The Nature of Information

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1. **Personal Experience**
   - Beliefs
   - Opinions
   - Perceptions

2. **Authority**
   - We trust the source of the information

3. **Evidence**
   - Not all information is equal
   - Decisions should be based on the information that has the most evidence

Fish Oil

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- **Increases your omega-3 fatty acids**
- **Lower's bad LDL**
- **Protective against cardiovascular disease and diabetes**
- **Lose weight, increase fertility, healthier skin, higher energy**

NEW EVIDENCE

Wine

- **Drinking red wine in moderation has healthy benefits**
- **Reducing depression**
- **Prevents colon cancer**
- **Has anti-aging properties**
- **Prevents breast cancer**

NEW EVIDENCE

Dark Chocolate

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- **Powerful source of antioxidants**
- **Improves memory**
- **Helps you lose weight**

Dark Chocolate

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John Bohannon, in the magazine "Science" published these results in 2013.

"the world is drowning in pseudo-science"

"Here's the dirty little secret: If you measure a large number of things about a small number of people, you are almost guaranteed to get a 'statistically significant' result. Our study included 18 different measurements – weight, cholesterol, sodium, blood protein levels, sleep quality, well-being, etc. – from 15 people. That study design is a recipe for false positives… We didn't know exactly what would pan out – the headline could have been that chocolate improves sleep or lowers blood pressure – but we knew our chances of getting at least one 'statistically significant" result were pretty good."

National Institute of Mental Health and CDC Statistics

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1 in **5** adults are prescribed psychotropic medication

National Institute of Mental Health and CDC Statistics

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1 In **13** children take psychotropic medication

1/3 of these children take **2+** psychotropic medication

National Institute of Mental Health and CDC Statistics

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Foster care population is 4.5 times higher than the general population to receive psychotropic medication

Approximately 1 million children under the age of 5 take psychotropic medication

Studies are indicating that approximately 80% of children who receive psychotropic medication will continue using psychotropic medication into adulthood

Pharmaceutical Trials with Children

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- **Drug-licensing system began in 1968 following the thalidomide disaster.**
- **Center for Drug Evaluation and Research (CDER) part of the FDA oversees how pharmaceutical companies complete drug trials**
- **Prior to 2003, there were no drug trials involving children**

Pharmaceutical Trials with Children

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- **In 2003 a law was passed by the FDA to encourage pharmaceutical company's to begin drug trials with children, if they had these clinical studies, they received an additional six month to market their drug exclusively.**

- **Most pharmaceutical trials are conducted with only 1 drug**

- **Parents are involved in the decision to enroll children in a study, and children ages 7 or older can "assent" or "dissent".**

A few definitions

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Off-label prescribing - is when a physician gives you a drug that the U.S. Food and Drug Administration (FDA) has approved to treat a condition different than your condition. This practice is legal and common. In fact, one in five prescriptions written today are for off-label use.

Synergy - occurs when two drugs have additive mechanisms of action, making their combined effect more powerful

Wash-out – a duration where one drug is discontinued and out of the system before another drug can be started.

A few definitions

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Black box warning - strictest **warning** put in the labeling of prescription drugs or drug products by the FDA when there is reasonable evidence of an association of a serious hazard with the drug

Adjunctive medication – medications used in conjunction with other medication to reduce the side effects

Research on Research

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Meta-studies / Meta-Analysis - uses a statistical approach to combine the results from multiple studies in an effort to increase power (over individual studies), improve estimates of the size of the effect and/or to resolve uncertainty when reports disagree

Bias statistics - Publication bias, especially the lack of publication of negative treatment studies, is known to be a major problem in the medical literature

In terms of study quality, 29% of the trials were rated as having a high risk for bias, 59% as having a moderate risk, and 12% as having a low risk.

Childhood Brain Development

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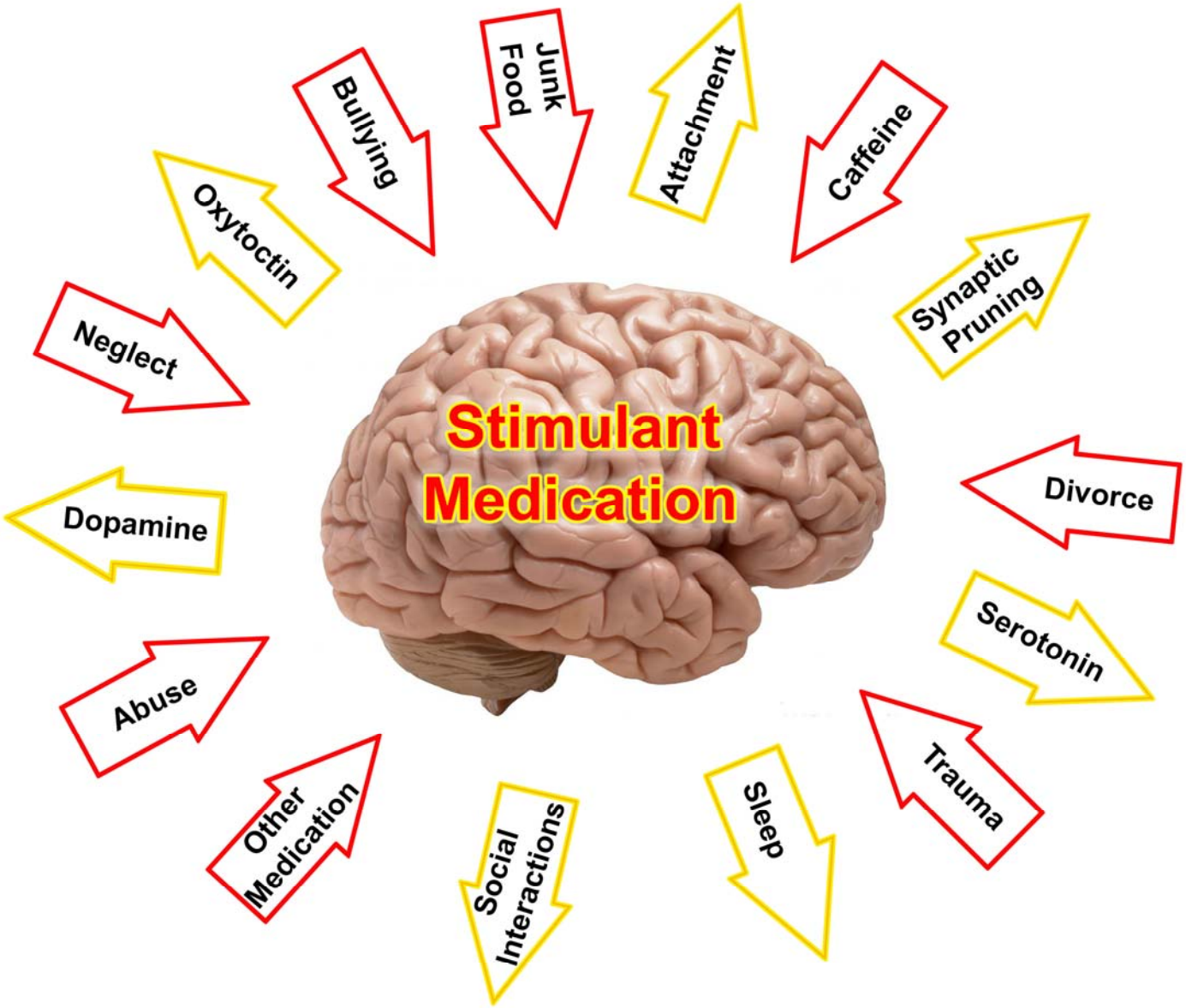
Childhood Brain Development



The First 7 Questions

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1. Is there any behavioral alternatives to the medication?
2. Is the medication nationally accepted for this diagnosis?
3. How long does it take for the medication to take effect?
4. What are the short term side effects?
5. What are the long term side effects?
6. Are there any interaction effects with other medication?
7. How long will he/she need to take the medication?

Medication Classification

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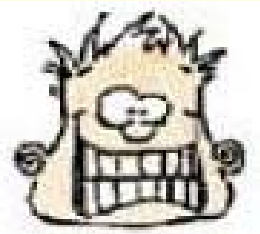
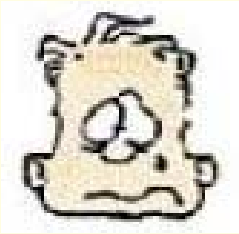
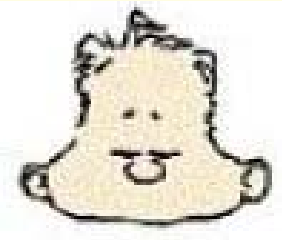


Stimulants

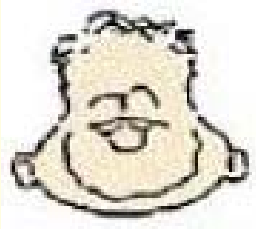


Anti-Depressants



Mood Stabilizers

Anti-Psychotics



Anti-Anxiety

Stimulants and ADHD Medications

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Stimulants

Ritalin
Adderall
Vyvanse
Dexedrine
Focalin
Metadate
Concerta
Daytrana

Non-Stimulants

Strattera (SNRI)
Intuniv

Anti-Hypertensive

Clonidine
Tenex
Inderal (BB)
Tenormin (BB)

Adverse Effects of Stimulant Medication

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Physical

- Appetite loss
- Lethargy
- Insomnia
- Headaches
- Abdominal pain
- Tics/jaw clenching
- Weight loss
- Growth suppression
- Hypertension
- Cardiac death

Emotional

- Depression
- Apathy
- Mood swings
- Irritability
- Anxiety
- Hostility
- General Dullness

Psychiatric

- OCD symptoms
- Mania
- Paranoia
- Psychosis
- Hallucinations

Stimulate Research

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Usually a short and intermediate acting medication

Stimulants curb hyperactivity by **"reducing the number of behavioral responses"** Oxford Textbook of Clinical Psychology and Drug Therapy.

1/2 of all psychotropic medication prescribed to children are for the diagnosis of ADHD/ADD

Current government reports recommend that behavior intervention occur **before** the use of medication, especially with preschoolers

Stimulant Research

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"Attention-deficit drugs increase concentration in the short term, which is why they work so well for college students cramming for exams. But when given to children over long periods of times, they neither improve school achievement nor reduce behavior problems . . . to date, no study has found any long-term benefit of attention-deficit medication on academic performance, peer relationships, or behavior problems, the very things we would want most to improve . . . The drugs can also have serious side effects, including stunting growth."

--Alan Sroufe, professor emeritus of psychology at the University of Minnesota, Source: New York Times, "Ritalin Gone Wrong," January 28, 2012.

Anti-Depressants

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SSRIs	Atypical	MAOIs	Tricyclic
Prozac	Wellburtrin	Marplan	Elavil
Zoloft	Pristiq	Nardii	Norpramin
Paxil	Cymbalta	Parnate	Zonalon
Celexa	Remeron	Zelapar	Tofranil
Lexapro	Effexor (SNRI)		Pamelor
Luvox	Trazodone (SARI)		Vivactil
	(Oleptro)		Aventyl
			Surmontil

Adverse Effects of Anti-Depressants

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Physical

- Insomnia
- Sexual Dysfunction
- Headaches
- Abominable distress
- Muscle cramps
- Seizures
- Akathisia

Emotional

- Emotional Dulling
- Anxiety
- Apathy

Psychiatric

Mania
Panic Attacks
Psychosis
Risk of Suicide

Noted Long Term Effect:

- Apathy Syndrome
- Cognitive Impairment
- Sexual Dysfunction in adulthood

Anti-Depressant Research

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Approximately ¼ of medication prescribed to children are anti-depressants

Anti-Depressants - the most **overused** and **underused** medication

Most Anti-Depressants take up to **2 weeks** to start working and full effects may not take effect for 6-8 weeks

Anti-Depressant Research

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Studies involved Anti-Depressants indicate that there is usually a

40% placebo effect.

MAOIs – has **diet restriction**

Changing Anti-Depressants

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Anti-Depressant have a definite wash-out periods if the medication is changed

SSRI

Current medication	New medication	Changing over
SSRI - all except fluoxetine - fluoxetine	SSRI	cease over 4-7 days, wait 3 days, start SSRI cease stat, wait 14 days, start SSRI
SSRI - all except fluoxetine - fluoxetine	SNRI	cease over 4-7 days, wait 5 days, start SNRI cease stat, wait 14 days, start SNRI
SSRI - all except fluoxetine - fluoxetine	TCA	cease over 4-7 days, wait 5 days, start TCA cease stat, wait 6 weeks, start TCA
SSRI - all except fluoxetine - fluoxetine	MAOI	cease over 4-7 days, wait 7 days, start MAOI cease stat, wait 6 weeks, start MAOI (diet & medication restrictions for 2 wks before)

Anti-Depressants and Suicide

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As of 2007, the FDA requires all anti-depressant medication to have a black box warning

WARNING

SUICIDALITY IN CHILDREN AND ADOLESCENTS

ANTIDEPRESSANTS INCREASED THE RISK OF SUICIDAL THINKING AND BEHAVIOR (SUICIDALITY) IN SHORT-TERM STUDIES IN CHILDREN AND ADOLESCENTS WITH MAJOR DEPRESSIVE DISORDER (MDD) AND OTHER PSYCHIATRIC DISORDERS. ANYONE CONSIDERING THE USE OF [INSERT ESTABLISHED NAME] OR ANY OTHER ANTIDEPRESSANT IN A CHILD OR ADOLESCENT MUST BALANCE THIS RISK WITH THE CLINICAL NEED. PATIENTS WHO ARE STARTED ON THERAPY SHOULD BE OBSERVED CLOSELY FOR CLINICAL WORSENING, SUICIDALITY, OR UNUSUAL CHANGES IN BEHAVIOR. FAMILIES AND CAREGIVERS SHOULD BE ADVISED OF THE NEED FOR CLOSE OBSERVATION AND COMMUNICATION WITH

Reasons for Suicide and Anti-Depressants

- Behavioral
- Chemical

Mood Stabilizers - Lithium

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Lithium (Lithobid)

- Blood level monitored for toxicity
- Works in 1-3 weeks
- 75% have side effects

Restriction

- Not under the age of 12
- Not pregnant/bf
- Not with high blood pressure / heart disease
- Anti-inflammatory
- Brugada Syndrome

Side Effects

- Dry mouth
- Hair loss
- Fine movement control
- Joint/muscle pain
- Renal/Thyroid issues
- Blackouts
- Seizures
- Confusion
- Severe headaches
- Weight changes
- Constipation
- Depression
- Brittle fingernails/hair
- Sensitivity to cold

Mood Stabilizers – Anti-Epileptics

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Tegretol / Epitol

Depakote

Lamictal

Neurontin

Lyrica

Topamax

Restrictions:

- Do not take if pregnant
- Renal issues
- Liver problems

Side Effects

- Liver damage
- Ovarian cysts
- Kidney stones
- Inflammation of the pancreas
- Stevens-Johnson Syndrome
- Insomnia
- Weight fluctuation
- Blurred vision
- Loss of coordination
- Loss of bone density

Anti-Psychotics

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1st Generation	2nd Generation (atypical)
Haldol	Abilify
Stelazine	Clozaril
Prolixin	Geodon
Thorazine	Latuda
Moban	Risperdal
Navane	Saphris
Mellaril	Seroquel
Trilafon	Zyprexa

These drugs are usually referred to as neuroleptics:

1. Psychomotor slowing
2. Emotional quieting
3. Affective indifference

2nd Generation Anti-Psychotic Side Effects

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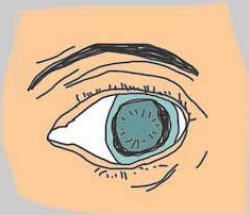
Side effects of atypical antipsychotic drugs

Weight Gain

Mean weight gain in patients receiving standard doses of antipsychotics over a 10-week period: 4.45 kg with clozapine, 4.15 kg with olanzapine, 2.92 kg with sertindole, 2.10 kg with risperidone, and 0.04 kg with ziprasidone.

Cataracts

Some drugs may be associated with an increased risk of ocular lens opacities. Also, patients with schizophrenia often have risk factors for lens opacities, such as Diabetes, hypertension and poor nutrition.



Sexual side effects

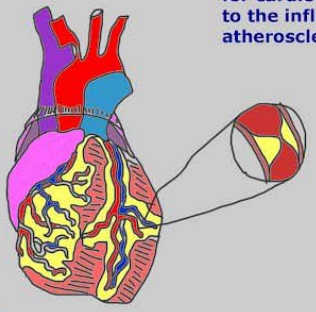
Antipsychotic-induced sexual dysfunction is related to the effects of the drugs on alpha-1 and alpha-2 adrenergic, H1 histamine and dopaminergic receptors, in particular to the blockade of D2 receptors in pituitary lactotroph cells, which leads to an excess of prolactin secretion

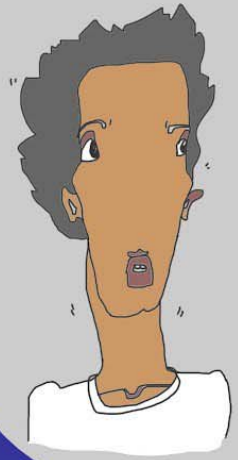
Diabetes Mellitus

The prevalence of type-2 DM in people with schizophrenia is more than twice higher than in the general population. Most of these studies indicate that drugs associated with greater weight gain.

Hyperlipidemia

A high concentration of lipid in the blood, an increased risk for cardiovascular disease due to the influence on atherosclerosis





Extrapyramidal symptoms

Movements disorders, kinesia (inability to initiate movement) and akathisia (inability to remain motionless)

Prolongation QTC Interval

An increase in the time between the start of the Q wave and the end of the T wave in the heart's electrical cycle. A prolonged QTC interval is a biomarker for ventricular tachyarrhythmias and a risk factor for sudden death

Myocarditis

Inflammation of heart muscle. It can cause a mild disease without any symptoms that resolves itself, or it may cause chest pain, heart failure, or sudden

ÜÇOK, A. and GAEBEL, W. Side effects of atypical antipsychotics: a brief overview. World Psychiatry. 2008 February; 7(1): 58–62.

Adverse Effects of Anti-Psychotics

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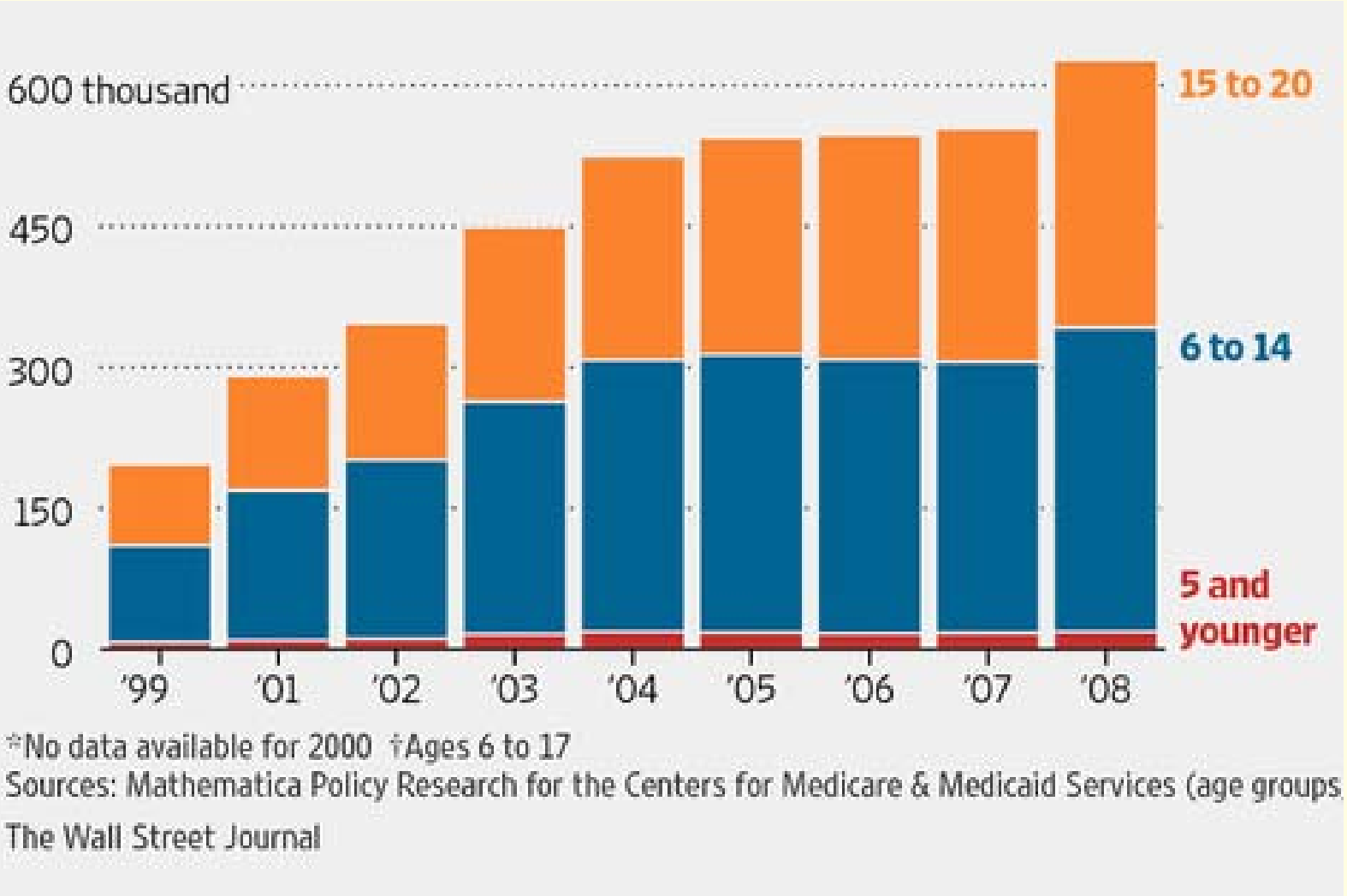
Extrapyramidal Side Effects (EPSE)

- Dystonia
- Akathisia
- Tardive dyskinesia
- Bradykinesia
- Parkinsonism
- Shuffling gait
- Sialorrhoea
- Seborrhea
- Severe muscle aches and cramps

Adjunctive Medication

- Cogentin
- Benadryl
- Benzodiazepines

Increase in Anti-Psychotic Among Children



Anti-Psychotic Uses

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A study examining use of antipsychotic drugs shows many children receive them for conditions without psychosis.

Children Prescribed Anti-Psychotics

- 38% for Disruptive Behavior
- 32% for Mood Disorder
- 17% for IDD and Developmental issue
- 14% for psychotic disorder

Source: M. Olfson "National trends in the outpatient treatment of children and adolescents with antipsychotics drugs, arch Gen Psychiatry 63 (2006) 679-85

Conversion to Bipolar Disorder

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Stimulants Can Induce Mood Swings That Are Basis for Bipolar Diagnosis

Stimulant-induced symptoms		Bipolar Symptoms	
Arousal	Dysphoric	Arousal	Dysphoric
Increased energy Intensified focus Hyperalertness Euphoria Agitation, anxiety Insomnia Irritability Hostility Hypomania Mania Psychosis	Somnolence Fatigue, lethargy Social withdrawal Decreased spontaneity Reduced curiosity Constriction of affect Depression Emotional lability	Increased energy Intensified goal-directed activity Agitation Severe mood change Decreased need for sleep Irritability Destructive outbursts Increased talking Distractibility Hypomania Mania	Sad mood Loss of energy Loss of interest in activities Social isolation Poor communication Feelings of worthlessness Unexplained crying

Anti-Anxiety Medications

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Benzodiazepines

Xanax
Klonopin
Valium
Ativan
Librium
Restoril
Halcion

Sedative-Hypnotics
aka: Z-Drugs

Ambien
Lunesta
Sonata
Zimovane

Others

BuSpar

*note: There are some opioid sedatives and Barbiturates (Miltown, Quaalude)

Anti-Anxiety Medications

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Anti-Hypertensive

Clonidine
Tenex
Inderal (BB)
Tenormin (BB)

Anti-cholinergic / Anti-histamines

Benadryl
Dramamine
Histafen
Polaramine
Phenergan
Vallergan Forte

Anti-Anxiety Medications

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Common Side Effects

- Drowsiness
- Dizziness
- Poor coordination
- Slurred speech
- Trouble concentrating
- Blurred vision
- Confusion
- Memory problems

Anti-Anxiety Medications

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Adverse Side Effects

- Very addictive with easy build up of tolerance
- Significant withdraw symptoms
  - Panic/agitation
  - Insomnia
  - Sweating
  - Confusion
- Synergy effect – can't mix with other medication or alcohol
- Toxicity can occur if they are used with SSRIs

Sleep Aids Linked to Dementia

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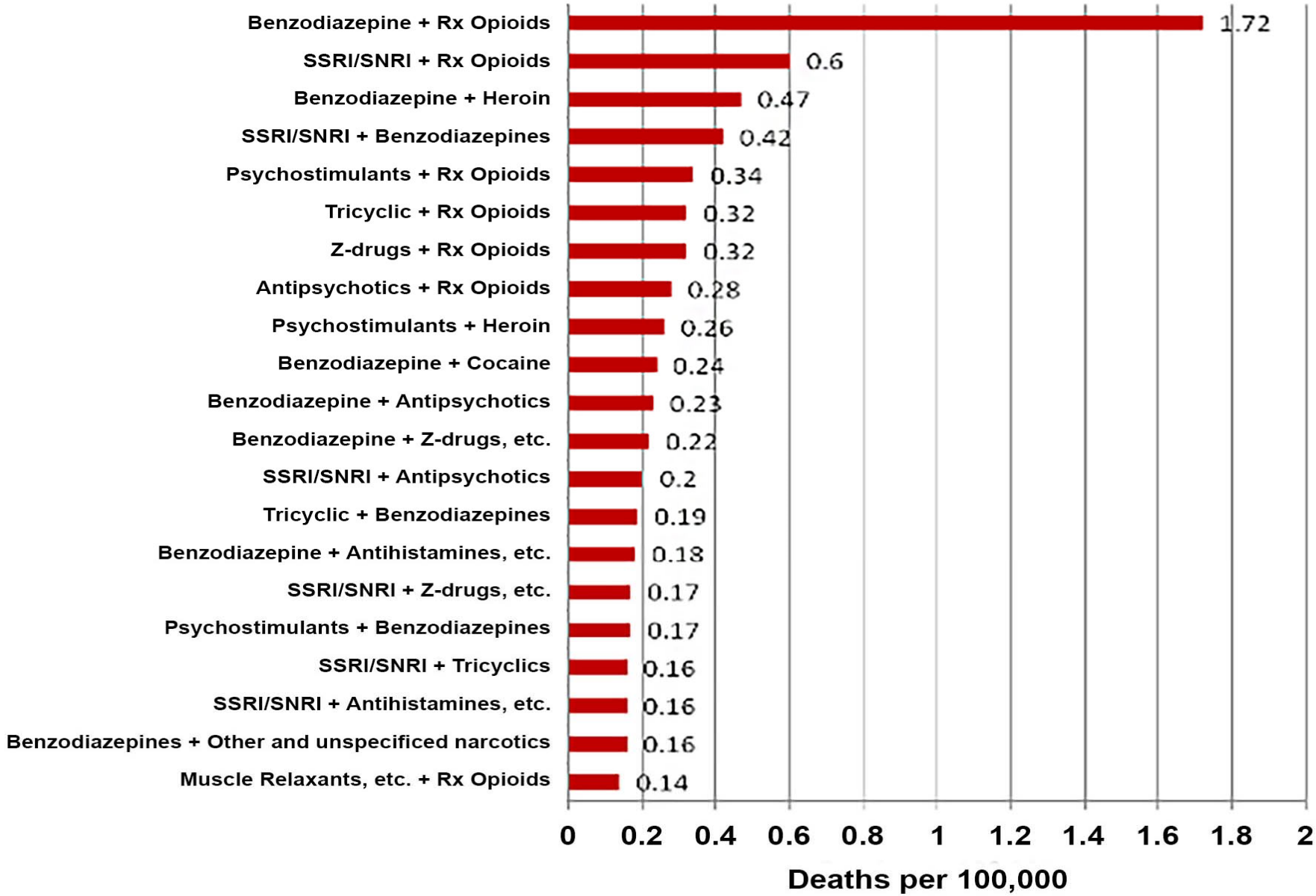
http://www.medicalnewstoday.com/articles/288546.php

- Researchers have discovered a significant link between high use of anticholinergic drugs - including popular non-prescription sleep aids and the antihistamine Benadryl (diphenhydramine) - and increased risk of developing dementia and Alzheimer's disease in older people.

- Taking anticholinergics for more than 3 years linked to **higher dementia risk**

- It is also the first study to show a dose-response effect, note the authors. That is, the higher the cumulative amount of drug taken, the higher the risk of developing dementia.

Deadliest combinations with psychiatric medications 2014



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