Nevertheless, functional neurological symptom disorder causes distress and/or functional impairment, and is common in many clinical settings and often has a poor prognosis [2-5].

This topic reviews treatment of functional neurological symptom disorder. The terminology, diagnosis, epidemiology, prognosis, clinical features, and assessment are discussed separately, as are specific subtypes of functional neurological symptom disorder (psychogenic nonepileptic seizures and functional movement disorders):

- (See "[Functional neurological symptom disorder \(conversion disorder\) in adults: Terminology, diagnosis, and differential diagnosis](#)".)
- (See "[Functional neurological symptom disorder \(conversion disorder\) in adults: Epidemiology, pathogenesis, and prognosis](#)".)
- (See "[Functional neurological symptom disorder \(conversion disorder\) in adults: Clinical features, assessment, and comorbidity](#)".)
- (See "[Psychogenic nonepileptic seizures: Etiology, clinical features, and diagnosis](#)".)

- (See ["Functional movement disorders"](#).)

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## GENERAL PRINCIPLES

First-line treatment for patients with functional neurological symptom disorder (conversion disorder) is education about the illness [6]. For functional neurological symptom disorder that does not respond to education alone, second-line treatment for patients with motor symptoms is physical therapy, either alone or with psychotherapy (the best evidence is for cognitive-behavioral therapy [CBT]). Psychotherapy can also help other subtypes of functional neurological symptom disorder; again, the best evidence lies with CBT. For patients with functional speech and communication symptoms, we suggest speech and language therapy. No head-to-head trials have compared first- and second-line treatments.

For patients with functional neurological symptom disorder who are treated by neurologists or primary care clinicians but do not respond to education, referral to a psychiatrist can be helpful [7]. A consultation-liaison psychiatrist or neuropsychiatrist is often best suited to assess the patient. Patients may be more inclined to accept referrals if they are told that the psychiatrist has experience in treating functional symptoms and that the referral does not mean the patient is "crazy." Additional information about psychiatric referrals is discussed separately. (See ["Somatic symptom disorder: Treatment"](#), section on 'Choosing treatment'.)

Multidisciplinary treatment can be helpful. A randomized trial compared multidisciplinary care with usual care in patients with functional neurological symptom disorder (n = 23); multidisciplinary care consisted of four to six sessions of psychotherapy administered by a psychiatrist and neurologist over two months [8]. The group that received multidisciplinary care showed greater improvement of physical and psychological symptoms, and spent fewer days in the hospital during the one-year follow-up.

Comorbid anxiety or depressive disorders, as well as chronic pain, should be treated concurrently with functional symptoms [9]. Treatment of these comorbidities is discussed separately. (See ["Comorbid anxiety/depression/chronic pain"](#) below and ["Generalized anxiety disorder in adults: Management"](#) and ["Management of panic disorder with or without agoraphobia in adults"](#) and ["Unipolar major depression in adults: Choosing initial treatment"](#) and ["Approach to the management of chronic non-cancer pain in adults"](#).)

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## CHOOSING TREATMENT

We suggest that acute treatment of functional neurological symptom disorder (conversion disorder) proceed according to the sequence described in the subsections below. Patients initially receive first-line therapy and progress through each step until they respond.

**First-line treatment** — Based upon observational studies, first-line treatment for functional neurological symptom disorder is education about the diagnosis [10-12]. As an example, a prospective study of 54 patients with psychogenic nonepileptic seizures reported that after the diagnosis was explained, rapid recovery occurred in 44 percent [13]. However, some of these patients subsequently suffered a recurrence.

A credible explanation of the diagnosis that creates a therapeutic alliance with the patient is an essential platform for any further treatment [14]. Patients who do not agree with the diagnosis are unlikely to engage with additional treatment; rather, they may continue to search for alternative explanations of their symptoms from other doctors. Treatment failures can often result from clinicians paying insufficient attention to the initial explanation of the illness.

Therapeutic engagement of patients with functional neurological symptom disorder often requires repeated explanations of the rationale for the diagnosis and addressing the patients' questions and concerns. For as long as patients are receptive, clinicians should educate patients about the diagnosis until they agree with it.

Clinicians who administer treatment should understand how the symptoms and clinical findings led to the diagnosis. If multiple clinicians (eg, primary care physician, neurologist, psychiatrist, and physical therapist) are treating the patient, the explanation of the diagnosis by all involved must be consistent [15]. With successful engagement, patients become more willing to share responsibility with their clinicians for working toward recovery. Such a collaborative relationship is not only essential for effective treatment but can also reduce feelings of powerlessness, frustration, and mistrust in both patients and clinicians.

**Presenting the diagnosis** — There is consensus that successful treatment of functional neurological symptom disorder begins with education about the condition [9-12]. For a minority of patients, an explanation of the diagnosis along with encouragement may be all that is necessary for recovery.

In discussing the diagnosis, we generally [7,9,12,14-16]:

- Ask patients and their friends and family what they think is wrong and what is expected for further investigation and treatment.

- Provide a positive diagnosis rather than telling patients that “the investigations are normal” or “nothing is wrong.” There are several diagnostic terms to draw upon; our preference is to use the diagnosis of functional neurological disorder. The choice depends upon how the clinician conceptualizes the disorder:
  - Functional neurological (symptom) disorder
  - Conversion disorder
  - Dissociative neurologic symptom disorder
  - Psychogenic

The issue of whether the patient’s problem is viewed as purely a “mental health” issue (functional or psychogenic) or as a disorder at the interface of neurology and psychiatry is important for clinicians to decide for themselves. However, it is best to avoid a struggle with patients over which diagnostic term is used; the way the term is explained is probably more important than the specific term. Additional information about the terminology for functional neurological symptom disorder is described separately. (See ["Functional neurological symptom disorder \(conversion disorder\) in adults: Terminology, diagnosis, and differential diagnosis", section on 'Terminology'.](#))

- State that the symptoms are real and taken seriously.
- Explain how the diagnosis was made, including the clinical features and physical signs that are inconsistent with recognized neurologic disease. As an example, patients with a positive Hoover’s sign can be told that the examination confirms that when they try to move the affected limb, the brain does not transmit messages correctly to the leg – there is a disorder of voluntary movement. However, the movement seen in the affected limb when they move their unaffected leg shows that “automatic” movements are preserved. This is consistent with the problem being due to abnormal nervous system functioning rather than damage to neurologic pathways [14]. Hoover’s sign is discussed separately. (See ["Functional neurological symptom disorder \(conversion disorder\) in adults: Clinical features, assessment, and comorbidity", section on 'Examination'.](#))
- Discuss the mechanism underlying the symptoms. As an example, neuroimaging research supports the idea that there is abnormal functioning of the nervous system, rather than structural damage. Alternatively, symptoms can be described as a “software” (functional) problem rather than a “hardware” (structural) problem.
- Discuss the etiology of the illness and establish a clinical formulation with which the patient agrees; however, this takes time and is often best left for later sessions. We generally acknowledge that although it is possible to speculate about cause, reaching an

understanding of causation is a complex task and may never be fully achieved. However, we emphasize that similar to other medical conditions, this uncertainty does not prevent us from diagnosing and treating the illness [7].

- If the patient has concerns about other (missed) neurologic conditions, such as multiple sclerosis, epilepsy, or stroke, explain why the patient does not have these diagnoses. However, an additional diagnosis of functional neurological symptom disorder can still be made in the presence of another neurologic condition, using positive clinical signs such as Hoover's sign or a tremor entrainment test.
- Emphasize the positive message that the symptoms of functional neurological symptom disorder are potentially reversible (unlike those of many neurologic diseases). Patients can be told that although their bodies are not functioning properly, improvement remains possible.
- Explain that it is important to also identify and treat comorbid psychiatric disorders such as anxiety, depression, panic, or posttraumatic stress disorder, because these conditions can worsen functional symptoms.
- Discuss how it is important that the patient agrees with the diagnosis of functional neurological symptom disorder, rather than focussing on the cause of the symptoms, because agreement with diagnosis is the basis for working on rehabilitation.
- Attempt to enlist family members or friends to help the patient understand the diagnosis.
- Tell patients that although they were not responsible for bringing about the symptoms, they need to actively participate in their rehabilitation (eg, working on graded exercise or distraction techniques), if they are to improve.
- Acknowledge the patient's negative experience of any prior treatment, if appropriate.
- Arrange a follow-up consultation (preferably with the clinician responsible for making the diagnosis) to:
  - Assess the extent to which the patient understands and agrees with the diagnosis
  - Provide further explanation if needed
  - Answer additional questions from the patient and family

**Information for patients** — As part of education about functional neurological symptom disorder, we typically provide written information that patients can review at home and share with family and friends [9]. General information about the disorder on the internet that can be

downloaded and printed is available at the [Neurosymbols website](#); information specific to psychogenic nonepileptic seizures is available at the [Nonepilepticseizures website](#) and [the Sheffield Teaching Hospitals NHS Foundation Trust](#). Patient-led organizations such as [FND Hope](#) and [FNDAction](#) also provide useful information. In addition, for patients who are treated by primary care clinicians and have consulted a psychiatrist or neurologist, a copy of the appropriately worded letter to the primary care clinician can be given to patients.

Providing information is useful as a first step but is often not sufficient. A six-month randomized trial compared usual care plus an educational, self-help website with usual care alone in 186 patients with functional motor symptoms, and found that improvement of general health, functional motor symptoms, anxiety, and depression were comparable in the two groups. However, patient satisfaction with the intervention was high [17].

**Second-line treatment** — Functional neurological symptom disorder usually does not respond to education alone. For most patients, agreeing with the diagnosis requires repeated discussions with their clinician, especially in patients with longstanding symptoms.

For functional neurological symptom disorder with weakness or paralysis (motor) symptoms, we suggest physical therapy as a second-line therapy (see '[Motor symptoms](#)' below) [12,18-21]. However, psychotherapy, especially cognitive-behavioral therapy (CBT), is often used as well, either concurrently with physical therapy or afterwards.

For functional neurological symptom disorder with seizures, psychotherapy is often used (see '[Psychogenic nonepileptic seizures: Management and prognosis](#)', section on '[Psychotherapy](#)'). Other types of functional neurological symptom disorder may benefit from occupational therapy or speech and language therapy as second-line treatment.

Clinicians should administer a full-course of second-line treatment before pursuing third-line treatment. As an example, if CBT is prescribed, patients should receive a full course (eg, 8 to 20 sessions).

**Motor symptoms** — For patients with functional neurological symptom with motor symptoms (either weakness or movement disorder), we typically offer physical therapy plus psychotherapy, or physical therapy alone if psychotherapy is declined, not indicated, or not available. Physical therapy is essential for patients with a physical disability (eg, need to use a walking aid) [21]. Specific consensus recommendations for treating functional motor disorders with physical therapy are available [21]. Treatment is based upon a biopsychosocial model and is directed at decreasing abnormal self-directed attention, and reducing abnormal movements through:

- Education (see '[First-line treatment](#)' above)

- Eliciting normal “automatic” movements
- Movement retraining by diverting attention

The essential element of physical therapy for functional motor symptoms is encouraging normal movement and teaching patients to suppress abnormal patterns of voluntary movements or deficits [18,21-23]. Attention to the affected limb tends to worsen function, whereas exercises involving distraction or superimposition of movement may help. As an example, a patient with unilateral functional tremor may benefit from superimposing a “sweeping” movement like an orchestral conductor and then being trained to gradually diminish the amplitude and frequency of the tremor. Physical therapy may incorporate findings from bedside tests like Hoover’s sign to begin generating more “automatic” normal movement. However, it is generally more beneficial to address activities such as transfers and walking than impairments such as weakness [24]. For patients who have fallen, therapy emphasizes increasing confidence in standing and walking, and when possible, reducing reliance on walking aids. In addition, a collaborative and individually tailored approach to graded increases in activity, following the principles used for chronic fatigue syndrome (also known as myalgic encephalomyelitis/chronic fatigue syndrome), may be helpful [25].

Several studies support the use of physical therapy for functional symptoms [18,20,22,26,27]:

- A randomized trial compared three weeks of inpatient physical therapy (including education) with a waiting list control condition in hospitalized patients with functional gait disorder (n = 60) [19]. Ambulation and functional independence improved more with physical therapy, the clinical effect was large, and the benefits were maintained at the one-year follow-up.
- Another randomized trial compared a five-day, intensive outpatient specialized physical therapy program with standard neurologic physical therapy in patients with functional motor disorders (n = 60) [28]. The control group received an average of five sessions. At six-month follow-up, improvement occurred in four times as many patients in the intervention group than the controls (72 versus 18 percent).

### Any symptom subtype

**Cognitive-behavioral therapy** — CBT is often used as a second-line treatment for functional neurological symptom disorder. The initial step in using CBT is an assessment of the predisposing, precipitating, and perpetuating factors to generate a case formulation ( [table 1](#)) [15]. A practical guide for administering CBT is shown in the table ( [table 2](#)).



The type of CBT used for functional neurological symptom disorder combines cognitive therapy and behavioral therapy and thus resembles forms of CBT that are used to treat anxiety disorders, unipolar depressive disorders, bipolar disorders, and chronic fatigue syndrome.

Cognitive therapy helps patients re-evaluate their thoughts and beliefs about the causes and consequences of their symptoms; one technique to achieve this involves encouraging patients to test their most catastrophic thoughts (such as “the symptoms will get worse if I do something”) and to consider more benign alternatives (such as “doing something will make the symptoms worse but only temporarily”). Behavioral therapy aims to change problematic behavior; specific techniques include desensitization (which involves progressively greater exposure to feared and avoided situations and symptoms), progressive muscle relaxation, abdominal breathing exercises, and very gradual increases in physical activity. CBT principles and techniques are typically taught to patients by therapists according to a manual.

A typical CBT model for functional seizures overlaps with one used to treat panic disorder [29]. Patients are helped to recognize warning symptoms such as autonomic arousal and dissociation, understand the physiological basis, and then given techniques to delay or overcome functional seizures. Subsequent parts of therapy focus upon why the individual is vulnerable to these sudden states of autonomic arousal.

Evidence supporting CBT for functional neurological symptom disorder includes randomized trials:

- A three-month trial compared usual care plus CBT with usual care alone in 125 patients with functional neurologic symptoms [30]. CBT consisted of guided self-help in using a workbook, with up to four sessions (each lasting 30 minutes) with a clinician who guided patients on using the book. The book explained that functional symptoms were the result of changes in nervous system functioning that were maintained, at least in part, by psychological and behavioral factors; gave examples of common functional symptoms and their associated anatomy and physiology; discussed how functional symptoms are diagnosed; and suggested self-help techniques to reduce dysfunctional thoughts and improve coping with symptoms. At the six-month assessment, the presenting symptoms improved in more patients who received adjunctive CBT than in those who received only usual care (47 versus 30 percent). CBT also improved physical functioning and reduced anxiety.
- Systematic reviews of trials indicate that CBT is often moderately efficacious for somatic symptom and related disorders in general. (See "[Somatic symptom disorder: Treatment](#)", [section on 'Psychiatric treatment'](#).)



The evidence for using CBT to treat functional seizures is discussed elsewhere. (See ["Psychogenic nonepileptic seizures: Management and prognosis", section on 'Psychotherapy'.](#))

**Psychodynamic psychotherapy** — Brief, individual, psychodynamic psychotherapy has been adapted for functional symptoms and is often preferred for patients who have interpersonal difficulties or a history of trauma. The treatment is most suitable for patients who are psychologically minded.

Although exploring the association between current functional symptoms and prior life events may be helpful, this approach must be used with caution [7]. Patients may disengage from psychotherapy if therapists overzealously attribute current symptoms to past traumas. In addition, it is not always necessary or desirable to provide a complete psychological explanation of functional symptoms. If treatment uncovers psychological problems or life events that predated the functional symptoms, we generally avoid ascribing the symptoms solely to these stressors; rather, we emphasize that psychological issues may be one factor in generating or worsening the symptoms.

One hypothesis as to why psychodynamic psychotherapy may help functional neurological symptom disorder is that the disorder is caused or exacerbated by a pattern of dysfunctional interpersonal relationships that typically originates earlier in life [31]. In administering therapy, clinicians make tentative suggestions about the link between symptoms and relationships, offer support, avoid confrontation, and encourage patients to change their problematic interpersonal behavior and to express emotions more effectively (particularly those regarding unresolved past issues such as abuse, neglect, or losses). The goal is to develop insight and reduce the use of functional symptoms as a defense against anxiety and conflict. Additional information about psychodynamic psychotherapy is discussed separately in the context of unipolar major depression. (See ["Unipolar depression in adults: Psychodynamic psychotherapy".](#))

Evidence regarding the efficacy of psychodynamic psychotherapy for functional neurological symptom disorder includes the following [32]:

- An observational study in 63 patients with a variety of functional symptoms found that therapy (median of six sessions, each lasting 50 minutes) was associated with improved psychosocial functioning, less overall psychopathology, and a reduced number of physical symptoms [31].
- A three-month observational study included 29 patients with various symptom subtypes of functional neurological symptom disorder, and found that improvement of mental wellbeing and function at the 12-month follow-up occurred in 66 percent of patients [33].

- In a 12-week randomized trial that compared psychodynamic psychotherapy with neurologic observation in 15 patients with functional movement disorder, improvement in the two groups was comparable [34].

In addition, systematic reviews of randomized trials indicate that for somatic symptom and related disorders in general, psychodynamic psychotherapy may be beneficial [35,36].

**Occupational therapy** — Occupational therapists are often trained to manage both physical and mental illnesses and can be well suited to provide therapy for functional neurological symptom disorder. International consensus recommendations provide practical guidance, including patient education, vocational rehabilitation, and self-management strategies [37]. The recommendations prioritize activity-based goals rather than impairment-based ones.

Compensatory aids such as wheelchairs and canes are generally best avoided in patients with functional neurological symptom disorder. However, such equipment may be needed, either as part of rehabilitation or for patients who have not responded to treatment, to improve independence and quality of life.

**Speech symptoms** — If the primary presenting symptom in neurological symptom disorder involves speech and communication problems, such as dysphonia, dysfluency (including stuttering), or articulatory speech problem, second-line treatment is speech and language therapy, administered by therapists with experience in treating the disorder. For less experienced therapists, international consensus treatment recommendations provide guidance on useful approaches, including patient education, vocal and speech techniques that may improve symptoms, and exercises and tasks that promote automatic sound and speech, such as coughing or laughing while trying to speak [38].

**Third-line treatment** — Functional neurological symptom disorder often does not respond to first- or second-line treatments. For these refractory patients, we suggest one of the third-line treatment options discussed in the sections below, which are organized around the nature of the patient's functional symptoms. The specific choice often depends upon the availability of therapies, as well as the patient's values and preferences, and ability to engage with a therapy. It is often counterproductive to try to force a treatment upon patients who are skeptical of its value.

**Comorbid anxiety/depression/chronic pain** — Patients with functional neurological symptom disorder may sometimes benefit from medications [39,40]. Pharmacotherapy is more widely available, less complex, and easier to administer than options such as hypnosis, longer-term psychotherapy, and inpatient treatment.

The most commonly used drugs for functional neurological symptom disorder are antidepressants (especially selective serotonin reuptake inhibitors); however, there is little evidence to support their use for functional symptoms per se [12]. Rather, antidepressants may be useful in treating comorbid anxiety or depressive disorders. In addition, the presence of pain, especially in the context of anxiety or depression, is an indication for antidepressants, especially tricyclic antidepressants and [duloxetine](#), and it may be possible to use one medication to manage both pain and anxiety/depression in patients with functional neurological symptom disorder.

Indirect evidence supporting the use of antidepressants for functional neurological symptom disorder includes systematic reviews that suggest antidepressants can be useful for somatic symptom and related disorders in general. (See ["Somatic symptom disorder: Treatment", section on 'Antidepressants'](#).)

Additional information about the efficacy of antidepressants for functional neurological symptom disorder is discussed separately in the context of psychogenic nonepileptic seizures. (See ["Psychogenic nonepileptic seizures: Etiology, clinical features, and diagnosis"](#).)

Choosing pharmacotherapy for anxiety disorders, depressive disorders, and chronic pain is discussed elsewhere. (See ["Management of panic disorder with or without agoraphobia in adults"](#) and ["Generalized anxiety disorder in adults: Management"](#) and ["Unipolar major depression in adults: Choosing initial treatment"](#) and ["Approach to the management of chronic non-cancer pain in adults"](#).)

**Motor symptoms** — Hypnosis may be useful for patients with functional neurological symptom disorder with motor symptoms (either weakness or movement disorder), and lends itself to introducing relaxation techniques for patients who do not want psychotherapy [12,41]. Hypnosis is a form of suggestion and is generally not offered to patients who are skeptical of or disapprove the intervention.

During hypnosis, concentration and physical relaxation are induced by asking the patient to focus upon an external object. In this relaxed, trance-like state, patients are thought to be more susceptible to suggestions aimed at alleviating symptoms or expressing emotions [42,43]. Hypnosis can be used to demonstrate the diagnosis of functional neurological symptom disorder to patients if the symptoms disappear during hypnosis. Some patients can be trained to use self-hypnotic techniques to change their bodily sensations and functions.

Evidence supporting the use of hypnosis for functional neurological symptom disorder includes two randomized trials:

- A three-month trial compared hypnosis (at least 10 weekly sessions, as well as daily self-hypnosis homework) with a waiting list control group in 44 outpatients with functional motor symptoms; improvement was greater in patients who received hypnosis [44]. Follow-up assessments of the active treatment group six months posttreatment suggested that treatment gains were sustained.
- A two-month trial compared adjunctive hypnosis (eight weekly sessions, as well as daily self-hypnosis) with adjunctive psychotherapy that focused upon stressors (eight weekly sessions, as well as daily writing about stressors) in 45 hospitalized patients with functional motor symptoms who all received multidisciplinary treatment [45]. Improvement was comparable for both groups.

**Psychologically minded patients** — Patients who are psychologically minded may benefit from one of the psychotherapies discussed below.

- Longer-term psychotherapy – Longer-term psychotherapy, such as interpersonal psychotherapy or psychodynamic therapy lasting at least one year, can be helpful for some patients with functional neurological symptom disorder, especially those with comorbid personality disorder.
- Family therapy – Patients with functional neurological symptom disorder may benefit from an assessment of family functioning in domains such as communication, problem solving, and roles. Identified problems (eg, suppressed expression of affect) that may perpetuate functional symptoms can then be addressed in short-term, structured, family therapy. Assessment of family functioning and administering family therapy are discussed separately in the context of unipolar major depression. (See "[Unipolar depression in adults: Family and couples therapy](#)".)
- Group therapy – Group therapy can reinforce education about functional neurological symptom disorder and enable patients to learn from each other [46,47]. Evidence supporting group therapy includes observational studies [48].

**Severe and chronic functional symptoms** — Multidisciplinary inpatient treatment with both physical and psychological rehabilitation may be indicated for patients with more severe and chronic physical disabilities (eg, patients using a wheelchair or heavily dependent upon walking aids) [49]. The presence of comorbid psychopathology in conjunction with the physical disabilities may further suggest the need for inpatient treatment.

Multiple studies suggest that treating patients with severe functional neurological symptom disorder on specialist inpatient units can be beneficial. A review of 34 studies (total n = 458

patients) found that partial or full resolution of symptoms occurred in most studies [49]. As an example, a three-week randomized trial compared inpatient rehabilitation with a waiting list in 60 patients with functional gait disorder [19]. Ambulation and functional independence improved more with active treatment, the clinical effect was large, and the benefits were maintained at the one-year follow-up.

**Other interventions** — For patients with functional neurological symptom disorder who do not respond to consecutive trials of first-, second-, and third-line treatments, less established options include repetitive transcranial magnetic stimulation (TMS), sedation and abreaction, and biofeedback for functional tremor.

**Repetitive TMS** — Multiple studies suggest that TMS may help improve functional motor symptoms (either weakness or movement disorder), especially acute symptoms [50]. However, the quality of the evidence is relatively low and often insufficient to establish the benefit of TMS. Although TMS is also associated with improvement of chronic functional motor symptoms, in many cases other active treatments were administered and thus the value of TMS was not definitive [51].

Small, randomized trials that studied TMS for treating functional neurological symptom disorder have shown mixed results [51]:

- A trial enrolled patients with functional movement disorders (n = 33) and randomly assigned them to one of two groups; group 1 received low frequency TMS on day 1 and low frequency spinal root magnetic stimulation on day 2, and group 2 had the same treatments in reverse order [52]. TMS was administered over the cortex contralateral to the symptoms and spinal root magnetic stimulation over the roots homolateral to the symptoms. Improvement (reduction of baseline symptoms  $\geq 50$  percent) occurred in 66 percent of the patients; however, the benefit of TMS and spinal root magnetic stimulation was comparable, suggesting that improvement was related to nonspecific therapeutic effects rather than specific neuromodulation.
- Another trial compared two sessions of active TMS with sham TMS in 21 patients with functional limb weakness [53]. At the three-month follow-up, more than twice as many patients were much improved with active TMS than sham TMS (44 versus 20 percent).

**Sedation** — Sedation may transiently improve functional symptoms. Based upon clinical experience, a positive therapeutic relationship should be established prior to using sedation.

A retrospective study examined 11 patients with functional motor symptoms who received therapeutic sedation with propofol and were followed for a median of 30 months; substantial

improvement or recovery occurred in 5 patients (45 percent) [54]. In addition, a case report described using sedation to help persuade a patient that the symptoms were reversible, and to provide an experience of moving a limb that was functionally paralyzed [55].

**Abreaction** — Abreaction (narcotherapy) is a rarely used technique that takes sedation one step further and involves interviewing patients who are lightly sedated (relaxed but not drowsy) following intravenous administration of a drug [42,56]. During the procedure, patients may become more receptive to explanations about the nature of their disorder. Based upon clinical experience, a positive therapeutic relationship should be established prior to using abreaction. A pooled analysis of 55 observational studies (19 of the studies predate 1950) in 116 patients with functional neurological symptom disorder found that recovery occurred in 79 percent [57].

**Biofeedback** — Biofeedback may help functional tremor. In a prospective observational study (n = 10), patients “retrained” their tremor frequency over a period of two to six hours, using equipment that measured joint angles and provided tactile cueing and real time visual feedback on a computer screen [58]. Follow-up three to six months later found that three patients remained tremor free, and that improvement persisted in two others.

**Techniques to avoid** — For functional neurological symptom disorder, we do not use treatment techniques that involve deceiving patients, such as reverse psychology (also called paradoxical intention; eg, “you are not allowed to get up from that wheelchair” [59]), telling patients that they have a spinal cord concussion [23], or telling them that full recovery constitutes proof of a physical etiology and failure to recover constitutes conclusive evidence of a psychiatric etiology [60]. Although some clinicians have reported that these techniques can be effective, our view is that deceiving patients in this manner is not good practice. In addition, procedures that have not demonstrated benefit but may cause harm, such as surgery (eg, deep brain stimulation for movement disorder), should be limited to research protocols [21].

**Persistently ill patients** — Patients with functional neurological symptom disorder may not improve with consecutive trials of first-, second-, and third-line treatments, as well as other interventions. Our view is that clinicians should be able to accept this outcome. While poor outcome is accepted for most illnesses, clinicians may find it hard to accept in patients who do not have recognizable disease pathology. However, persistent functional neurological symptom disorder should be treated as any other persistent illness. Treatment is typically rendered by primary care clinicians using a conservative approach that avoids excessive investigations and treatments, and includes regular visits to monitor existing or new general medical and psychiatric illnesses. Management of patients with chronic somatic symptoms by primary care



clinicians is discussed separately. (See "[Somatic symptom disorder: Treatment](#)", section on '[Treatment-refractory patients](#)'.)

Functional neurological symptom disorder may be less responsive to treatment if there are factors perpetuating it, such as [\[7,61\]](#):

- Severe and chronic functional symptoms – Some symptoms may not be amenable to treatment.
- Diagnostic doubt – Patients may not agree with the diagnosis and continue to seek additional opinions, investigations, and medical or surgical solutions to their symptoms.
- Poor motivation to improve – Patients have often resigned themselves to living with their symptoms and do not engage in treatment.
- Disability payments, litigation, and excessive social support – Although these factors can potentially act as barriers to improvement, clinicians should be cautious with the concept of secondary gain. There is no evidence that this is more common in functional neurological symptom disorder than in other general medical and psychiatric conditions.
- Inexperienced clinicians – Patients can be easily alienated by clinicians who inadvertently worsen the patient's prognosis. A common mistake is to attribute functional symptoms exclusively to psychological issues, especially when these are not relevant or do not exist. Another common error is to point out the connection between symptoms and psychological issues before patients are ready to consider such explanations.

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## SUMMARY AND RECOMMENDATIONS

Acute treatment of functional neurological symptom disorder (conversion disorder) proceeds according to the sequence described below. Patients initially receive first-line therapy and progress through each step until they respond.

- **First-line treatment** – For patients with functional neurological symptom disorder, we suggest education about the diagnosis as first-line treatment rather than other therapies ([Grade 2C](#)). (See '[First-line treatment](#)' above.)

Education about functional neurological symptom disorder includes eliciting how patients conceptualize their symptoms, stating that the symptoms are real and taken seriously, giving a diagnostic label, discussing how the diagnosis was made, emphasizing that the symptoms are potentially reversible, reassuring patients that understanding the diagnosis



can lead to improvement, explaining that the patient does not have a neurologic disease, describing self-help techniques that can foster improvement, and providing at least one follow-up visit. (See '[Presenting the diagnosis](#)' above.)

Written information describing the diagnosis and management of functional neurological symptom disorder is often helpful. (See '[Information for patients](#)' above.)

- **Second-line treatment** – Functional neurological symptom disorder often does not respond to education initially. In these cases, it is important to establish whether the patient needs more time to understand the diagnosis or does not agree with the diagnosis. Patients who cannot agree with the diagnosis are unlikely to benefit from other treatments; either first-line treatment should be revisited, or the clinician should explicitly discuss the problem of trying to embark on further treatment for a condition that the patient does not acknowledge. (See '[Second-line treatment](#)' above.)

For patients with functional neurological symptom disorder who understand and agree with the diagnosis, but do not respond to first-line treatment (education), we suggest adding physical therapy for motor symptoms as second-line treatment (**Grade 2C**). For patients with other symptoms (eg, sensory or speech symptoms), we suggest cognitive-behavioral therapy ( [table 2](#)) (**Grade 2C**). (See '[Second-line treatment](#)' above.)

- **Third-line treatment** – Patients who do not respond to first- or second-line treatment may benefit from third-line treatments, including pharmacotherapy, hypnosis, longer-term psychotherapy, family therapy, group therapy, or multidisciplinary inpatient treatment. (See '[Third-line treatment](#)' above.)
- **Other interventions** – Other treatments that may be used adjunctively include transcranial magnetic stimulation, sedation (with or without abreaction), and biofeedback for functional tremor. (See '[Other interventions](#)' above.)
- **Conservative approach** – Patients with functional neurological symptom disorder who are persistently ill despite receiving first-, second-, and third-line treatments, as well as other adjunctive interventions, should generally be treated with a conservative approach. This approach aims to minimize iatrogenic harm by avoiding excessive investigation and treatment, and includes regular visits to monitor existing or new general medical and psychiatric illnesses. (See '[Persistently ill patients](#)' above and "[Somatic symptom disorder: Treatment](#)", section on '[Treatment-refractory patients](#)'.)

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## Topic 85766 Version 17.0

