

# BRAIN INJURY MEDICATIONS

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**\*\*\* PLEASE CONSULT WITH YOUR PHYSICIAN BEFORE MAKING ANY CHANGES IN YOUR CURRENT MEDICATION OR ADDING ANY NEW MEDICATIONS!\*\*\***

The following list of medications used for brain injury-related problems is based on the medical literature and my clinical experience.

## **CLINICAL INDICATIONS:**

Disorders in the following areas:

Aggression, Anxiety, Arousal, Autonomic regulation, Cognition, Conceptual disorder, Eating, Headache, Mood Movement, Obsessions-compulsions, Perception, Seizures, Sexual function, Sleep, Speech-language

## **AGGRESSION:**

Anticonvulsants

Carbamazepin, Valproic acid, Clonazepam, Gabapentin, Lamictal, Topiramate, Neuroleptics, Fluphenazine, Pimozide (especially for negative symptoms; check EKG at start and each dose increase over 10 mg/day), Clozaril (no extra-pyramidal side effects (EPS), but hypotension, hypersalivation, sedation, agranulocytosis)

Risperidone (low EPS), Olanzapine, Quetiapine

Medroxyprogesterone

Lithium carbonate

Amantadine (100 mg up to 100mg qid)

Beta adrenergic blockers

Inderal, Pindolol (up to 60 mg daily; less hypotension secondary to intrinsic sympathomimetic activity)

Calcium Channel Blockers

Verapamil (up to 80 mg. qid), Diltiazem, Nifedipine,

Nimodipine (selective for cerebral vasculature)

Antidepressants

Fluoxetine, Sertraline, Paroxetine, Trazodone, Nortriptyline, Desipramine

Amoxapine (metabolized to a neuroleptic), Nefazodone, Mirtazapine

Anti-anxiety medications

Bupirone, Alprazolam, Clonazepam, Lorazepam

Clonidine (hypotension and sedation; .05-.1 mg bid--starting dose. Increase by .1 mg/d, maximum dose = 2.4 mg/d)

Stimulants

Methylphenidate, Dextroamphetamine, Magesium Pemoline, Adderall

Antihistamines

Hydroxyzine

Anticholinergics

Benzotropine, Scopolamine

Dextromethorphan (sustained release) (60-90mg bid)

## **ANXIETY :**

**ANXIETY, SOMATIC PREOCCUPATION, HYPOCHONDRIASIS:**

Antidepressants, Bupirone, Alprazolam, Clonazepam, Lorazepam

**POST-TRAUMATIC STRESS DISORDER:**

Tricyclic antidepressants:

Imipramine, Nortriptyline

Selective serotonin reuptake inhibitor antidepressants:

Fluoxetine, Sertraline, Paroxetine

Monoamine oxidase inhibitor antidepressants:

Phenylzine, Parnate

Anti-anxiety agents:  
Alprazolam, Lorazepam  
Beta-adrenergic blockers: Propranolol, Atenolol  
Anticonvulsants: Carbamazepine

## **AROUSAL:**

### **COMA RECOVERY:**

L-Dopa, Amphetamine, Hyperbaric oxygen, Naloxone  
"Coma Cocktail"  
Neurotransmitter precursors  
Vitamin C 100 mg, Co-Enzyme Q10 2400 mg tid, L-Tyrosine 2000 mg/day for one week then add  
Bromocriptine 2.5 mg tid up to 30 mg/d (check bp) (or may use L-Dopa), then  
Dextroamphetamine 5 mg twice daily up to 20 mg/day, then  
Scopolamine patch (to block muscarinic receptors) behind alternating ears q3d (.5 mg/d) (Allen Childs, unpublished)

### **LACK OF INITIATIVE, APATHY, IMPAIRED ATTENTION AND MEMORY, HYPERACTIVITY:**

Amphetamine (avoid abrupt withdrawal, leading to depression)  
Bromocriptine, Pergolide, L-Dopa/Carbidopa  
Amantadine (100-400 mg. per day, especially in patients with Parkinsonian symptoms of bradykinesia, rigidity, tremor, reduced spontaneity and initiation) Fluoxetine, Sertraline, Paroxetine, Selegiline 5 mg bid, Risperidone (for negative symptoms in psychosis)  
Methylphenidate, Dextroamphetamine, and L-Dopa give best results in mild to moderate impairments such as mild post-concussion syndrome.  
Psychostimulants are best for mild impairment with decreased attention and memory, apathy and anergy.  
Other dopamine agonists are useful in more severe impairments.  
Presynaptic dopamine agonists:  
Methylphenidate, Dextroamphetamine, Adderall, L-Dopa  
Postsynaptic dopamine agonists:  
Bromocriptine (mixed), Pergolide, Amantadine (mixed)  
Other antidepressants:  
Imipramine, Desipramine, Amitriptyline

### **ATTENTION DEFICIT / HYPERACTIVITY:**

Bupropion, Buspirone, Other antidepressants, Carbamazepine  
Psychostimulants  
Methylphenidate, Dextroamphetamine, Adderall, Magnesium pemoline  
Beta-adrenergic blockers  
Inderal, Pindolol,  
Clonidine .05-.1mg bid, increasing by .1mg/d to 2.4 mg/d maximum  
(hypervigilance, hyperactivity)

### **HYPERVIGILANCE AND HYPERACTIVITY:**

Clonidine

### **EMOTIONAL INCONTINENCE/PATHOLOGICAL LAUGHING OR CRYING:**

Amitriptyline, Amantadine, L-Dopa, Fluoxetine, Carbamazepine

### **AUTONOMIC DYSREGULATION:**

(hyperthermia, diaphoresis, tachycardia, tachypnea)  
Bromocriptine, Dantrolene sodium

**COGNITION:** Cognitive impairment in TBI. First evaluate side effects of current medications-- anticholinergic, antihistaminic, sedative. These could lead to impaired memory, attention and concentration.

Naltrexone, Ergoloid mesylates, Nimodipine, Nicotine, Donepezil

### **CONCEPTUAL DISORDERS:**

#### **PSYCHOSIS:**

Neuroleptics  
Fluphenazine, Clozaril, Risperidone, Olanzapine, Quetiapine

Anticonvulsants

**MONOSYMPTOMATIC DELUSIONS, PATHOLOGICAL JEALOUSY:**

Pimozide, Fluoxetine

**EATING DISORDERS:**

**OVEREATING:**

Fluoxetine, Trazodone, Naltrexone, Sibutramine

**LACK OF APPETITE :**

Cyproheptadine

**EXCESSIVE WATER DRINKING :**

Demeclocycline (600 mg bid), Lithium carbonate, Captopril (12.5 mg/d)

**MOOD DISORDERS:**

**DEPRESSION:**

Incidence of post-TBI depression: 15 - 25%. Depression may occur without a feeling of sadness. It may manifest as agitation, irritability, lack of pleasure, impaired cognition.

**Antidepressants:**

Desipramine (not sedating), Nortriptyline (sedating), Bupropion (low anticholinergic and antihistaminic side effects; activating), Trazodone (sedating), Fluoxetine, Sertraline, Paroxetine (low anticholinergic and antihistaminic side effects; activating), Amoxapine (metabolized to neuroleptic), Nefazodone (lower incidence of insomnia, GI upset, weight gain), Mirtazapine, Venlafaxine, Selegiline (MAOI, no dietary restriction when used at Parkinson's Disease doses of 5-10mg/d; antidepressant doses, 15-60 mg/d, require low tyramine diet; metabolized to amphetamine)

Psychostimulants

Methylphenidate, Dextroamphetamine, Magesium pemoline, Adderall

**TREATMENT- RESISTANT OR PARTIALLY RESPONSIVE DEPRESSIONS:**

(a) Increase dose until benefits or side effects appear

(b) Change to another antidepressant

(c) Add a second antidepressant

(d) Augment antidepressants with: Buspirone, Lithium Carbonate, Thyroxine, Tri-iodothyronine, Atypical Neuroleptic, Anticonvulsant, Pindolol

**MANIC DISORDER :**

Lithium Carbonate

Anticonvulsants

Carbamazepine, Valproic acid, Clonazepam, Gabapentin, Lamotrigine

Calcium Channel Blockers

Verapamil, Diltiazem, Nifedipine, Nimodipine

Neuroleptics

(If single agent ineffective, consider low dose Lithium + anticonvulsants +/- neuroleptic)

**POST-TRAUMATIC HEADACHES:**

Nonsteroidal anti-inflammatories (NSAIDs) Antidepressants (tricyclic)

Calcium channel blockers

Verapamil, Diltiazem, Nifedipine, Nimodipine (selective for cerebral vasculature) Phenylzine (MAOI antidepressant)

**MOVEMENT DISORDERS:**

**ABSENCE OF MOVEMENTS AFTER TBI:**

Neostigmine, Physostigmine, Bromocriptine, Amantadine

**INCOORDINATION**

L-tryptophan, Thyrotropin-releasing hormone (oral), Propranolol,

Gamma-vinyl GABA, Acetazolamide, Phthalazinol

**DYSTONIA :**

Dopamine agonists: Bromocriptine, L-dopa

Anticholinergics: Benztropine, Trihexyphenidyl

Baclofen

Benzodiazepines: Diazepam, Alprazolam, Lorazepam

Carbamazepine

**TREMORS:**

Beta-adrenergic blockers: Propranolol, Atenolol, Pindolol  
Benzodiazepines, Dopamine agonists, Valproic acid, Anticholinergics, Isoniazide

**PARKINSONISM:**

(bradykinesia, dysarthria, decreased facial expression, rigidity)  
Selegiline, L-Dopa, Pergolide, Bromocriptine

**AKATHISIA:**

Bromocriptine, Propranolol, Cyproheptadine

**MYOCLONUS:**

Clonazepam, Trazodone, L-Tryptophan, Valproic acid, Primidone, Piracetam

**DYKINESIAS:**

Dopamine agonists, Anticonvulsants

**NEUROGENIC HETEROTOPIC OSSIFICATION:**

Etidronate disodium, Nonsteroidal anti-inflammatory meds (NSAIDs)

**OBSESSIVE-COMPULSIVE DISORDER:**

Fluoxetine, Sertraline, Paroxetine, Clomipramine (May add Buspirone or atypical neuroleptic to antidepressant )

**PERCEPTUAL DISORDERS:****HEMI-INATTENTION / NEGLECT:**

Bromocriptine

**SEIZURE DISORDERS:**

Carbamazepine (partial seizures, simple or complex) Valproic acid (multi-focal or generalized seizures), Gabapentin (metabolized by kidneys), Lamotrigine, Topiramate

**SEXUAL DISORDERS:****HYPOSEXUALITY:**

Antidepressants, Yohimbine, Testosterone, Sildenafil

**HYPERSEXUALITY:**

Females:

(Sexual assault, frequent masturbation, violent erotic dreams, with normal testosterone levels)

Cyproterone acetate (androgen receptor blocker) 25-50 mg/d (days 5-15 of menstrual cycle)

Ethinyl estradiol 50 mcg/day (days 5-25 of menstrual cycle)

Males:

Medroxyprogesterone im: approx. 200 mg im/week decreasing to 200mg/mo with testosterone level maintained at 100 po: 60-200mg/d (fewer side effects with low dose p.o. than i.m.)

Depo-leuprolide acetate 7.5 mg im/mo, Cyproterone acetate 50mg bid, Conjugated estrogens

Both males and females: fluoxetine and other serotonin re-uptake inhibitors ( reduced sex drive and function in 30% )

**SLEEP DISORDERS:****NARCOLEPSY:**

Fluoxetine, Psychostimulants

**INSOMNIA:**

Antidepressants (sedating), Valproic acid, Zolpidem, Clonazepam

**SPEECH - LANGUAGE DISORDERS:****MUTISM:**

Physostigmine 1 mg i.m. one time weekly x three weeks

Bromocriptine 2.5-5 mg twice daily up to 45 mg/day (increase the dose about every one month)

Imipramine

**DYSPHAGIA:**

L-dopa

**DYSPHASIA:**

Bromocriptine

**DYSARTHRIA:**

Clonazepam

**About the author:**

Daniel Gardner, MD is in the private practice of psychiatry, psychoanalysis, and neurobehavioral medicine in San Diego and Solana Beach, California. He provides treatment (problem solving, skill building, and medication management) and consults on quality of care issues with TBI

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He is Assistant Clinical Professor of Psychiatry, UCSD School of Medicine and faculty member, San Diego Psychoanalytic Society and Institute. He was formerly medical director of NeuroCare at Stone Mountain, a post-acute brain injury rehabilitation program and is currently medical director of Hidden Valley Rehabilitation Services, a neurologic disabilities rehabilitation program in Ramona, California.

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