Objectives

• Understand roles of medications, pharmacists, and you in post-brain injury medication management

• Understand what types of medications you may be on after brain injury including some examples of medications, indications, and side effects

• Understand/employ strategies for remembering to take medications, which medications to take, why to take them, and what to do if you feel you should not be taking a medication

• Understand/employ strategies for taking an active role in advocating for oneself in the management of medication
Role of Medications

• A piece of the puzzle
• Not a “quick fix”
• Important
Role of Pharmacists

- How does your pharmacist help?
  - Help manage medications
  - Answer questions
  - Strategies for management
  - Strategies for remembering
  - NOT pushing medications
Your Role

• Do what is good for your health
  • Know your medications, remember to take them

• ADVOCATE for yourself

• Have a system
Medications after Brain Injury

- Medications are specific to the person/situation
- Medication management is a team effort
- Close monitoring/close working with your providers
- Some medications take time to reach therapeutic effect
Types of Medications You May Be on After a Brain Injury

You may be on medications that treat...

• Pain/Headache
• Movement/Coordination
• Emotions
• Behavior/Thought Disturbances
• Cognition/Memory
• Seizures
• Sleep Disturbances
## Types of Medications You May Be on After a Brain Injury

<table>
<thead>
<tr>
<th>What it Treats</th>
<th>Medication Class</th>
<th>Medication Name</th>
<th>Common Side Effects</th>
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</table>
| Pain                 | Non-steroidal Anti-inflammatory Drugs (NSAIDs) | Acetaminophen (Tylenol)  | - Increased liver labs (especially at higher doses)  
- Nausea/vomiting  
- Rash |
|                     |                                    | Ibuprofen (Advil)        | - Increased risk of cardiac/thrombotic events  
- Stomach upset/pain/ ulceration/bleeding |
|                     |                                    | Meloxicam (Mobic)        |                                                                                     |
|                     |                                    | Ketorolac (Toradol)      |                                                                                     |
|                     |                                    | Naproxen (Aleve)         |                                                                                     |
| Opioids (chronic pain) |                                    | Oxycodone (Oxycontin)    | - Drowsiness, dizziness  
- Itching, rash  
- Nausea/vomiting  
- Constipation |
|                     |                                    | Hydrocodone/APAP (Norco) |                                                                                     |
|                     |                                    | Oxycodone/APAP (Percocet) |                                                                                     |
|                     |                                    | Morphine (MS Contin)     |                                                                                     |
Types of Medications You May Be on After a Brain Injury

Specific Type of Pain: Headaches

• 50% or more people with brain injury are reported to suffer from headaches

• Sometimes caused by

• Injury to areas such as joints, muscles, sinuses

• Other symptoms caused by injury – dizziness, weakness

• Migraine, tension headaches – important to treat the type of headache
Types of Medications You May Be on After a Brain Injury

Specific Type of Pain: Headaches

• Use of analgesics
  • Chronic use can cause rebound headaches

• Diet
  • Caffeine intake, alcohol intake, nicotine use should be reviewed and discussed with your provider
Types of Medications You May Be on After a Brain Injury

Specific Type of Pain: Headaches

• Tension headaches
  • First line: NSAIDs
  • Try to avoid opioids
  • Amitriptyline may be beneficial for chronic tension headaches
Types of Medications You May Be on After a Brain Injury

Specific Type of Pain: Headaches

- Migraines
  - Acetaminophen +/- NSAID +/- antiemetic
  - 5HT₁ Receptor Agonists “Triptans”: sumatriptan, rizatriptan, etc
  - DHE infusion – may require hospital admission for IV administration
- Migraine prophylaxis:
  - Propranolol, valproic acid, topiramate
  - Botulinum injection
# Types of Medications You May Be on After a Brain Injury

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| Movement/Coordination | Dopamine Agonist         | Amantadine (Gocovri, Osmolex ER) | - Orthostatic hypotension  
- Syncope, dizziness  
- Hallucinations/paranoia  
- Dry mouth  
- Constipation |
|                 | Bromocriptine (Cycloset, Parlodel) | Carbidopa/Levodopa (Sinemet) | - Dizziness, tiredness  
- Constipation, nausea  
- Hypotension (less often) |
|                 | Decarboxylase Inhibitor     | Entacapone (Comtan)   | - Nausea  
- Sometimes increased dyskinesia  
- Dizziness, fatigue  
- Diarrhea, stomach pain, constipation |
# Types of Medications You May Be on After a Brain Injury

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<th>Common Side Effects</th>
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<tbody>
<tr>
<td>Emotions (mood)</td>
<td>SSRIs</td>
<td>Sertraline (Zoloft) Escitalopram (Lexapro) Fluoxetine (Prozac)</td>
<td>- Insomnia (some cause drowsiness) - Dizziness - Agitation - Orthostatic hypotension - Nausea/stomach upset - Weight gain - Sexual dysfunction</td>
</tr>
<tr>
<td></td>
<td>SNRIs</td>
<td>Duloxetine (Cymbalta) Venlafaxine (Effexor) Desvenlafaxine (Pristiq)</td>
<td>- Insomnia (some cause drowsiness) - Dizziness - Nausea/stomach upset - Sexual dysfunction - Dry mouth</td>
</tr>
<tr>
<td></td>
<td>TCAs</td>
<td>Amitriptyline (Elavil) Nortriptyline (Pamelor) Clomipramine (Anafranil)</td>
<td>- Anticholinergic effects - Drowsiness (some cause insomnia) - Cardiac effects - Sexual dysfunction (some medications)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bupropion (Wellbutrin)</td>
<td>- Insomnia - Agitation - Stomach upset - QTc prolongation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mirtazapine (Remeron)</td>
<td>- Drowsiness - Anticholinergic - QTc prolongation - Weight gain</td>
</tr>
<tr>
<td>What it Treats</td>
<td>Medication Class</td>
<td>Medication Name</td>
<td>Common Side Effects</td>
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<td>-------------------------------------------</td>
</tr>
<tr>
<td>Emotions (anxiety)</td>
<td>Benzodiazepines</td>
<td>Lorazepam (Ativan)</td>
<td>- Drowsiness/dizziness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Anxiety</td>
</tr>
<tr>
<td>Behavior/Thought</td>
<td></td>
<td>Alprazolam (Xanax)</td>
<td>- Drowsiness/fatigue</td>
</tr>
<tr>
<td>Disturbances (agitation)</td>
<td></td>
<td></td>
<td>- Lack of muscle coordination</td>
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<td></td>
<td></td>
<td></td>
<td>- Memory effect</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Irritability</td>
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<td></td>
<td></td>
<td></td>
<td>- Depression</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Weight gain/loss</td>
</tr>
<tr>
<td>Emotions (anxiety)</td>
<td>Non-benzodiazepine</td>
<td>Buspirone (Buspar)</td>
<td>- Nausea</td>
</tr>
<tr>
<td></td>
<td>anxiolytic</td>
<td></td>
<td>- Dizziness/Headache</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Dysphoria</td>
</tr>
</tbody>
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<th>Common Side Effects</th>
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</thead>
<tbody>
<tr>
<td>Behavior/Thought Disturbances</td>
<td>First Generation Antipsychotics</td>
<td>Haloperidol (Haldol)</td>
<td>- Extrapyramidal effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chlorpromazine (Thorazine)</td>
<td>- Sedation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Anticholinergic effects</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- QTc prolongation</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Weight gain</td>
</tr>
<tr>
<td>Second Generation (Atypical) Antipsychotics</td>
<td>Quetiapine (Seroquel)</td>
<td></td>
<td>- Weight gain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risperidone (Risperdal)</td>
<td>- Extrapyramidal effects (some less frequent than others)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aripiprazole (Abilify)</td>
<td>- Sedation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Orthostatic hypotension</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- QTc prolongation</td>
</tr>
</tbody>
</table>

In general, side effects for atypicals are less frequent/severe than first generation.

*Note*

Antipsychotic use after TBI can sometimes result in a slower recovery. However, the benefit of their use may outweigh the risk in some people.
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<tr>
<td>Cognition/Memory/Attention</td>
<td>Acetylcholinesterase</td>
<td>Donepezil (Aricept)</td>
<td>- Nausea/diarrhea</td>
</tr>
<tr>
<td></td>
<td>Inhibitor</td>
<td></td>
<td>- Headache/dizziness</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Drowsiness/confusion</td>
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<td></td>
<td></td>
<td></td>
<td>- Insomnia</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- High blood pressure</td>
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<tr>
<td>Central Nervous System Stimulant</td>
<td>Rivastigmine (Exelon)</td>
<td></td>
<td>- Dizziness/headache</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Agitation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Increased falls</td>
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<td></td>
<td></td>
<td></td>
<td>- Weight loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Nausea/vomiting</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- tremor</td>
</tr>
<tr>
<td></td>
<td>Amphetamine/dextroamphetamine (Adderall)</td>
<td></td>
<td>- High blood pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Increased heart rate/palpitations</td>
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<td></td>
<td></td>
<td></td>
<td>- Insomnia</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Headache/irritability</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Anxiety/agitation</td>
</tr>
<tr>
<td></td>
<td>Methylphenidate (Concerta, Ritalin)</td>
<td></td>
<td>- Insomnia</td>
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<td></td>
<td></td>
<td></td>
<td>- Headache/irritability</td>
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<td></td>
<td></td>
<td></td>
<td>- Dry mouth</td>
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<td></td>
<td></td>
<td></td>
<td>- Decreased appetite</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Nausea</td>
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</table>
| Seizures      | Anticonvulsant  | Levetiracetam (Keppra) | - Sedation  
- Behavioral effects |
|               | Anticonvulsant  | Valproic Acid (Depakote) | - Abdominal pain/upset  
- Sedation/unsteadiness  
- Tremor  
- Weight gain  
- Menstrual cycle irregularities |
|               | Anticonvulsant  | Phenytoin (Dilantin) | - Sedation  
- Behavior changes  
- Dizziness/headache  
- Loss of coordination  
- Hematologic changes  
- Dental issues |
|               | Anticonvulsant  | Lamotrigine (Lamictal) | - Dizziness/unsteadiness  
- Headache  
- Rash (can be severe) |
|               | Anticonvulsant  | Carbamazepine (Tegretol) | - Dizziness/drowsiness  
- Nausea  
- Vision issues  
- Hematologic changes  
- Weight gain |
|               | Anticonvulsant  | Topiramate (Topamax) | - Difficulty concentrating  
- “Foggy” feeling  
- Weight loss  
- Dizziness/headache |
Notes About Types of Medications You May Be on after Brain Injury

• Preceding lists are not all-inclusive

• Other sequelae that need to be treated after brain injury (i.e. sleep disturbances, etc.)

• Common medications

• Common side effects

• With many of the preceding medications, your doctor will want to monitor certain blood tests
Notes About Types of Medications You May Be on after Brain Injury

• Some medications may cover multiple areas
  • SSRIs have been used to treat behavior
  • Anti-seizure medications have been used to treat behavior
  • Some mood medications can also help with sleep
• Other options for treating
• YOU know your body best
Medications

• Important to take as prescribed

• Remember when you need refills

• Reminder in planner

• Medication packs
Taking Medications

• Strategies for remembering
  • Pill boxes
  • Reminder/alarm lids
  • Phone alarms
  • Apps
  • Planner
  • Sticky notes
  • Keeping emergency medications with you
Taking Medications

- Keep an UPDATED, clear list of your medications
- Take pictures of your bottles
- Make a list of what you take, what it’s for
- Strategies for remembering to update:
  - Do it right away
  - Have a family member/friend/clinic nurse help
  - INCLUDE over the counter, herbals, vitamins, “as needed” medications
A Note About Supplements

Verified by US Pharmacopeia:
www.quality-supplements.org/verified-products/verified-products-listings
Quitting Cold Turkey

- Can be dangerous

- Withdrawal symptoms:
  - Sertraline (Zoloft)
  - Lorazepam (Ativan)
  - Valproic Acid (Depakote, Depakene)
Talk to Your Doctor and Pharmacist

- If something doesn’t feel right
- If you have concerns
- Advocate for yourself SAFELY
Summary

- Medications are a PART of keeping you healthy and managing your brain health

- Talk to your TEAM

- Advocate for yourself (and surround yourself with others who will advocate for you)

- If possible, educate yourself on the medications you take to arm yourself with as much knowledge as possible
Summary

• Keep an UPDATED list of your medications

• Take your medications as prescribed

• If you have concerns about medications - talk to your doctor or pharmacist before quitting
References


