

Medication usage in children and possible impacts later in life

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- The test of the morality of a society is what it does for its children.

●Dietrich Bonhoeffer (1906 - 1945)

- When suffering knocks at your door and you say there is no seat for him,

- he tells you not to worry because he has brought his own stool.

- Chinua Achebe

- Cyrus Trask mourned for his wife with a keg of whisky and three old army friends who had dropped in on their way home to Maine. Baby Adam cried a good deal at the beginning of the wake, for the mourners, not knowing about babies, had neglected to feed him. Cyrus soon solved the problem. He dipped a rag on whisky and gave it to the baby to suck, and after three or four dippings young Adam went to sleep. Several times during the mourning period he awakened and complained and got the dipped rag again and went to sleep. The baby was drunk for two days and a half. Whatever may have happened in his developing brain, it proved beneficial to his metabolism: from that two and a half days he gained an iron health. And when at the end of three days his father finally went out and bought a goat, Adam drank the milk greedily, vomited, drank more, and he was on his way. His father did not find the reaction alarming, since he was doing the same thing.

- John Steinbeck, *East of Eden*

- Modafinil (Provigil)** is a “stimulant-like” manufactured by Cephalon, and is

approved by the FDA for the treatment of narcolepsy, shift work sleep disorder and obstructive sleep apnea.

- Modafinil, like other stimulants, increases the release of monoamines but also elevates hypothalamic histamine levels, leading some pharmacologists to consider Modafinil a "wakefulness promoting agent" rather than a classic stimulant .

- Modafinil is also indicated, though not approved, in the treatment of (ADHD), depression, cocaine addiction, Parkinson’s Disease, schizophrenia, and disease-related fatigue.

- By law, however, Cephalon is not allowed to market Modafinil for conditions other than those officially approved by the FDA.

- A child of five would understand this.

- Send someone to fetch a child of five.

●Groucho Marx

- When the expected course of everyday life is interrupted,

- We realize that we are like shipwrecked people trying to keep their balance on a miserable plank in the open sea,

- Having forgotten where they came from and not knowing whither they are drifting.

- Albert Einstein’s 1945 letter to grieving friends who had just lost a child, as had the Einsteins had in 1902

Dealing with mental health

- There is evidence from Neolithic times of the practice of trepanation (cutting large holes into the skull), as an attempt to cure various ailments including mental disorders.

- Continued into the 1800s and most likely is still being practiced somewhere today.

Trepanated skull. The perimeter of the hole in the skull is rounded off by in growth of new bony tissue, indicating that the patient survived the operation.

- Hippocrates (460-377 BC), influenced by humoral theory, proposed a triad of mental disorders termed melancholia, mania, and phrenitis (an acute mental disorder accompanied by fever).
- He also spoke of other disorders such as phobia, and is credited with being the first physician to reject supernatural or divine explanations of illness.
- He believed that disease was the product of environmental factors, diet and living habits, not a punishment inflicted by the gods, and that the appropriate treatment depended on which bodily fluid, or humor, had caused the problem.
- Under Islam, the mentally disordered were considered incapable yet deserving of humane treatment and protection.
- For example, Sura 4:5 of the Qur'an states "Do not give your property which God assigned you to manage to the insane: but feed and cloth the insane with this property and tell splendid words to him."
- Mental disorder was said to be caused by possession by a djin (genie), which could be either good or demon-like.
- There were sometimes beatings to exorcise djin, or alternatively over-zealous attempts at cures.
- The first "psychiatric" hospital ward was founded in Baghdad in 705, and insane asylums were built in Fes in the early 8th century, Cairo in 800 and in Damascus in 1270.
- "Insane" patients were benevolently treated using baths, drugs, music and activities.
- Conceptions of madness in the Middle Ages in Europe were a mixture of the

divine, diabolical, magical and transcendental.

- Theories of the four humors (black bile, yellow bile, phlegm, and blood) were applied, sometimes separately (a matter of "physic") and sometimes combined with theories of evil spirits (a matter of "faith").
- Arnaldus de Villanova (1235-1313) combined "evil spirit" and Galen-oriented "four humors" theories and promoted trepanning as a cure to let demons and excess humors escape.
- Other bodily remedies in general use included purges, bloodletting, and whipping.
- Madness was seen as a moral issue, either a punishment for sin or a test of faith and character.
- The term "lunatic" was applied to those with periodic mental disorders to suggest an influence of the moon.
- As in other civilizations, visions were generally interpreted as meaningful spiritual and visionary insights; some may have been casually related to mental disorders, but since hallucinations were culturally supported they may not have had the same connections as today.

Benjamin Rush

- 1812, the year before his death, he published *Medical Inquiries and Observations Upon the Diseases of the Mind*, the first American textbook of psychiatry, hence his silhouette on the American Psychiatric Association.
- The word "psychiatry" was invented by Johann Christian Reil in 1808.
- The word psyche derives from the ancient Greek for soul and butterfly.
- The butterfly features on the coat of arms of the Royal College of Psychiatrists

Shock Therapy

●Between 1917 and 1935, four methods for producing physiological shock were discovered, tested and used in the psychiatric practice, all of them in Europe:

- Malaria-induced fever, to treat neurosyphilitic paresis, discovered in Vienna by Julius Wagner-Jauregg, in 1917;
- Insulin-induced coma and convulsions, to treat schizophrenia, discovered in Berlin by Manfred J Sakel, in 1927;
- Metrazol or Pentylenetetrazol (PTZ) - induced convulsions, to treat schizophrenia and affective psychoses, discovered in Budapest by Ladislaus J. von Meduna, in 1934.
- Electroconvulsive shock therapy, discovered by Ugo Cerletti and Lucio Bini in Rome, in 1937.
- In 1962, the French researcher Pierre Eymard serendipitously discovered the anticonvulsant properties of valproic acid while using it as a vehicle for a number of other compounds that were being screened for anti-seizure activity.
- He found that it prevented PTZ convulsions in rodents.
- Since then it has also been used for migraine and bipolar disorder among other psychiatric conditions.
- 1943 Refrigeration experiment conducted on sixteen mentally disabled patients who were placed in refrigerated cabinets at 30 degree Fahrenheit, for 120 hours, at University of Cincinnati Hospital., "to study the effect of frigid temperature on mental disorders."
- Anti-psychiatry** refers to a post-1960s configuration of groups and theoretical constructs hostile to most of the fundamental assumptions and practices of psychiatry.
- Its igniting influences were Michel Foucault, R.D. Laing and Thomas Szasz.

Main Tenets

- The specific definitions of, or criteria for, hundreds of current psychiatric diagnoses or disorders are vague and arbitrary, leaving too much room for opinions and interpretations to meet basic scientific standards.
 - Current psychiatric treatments are ultimately far more damaging than helpful to patients.
 - The origins of what is called *anti-psychiatry* stem from concerns that arose due to the misuse of psychiatric ideas to engage in social control.
 - As far back as the eighteenth century, for example, Daniel Defoe, the author of *Robinson Crusoe*, *A Journal of the Plague Year* and other important works, reported that husbands used asylum hospitals to incarcerate their disobedient but sane wives.
- Medicalization is the process by which health or behavior conditions come to be defined and treated as medical issues.
- The term refers to the process by which certain events or characteristics of everyday life become medical issues, and thus come within the purview of doctors and other health professionals to engage with, study, and treat.
 - The process of medicalization typically involves changes in social attitudes and terminology, and usually accompanies (or is driven by) the availability of treatments.
 - The process has also been negatively referred to as disease mongering.
 - The medicalization of these life experiences has brought with it benefits, but at a price. And those costs, which are not just financial, are not always clear.

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Mental Health

- There are certainly concerns/diagnoses that do not respond to interventions
- There is evidence that many conditions are under diagnosed
- It may well turn out to be that psychiatric issues and psychiatric treatments are under utilized
- It is hard to determine without proper studies

Psychiatrists doing less psychotherapy.

A study of office-based psychiatrists has found that between 1996-7 and 2004-5, the percentage of visits involving psychotherapy declined from 44.4% in 1996 to 28.9% and the number of psychiatrists who provided psychotherapy to all of their patients declined from 19.1% to 10.8%.

- [Mojtabai R; Olfson M. National trends in psychotherapy by office-based psychiatrists. Archives of General Psychiatry 65:962-970, 2008]
<http://www.ncbi.nlm.nih.gov/pubmed/18678801>
- This decline coincided with changes in reimbursement, increases in managed care, and improved effectiveness and greater use of medications.
- There has also been a substantial, long-term decline in the amount of psychotherapy training in residency programs, which increases the risk that patients who are suitable for psychotherapy that can address underlying stresses may not be advised to seek it.
- Managed care programs favor drug treatment (with or without psychotherapy by a non-psychiatrist)

because it costs less per patient than psychotherapy.

●Psychologists, clinical social workers, and clinical mental health counselors now dominate the psychotherapy marketplace

- Society attacks early, when the individual is helpless.
- B. F. Skinner

Pharmacologic Interventions

- What is the potential need?
- What are the problems that have at least some indications drugs can help?
- What is the evidence?
- What studies have been done?
- Is the cup half empty or half full or somewhere on a 1 to 100 scale?

- No snowflake in an avalanche ever feels responsible.
- Stanislaw Lec

Thalidomide

- Thalidomide was developed by German pharmaceutical company Grünenthal.
- It was sold from 1957 to 1961 in almost 50 countries under at least 40 names, including Distaval, Talimol, Nibrol, Sedimide, Quietoplex, Contergan, Neurosedyn, and Softenon.
- Thalidomide was chiefly sold and prescribed during the late 1950s and early 1960s to pregnant women, as an antiemetic to combat morning sickness and as an aid to help them sleep.
- Before its release, inadequate tests were performed to assess the drug's safety, with catastrophic results for the children of women who had taken thalidomide during their pregnancies.
- Comparing the white moderate position of waiting for civil rights gains to occur over time as “a tranquilizing

thalidomide with deleterious long-term effects and dubious efficacy.”

- Martin Luther King, Jr.

- In the movie *Brain Candy*, a pharmaceutical company is asking several discovery scientists if their drug is ready.

- One of them is seen being dragged out of the boardroom screaming, "*It was only a couple of flipper babies!*", meaning the drug was like thalidomide.

- In an episode of *Breaking Bad*, Walter White explains the concept of chirality to his high school chemistry class by describing both isomers of thalidomide and their vastly different effects.

DSM-IV: Pathology Grab Bag “Bipolar Child”

Historically rare, now “highly prevalent”

"Five years ago, pinning down bipolar disorder in children was like nailing Jello to the wall. Today, we've seen significant advances—we are now nailing cheesecake to the wall."

“so far [genetic] research has not consistently shown increased occurrence of the disorder in children who are supposed to be at high risk.”

Gabrielle Carlson, M.D. Psych News, 12-2-2005

Bipolar has Become a Catchall DSM-IV Broadened Criteria

“One factor that may have contributed to this increase is a revision in the diagnostic criteria of bipolar disorder in the Diagnostic and Statistical Manual (DSM. 1994).” *Mark Olfson, 2007*

“we simply don’t know how accurately we can diagnose bipolar disorder... The label may or may not reflect reality.”

John March, NYT, 2007

“The number of children & adolescents being diagnosed with bipolar disorder... resulted in a significant rate of polypharmacy.”

Jon McClellan,

MD, Psychiatrist, Psych Times, 2005

Erratic Inpatient Diagnosing Biological Psychiatry, 2007

“Stimulant” Drugs

- Amphetamines
 - Dextroamphetamine
 - Methylphenidate
 - Pemoline
 - Atomoxetine
 - Adderall
 - Dexedrine
 - Dextrostat
 - Ritalin
 - Concerta
 - Cylert
 - Strattera
 - Tomoxetine
 - Sales of ADHD drugs rose to \$3.1 billion in 2004 from \$759 million in 2000, according to IMS Health, a pharmaceutical information and consulting firm.
 - About 2.5 million children between age 4 and 17 take ADHD drugs.
 - The survey found 9.3 percent of 12-year-old boys and 3.7 percent of 11-year-old girls take the drugs.
 - Adult use of the drugs alone grew 90 percent between March 2002 and June 2005.
 - 2006 AP
- #### **Antipsychotic Medications (Atypical)**
- Clozapine
 - Risperidone
 - Quetiapine
 - Olanzapine
 - Ziprasidone
 - Aripiprazole
 - Paliperidone
 - Others in the pipeline
 - Clozaril
 - Risperdal
 - Seroquel
 - Zyprexa
 - Geodon

- Abilify
- Invega
- Many in use in Europe
- Companies control the data & results**
- Analysis of every published trial comparing 5 new antipsychotics: 9 in 10 favored sponsor's drug.
- "it appears that whichever company sponsors the trial produces the better antipsychotic drug." *John Davis MD, American Journal of Psychiatry 2006*
- Antipsychotics (First Generation or typicals)
- Butyrophenones**
- Haloperidol (Haldol)
- Thioxanthenes**
- Chlorprothixene
- Flupenthixol (Depixol and Fluanxol)
- Thiothixene (Navane)
- Zuclopenthixol (Clopixol & Acuphase)
- Phenothiazines**
- Chlorpromazine (Thorazine)
- Fluphenazine (Prolixin) - Available in decanoate (long-acting) form
- Perphenazine (Trilafon)
- Prochlorperazine (Compazine) – Used mainly as an anti-nausea
- Thioridazine (Mellaril)
- Trifluoperazine (Stelazine)
- Mesoridazine
- Promazine
- Triflupromazine (Vesprin)
- Levomepromazine (Nozinan)
- Promethazine (Phenergan) – Used mainly as a potentiator
- “Mood Stabilizers”**
- Lithium citrate
- Lithium carbonate
- Divalproex
- Carbamazepine
- Lamotrigine
- Others coming
- Cibalith-S (others)
- Esalith, Lithobid (others)
- Depakote

- Tegretol
- Lamictal
- Antidepressants**
- Fluoxetine
- Paroxetine
- Nefazodone
- Bupropion
- Others in use and more to come
- Prozac
- Paxil
- Serazone
- Wellbutrin
- OCD**
- Clomipramine
- Fluoxetine
- Setraline
- Antidepressant, but used for OCD in children over six years old
- Anafranil
- Luvox
- Zoloft
- Benzodiazepines for anxiety**
- Alprazolam
- Clonazepam
- Clorazepate
- Diazepam
- Lorazepam
- Many others
- Xanax
- Klonopin
- Tranxene
- Valium
- Ativan
- Others**
- Buspirone
- Serotonin agonist
- Imipramine
- A tricyclic antidepressant also used for treating bed-wetting
- Many more coming.
- “Alternative Medicine, herbals, various other approaches.
- BuSpar
- Tofranil
- Pharmacologic Risks of addiction in general**

Opiates

- Children exposed to opiates in the womb tend to have a higher risk of addiction than the general population.
- Genetics?
- Children born to addicted mothers tend to have chaotic childhoods.
- Childhood opiate use for chronic pain management does not appear to be associated with addiction, but that is probably because kids with chronic pain usually have cancer.

Alcohol

- Alcohol exposure early in life is associated with later drug (not exclusively alcohol) addiction.
- Genetics?
- Chaotic lifestyle of children who are exposed to alcohol in the womb AND/OR are given alcohol in early childhood needs to be factored in.
- Children with fetal alcohol syndrome tend to have a higher risk of addiction (see above), although this may be compounded by the increased risk that people with intellectual impairments have for addiction.
- It is perhaps a “coping skills” factor.

Anti-depressants/SSRIs

- There is a correlation between anti-depressant use (for depression, not for obsessive-compulsive disorder) and increased risk of addiction.
- This may not be a true cause-effect relationship, because children who receive anti-depressants tend to have other issues in their family life.
- No study has tried to “tease out” the family factor, i.e. looking only at kids from intact, supportive families, so it may be the effect of kids who are depressed because their family is dysfunctional (exogenous depression – which the anti-depressants don’t work so well for, but are all too often prescribed

for) as opposed to endogenous depression.

The “black box” warning about increased risk of suicide,

- Despite this the overall risk of suicide in treated vs. untreated depression is lower.
- The increased risk of committing suicide shortly after starting anti-depressants has been known for over 30 years.
- Often, suicidal patients don’t act on their suicidal ideation because of the psychomotor retardation that accompanies depression.
- The anti-depressants lift the psychomotor retardation before they improve mood, so a suicidal-but-too-depressed-to-act-on-it patient may, after SSRIs are started, recover their ability to act before their suicidal ideation is resolved.

Stimulants

- Exposure to stimulants in childhood – apparently even in the womb – raises the risk of later addiction.
- This data is flawed by being from a small sample AND the fact that children born to stimulant-addicted mothers tend to have (surprise!) chaotic childhoods (either with their birth mother or in foster care), which ALSO raises the risk of addiction.
- Genetics?
- Untreated ADD/ADHD is a predisposing factor for adolescent and early adulthood addiction; this is presumed to be due to school failure, social isolation, etc.
- Children with ADD/ADHD who were treated with stimulants have a higher addiction rate than the general population, but apparently LESS than ADD/ADHD kids who were untreated.
- Genetics

- Methylphenidate is apparently less addicting
 - AND has fewer of the other unpleasant side-effects of the amphetamines (e.g. weight loss, dental decay).
 - It has a short half-life in the blood, but its effects in the brain appear to last much longer AND they are different from the amphetamines.
- <http://www.ritalindeath.com/>
- Info for Parents who are pressured to diagnose and drug their children for ADD or ADHD. Story behind our Sons death caused from ADHD drug, Ritalin. Between 1990 and 2000 there were 186 deaths from methylphenidate reported to the FDA MedWatch program, a voluntary reporting scheme, the numbers of which represent no more than 10 to 20% of the actual incidence.
 - Children are dying from ADHD Drugs
 - Our 14-year-old Son**
 - Matthew W Smith**
 - Died from Ritalin Use**
 - 9/1/1985-3/21/02**
 - Our fourteen year old son Matthew suddenly died on March 21, 2000. The cause of death was determined to be from the long-term (age 7-14) use of Methylphenidate, a drug commonly known as Ritalin.
 - According to Dr. Ljuba Dragovic, the Chief Pathologist of Oakland County, Michigan, upon autopsy, Matthew's heart showed clear signs of small vessel damage caused from the use of Methylphenidate (Ritalin).
 - *The certificate of death reads: "Death caused from Long Term Use of Methylphenidate, Ritalin."
 - I was told by one of the medical examiners that a full-grown man's heart weighs about 350 grams and that Matthew's heart's weight was about 402 grams.

- Dr. Dragovic said this type of heart damage is smoldering and not easily detected with the standard test done for prescription refills.
- The standard test usually consists of blood work, listening to the heart, and questions about school behaviors, sleeping and eating habits.
- *What is important to note here is that Matthew did not have any pre-existing heart condition or defect.

Swimmer Michael Phelps' mom
ADHD spokesperson Deborah Phelps talks about Michael's childhood and the road to Beijing

- Michael's classic ADHD behavior was detailed in a NY Times.
 - As a young child Michael's teachers were saying terrible things about his future.
 - It also discussed how his family doctor, whose children were also competitive swimmers, recommended meds for little Michael.
 - The meds worked a little but due to the stigma of taking pills at the nurse's office, Michael asked to come off them and the mom consulted again with his family doc before doing so.
 - Luckily, Michael's swimming is what helped him through his struggles in life.
 - Deborah Phelps, who is a school administrator, is a big part of her son's life and openly states she is on the fence on the use of medications for ADHD.
- Good Housekeeping Interview**
- Q. Did swimming help Michael cope with ADHD?**
 - A.** It did help. Swimmers have to develop good time management when they're juggling school work and hours of practice. The pool itself helped Michael, too. ADHD children need parameters. There's nothing better for that than two lane lines! Even if

Michael's mind was all over the place, he could focus on going up and down the pool. Plus, water itself has a calming, soothing effect. I think the pool became a safe haven where he could release his energy. But it's not just swimming that helped Michael; it was finding his passion and channeling his energy in that direction.

- Teenage boys, goaded by their surging hormones run in packs like the primal horde.
- They have only a brief season of exhilarating liberty between control by their mothers and control by their wives.
- Camille Paglia

● No atypical antipsychotic drugs are approved for use in pediatric populations

● Data supporting safety and efficacy of atypical antipsychotics for children and adolescents are limited

- 9 randomized controlled trials in children aged 10 years and younger
- small sample sizes (≤ 120 patients)
- short follow-up (≤ 10 weeks)

Atypical Antipsychotics in Children and Adolescents

● Adverse effects (ie, weight gain, sedation, and extrapyramidal symptoms) may be more prevalent and more severe in children and adolescents than in adults

Prevalence of the Use of Atypical Antipsychotics by Age and Gender
Annual Prevalence of the Use of Atypical Antipsychotics by Drug Importance

● Increasing use of atypical antipsychotics

● Long-term effects of early and prolonged exposure are unknown;

data in pediatric populations are limited

● Preliminary evidence that side effects may be more common and more severe in children

“Herbal” medications

These are poorly studied and even less well-characterized.

- Interactions with other drugs/herbs are a serious problem (e.g. St. John's Wort and all anti-depressants).
- The addictive properties of the “herbal remedies” have not been explored.
- However, there is some indications from cultures that routinely use Kava Kava that it is at least somewhat addictive.

Herbal remedies may not contain what is on the label.

- This can be due to gathering/harvesting the wrong “herb” (many plants look alike), the “correct” plant not having the desired product (wrong season, wrong growth conditions, insect infestation, etc.), the “correct” plant having compounds that are not expected (same list of causes) OR.....

Some “herbal” remedies are adulterated.

- Many “herbal Viagra” pills, when analyzed were found to contain – surprise! – Viagra.
- A patient whose “herbal” arthritis remedy – which he took because he was afraid of the side effects of steroids – contained massive amounts of prednisone.
- He presented with acute Addison's syndrome.
- A few years ago, a popular “herbal” tea, advertised as a “natural” alternative to caffeine
- (isn't caffeine “natural”?)
- was found to contain significant amounts of cocaine – at least enough to

turn a number of people's drug tests positive.

Herbal remedies used in children

- St. John's Wort: besides having a number of known and potential drug interactions (it is a mild non-specific MAO inhibitor), it is a photosensitizing agent.
- Valerian: used for ADD/ADHD, many of the compounds found in valerian interact with the GABA receptors.
- It is a mild sedative, which is exactly what ADD/ADHD people don't need.
- ADD/ADHD is marked by a "paradoxical" reaction to stimulants. Sedatives were used in the past and they were found to reduce "hyperactive" behaviors, but worsened attention span and ability to focus.
- One case report found withdrawal symptoms similar to benzodiazepine withdrawal when valerian was suddenly stopped
- Ginko Biloba: also used for ADD/ADHD.
- It has one of the best-studied list of known drug interactions.
- Extracts containing material from the seeds can cause fatal seizures.
- Kava kava: used for anxiety and ADD/ADHD. Known to cause hepatotoxicity, it is also an MAO inhibitor, which brings up a long list of potential drug interactions.
- Fatal hepatitis has been reported in people using kava kava.

The world's battlefields have been in the heart chiefly; more heroism has been displayed in the household and the closet, than on the most memorable battlefields in history.

Henry Ward Beecher

●To most men, experience is like the stern lights of a ship, which illumine only the track it has passed.

●Samuel Taylor Coleridge

●Raising children is like baking bread; it has to be a slow process or you end up with an overdone crust and an underdone interior.

●Marcelene Cox

●Anybody can have one kid.

●But going from one kid to two is like going from owning a dog to running a zoo.

●P. J. O'Rourke

●Parents are the bones on which children sharpens their teeth.

●Peter Ustinov

●Adolescence is a kind of emotional seasickness.

●Both are funny, but only in retrospect.

●Arthur Koestler

●Youth is a perpetual intoxication, a fever of the brain.

●Francois De La Rouchefoucauld

●Youth is a religion from which one always ends up being converted.

●André Malraux

Gender Issues

●Males get a ADHD diagnosis and stimulant drugs 5 times more than females.

●Females get a depression diagnosis and antidepressant drugs 3 times more than males.

Socioeconomic issues

●Same profile patients, if they are Medicaid are 80% more likely to be prescribed antipsychotics than private/work insurance.

- 1996 to 2001 Antipsychotic use increased 300%
- Most increase in inner-city population

Where does it all end?

- Chantix, the nicotine anti-addiction drug, adverse effect profile which includes dizziness, loss of consciousness, abnormal spasms/movement as well as mental health issues
- The FAA banned its use by pilots and air traffic controllers in May 2008, but now will decide on a case by case basis.

FDA

- 2/1/08
- It is “increasingly likely” Chantix can cause increased
- Depression
- Suicidal Thoughts
- Other Psychiatric Problems
- In 2007 Chantix had sales of \$883 million

Current Policy

- Smoking Cessation** - Nicotine patches or gum is approved on an individual basis. Chantix (Varenicline) is also approved on a case by case basis.
- Chantix (Varenicline) is initially grounding until applicant demonstrates no adverse side-effects at 72 hrs post peak dosage.
- Zyban (Bupropion hydrochloride) or other mood ameliorating drugs may be utilized to quit smoking but must be discontinued prior to FAA approval.

Antipsychotics

- In 2000 \$4 billion
- In 2002 \$6.8 billion
- "It's probably the best growth market in the business," said Richard T. Evans, a senior research analyst at Sanford C. Bernstein. A chart shows that since May 1999, children and babies--one to ten years old--have experienced the greatest

increase in use of antipsychotic drug prescription, an increase of 169%.”

- NYT
- “Sales of Antipsychotics and Anticonvulsants for the Bipolar Drug Market Will Reach \$2.6 Billion in 2011
- Bristol-Myers Squibb's Abilify Will Spur Market Growth, According to a New Study from Decision Resources.”

Antidepressants

- “In 2004, global sales of antidepressant agents exceeded \$15 billion. Japan is currently a relatively unimportant market for antidepressants, constituting about 5% of the global market; Europe (19%) and especially the United States (71%) account for most of the global sales of antidepressants.”

●\$1 billion in generic antidepressants drugs

“Global sales of branded antidepressants exceeded \$14 billion in 2004; U.S. sales totaled \$9.9 billion. Venlafaxine (Wyeth's Effexor) and sertraline (Pfizer's Zoloft) led the global market, each generating sales of \$3.3 billion.

●Nevertheless, as a result of the expiration of patents covering some of the leading antidepressant drugs, the market share of generic antidepressants is increas[ing]”...

●which means a “need” to get new ones with a new patent.

● <http://www.researchandmarkets.com/reports/314820>

"There is no question that the drugs work," said Dr. Steven Hyman, the director of the National Institute of Mental Health before becoming the provost at Harvard, "but they leave a lot to be desired."

●Antidepressants are now the second-largest class of prescription drugs, their sales exceeded only by heart medications.

● "You're greedy, unfeeling, inept, indifferent, self-inflating, and unconscionably profitable. Aside from that, I have nothing against you. I'm sure you play a helluva game of golf"
● (Dr. Bock to Dr. Welbeck) George C Scott as Dr. Brock in the 1971 movie *Hospital*

Summary

- What are the effects of medication on the development of a child's brain?
 - What are the possible long-term consequences?
 - No one really knows
 - More research is needed, but it appears little research is being done because children are "therapeutic orphans."
 - The laws which were introduced to ensure the efficacy and safety of drugs after the thalidomide tragedy have ended up with children being denied the protections of these laws because they are denied the use of many of the newer medications or are exposed to medications that have bypassed rigorous evaluations
 - "It is difficult to practice evidence-based medications when there is little or no evidence."

 - The validity of "informed consent" to therapy based on little or no information raises ethical concerns.
 - Adverse effects are more common in off-label use of drugs but paradoxically adverse effects of off-label drugs is less likely to be reported as part of post-marketing surveillance
- ADHD Gateway to Antipsychotics***
"to me the most striking thing was that nearly one in five psychiatric visits for young people included a prescription for antipsychotics."

Mark Olfson, MD Arch. Gen Psych, 2006

2.5 Million US Children Rx Antipsychotics

Most children Rx antipsychotics are not psychotic.

Mostly Rx for unapproved "conditions" – ADHD, Autism, Oppositional Defiance, Conduct Disorder
Vanderbilt University, Associated Press, 2006

Black Box Warnings:

"Increased mortality" in elderly

Other Serious Hazards:

acute weight gain (>100 lbs),
insulin resistance in children,

type II diabetes,

hyperglycemia, liver function

abnormalities.

neuroleptic malignant syndrome, heart disease, stroke...

● The FDA estimates 11 million antidepressant prescriptions were written in 2003 for under 19 year olds--a 27% increase in 3 years.

● Drugs used primarily to treat attention deficit/ hyperactivity (ADHD), which remains a controversial "condition," increased the most.

● In 5 to 9 year old children the use of drugs increased 85%, and in preschoolers usage was up 49%.

● Physicians prescribe mind-altering drugs even as they know that for this age group the developing brain is undergoing extraordinary changes.

● They acknowledge: "we have very little information about the long-term impact of treatment with these drugs early in development."

● A cynic is a man who, when he smells flowers, looks around for a coffin.

● **H. L. Mencken**

- An idealist is one who, on noticing a rose smells better than a cabbage, concludes that it will also make better soup.

- H. L. Mencken**

- Grown-ups never understand anything for themselves, and it is tiresome for children to be always and forever explaining things to them.

- Antoine de Saint-Exupery (1900 - 1944)**

- "The Little Prince", 1943*

- The first half of our lives is ruined by our parents, and the second half by our children.

- Clarence Darrow (1857 - 1938)**

- All God's children are not beautiful. Most of God's children are, in fact, barely presentable.

- Fran Lebowitz**

- Ask your child what he wants for dinner only if he's buying.

- Fran Lebowitz**

- Be gentle with the young.

- Juvenal (55 AD - 127 AD)**

- Children might or might be a blessing, but to create them and then fail them was surely damnation.

- Lois McMaster Bujold

HOW TO BE AN ADVOCATE FOR A CHILD

- If you have any questions or concerns, you should always try to get a second opinion.

- Nobody has all the answers, and parents really need to be advocates for their children.

- Questions to ask included:

- Why do you advise this medication?

- Have you treated others with it?

- Was it helpful?

- How will we know whether the medicine is helping?

- Push for specific criteria

- Are we measuring frequency of tantrums, school attendance or what?"

- How long should it take to work?

- How long would my child need to be on this medicine if it is working?

- What are the common and uncommon side effects?

- What are the alternatives to this treatment?

- What are the risks and benefits of each?

- Where can I get more information on the drug and on other treatment options?

- Is this the lowest dose that might be effective?

- How will this medication interact with other drugs my child is taking?

- How can I contact you quickly if I have concerns?

- What will we do if it doesn't help?

- What is the next step?

Red flags

- The doctor hasn't done a full evaluation before prescribing the drug, including reviews of the child's developmental, medical and psychiatric history; family medical and psychiatric history; and the child's behavior at school, with friends and family.

- The doctor has no plan for regular follow-up.

- The doctor doesn't discuss any other options, such as counseling, to accompany the medication, or instead of it.