What is your favorite book?

**1)The Hunger Games**

**2)“I don’t like to read”**

# Medical Treatment for Tics/ Tourette's Disorder and AD/HD

Montclair Child Study Group

April 17, 2015

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# Disclosures

- Sunshine Act  ProPublica.org
- Not a K.O.L.
- Monthly Tall Starbucks from Steve, Quillivant XR represntative

# Tourette's and Tics

- Tic:  A sudden, rapid, recurrent, nonrhythmic motor movement or vocalization (DSM5)
- **Provisional** Tic Disorder: single or multiple motor or vocal tics for **LESS THAN 1 year**
- **Persistent** Motor or Vocal Tic Disorder:  either single or multiple motor or vocal, but **NOT BOTH**, for **MORE THAN 1 year**
- **Tourette's:**  Multiple motor **AND** at least one vocal tic for MORE THAN 1 year (not necessarily concurrent)

# Tics and Tourette's

- 20% of children will have tics
- Start: 5-7 years old
- Peak: 11 years old
- Resolution: 14 years old
- Tourette's resolution: 50% at 18 years old

- Comorbidity: OCD, ADHD

# Tics and Tourette's

- 1) do nothing
- 2) Habit Reversal Therapy

  Awareness Training

  Competing Response Training

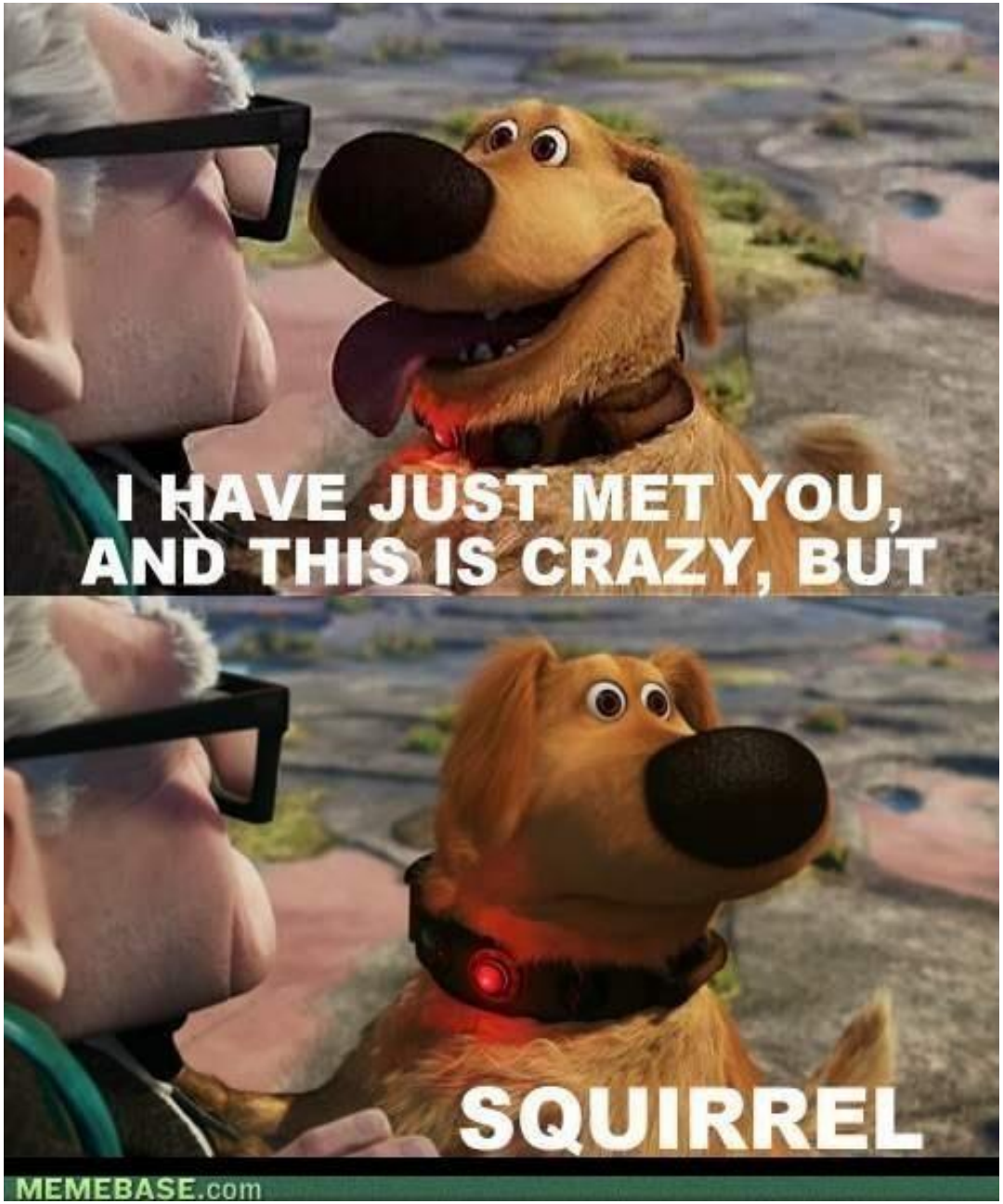
  Social Support

Result: 52.5% were responders after 10 weeks compared to supportive therapy 18.5% responders

# Tourette's and Tics

- Medications:
  - **Alpha-2 agonists:** guanfacine and clonidine
  - Sedation is main side effect, may also reduce blood pressure
  - **Antipsychotics:** pimozide, haloperidol, aripiprazole, risperidone
  - Sedation, metabolic changes, movement disorders

  - **BOTOX** injection, rTMS, Deep Brain Stimulation


I HAVE JUST MET YOU,
AND THIS IS CRAZY, BUT
SQUIRREL
MEMEBASE.com

# AD/HD

- fMRI indicates stimulants act in bilateral frontal inferior cortex/insula –areas of inhibition and time discrimination, key areas of cognitive control

- In 2011: 11% prevalence of school age kids, median age of diagnosis: 6.

- Only 6.1% of kids taking med for AD/HD.

# ADHD: stimulant meds

- 90% of children benefit, but that drops to 45% by 6 years of treatment (MTA study)
- Well-tolerated: common side effects include HA, stomach ache, suppressed mid-day appetite, afternoon rebound, benign BP elevation.
- Safe: since 1954. No cancer, no addiction, no birth defects, no lab monitoring
- Withdrawal effect (rebound) for 2-3 days upon stopping

# AD/HD: stimulants

- Methylphenidate or amphetamines
- Goal:  65-75% occupancy of Dopamine Transporter.  Over 75% = euphoria!
- Abuse potential in IR preparations
- 20% diversion rate (“study buddy”)
- Dose: methylphenidate can go to 2mg/kg/day, i.e. 75 lb kid could be on 68mg

# AD/HD: stimulants

- Caution:  cardiac issues, worsening psych comorbidities

- STUNTED GROWTH: potential loss of 0.5 inch of final height at 18 years old.  **THAT IS NOT STUNTED GROWTH.**

# AD/HD: stimulant side effects

# AD/HD: % mph IR/ER

| | |
|---|---|
| Quillivant XR: | 20/80 |
| Concerta: | 22/78 |
| Metadate CD: | 30/70 |
| Daytrana: | topical patch—olive oil removal |
| Focalin XR: | 50/50 |
| Ritalin LA/SR: | 50/50 |
| | |
| Ritalin/focalin: | 100/0 |

# AD/HD: % amph IR/ER

- Vyvanse: 0/100 (prodrug becomes activated)
- Adderall XR: 50/50

- Adderall: 100/0
- Dextrostat: 100/0
- Procentra: 100/0

# AD/HD: Atomoxetine

- Effect size: 0.64
- Uses: uncomplicated ADHD, refractory ADHD, Comorbid ADHD: anxiety, tics, depression, substance abuse
- Safety: rare hepatitis. HA and stomach ache.

- 40% on atomoxetine require add'l treatment

# Alpha-2 agonists

- Guanfacine or clonidine (Kapvay/Intuniv)
- Effect size: AD/HD 0.59 ODD 0.44
- Safety: bradycardia, 7mm decrease in systolic BP. For stimulant + alpha-2 agonist: get cardiology eval and clearance
- Side effects: irritability, **sedation**, stomach ache
- Uses: **comorbid tic**/anxiety/ODD/insomnia or unable to tolerate stimulant

# AD/HD: modafinil

- 2 adult RCT: negative
- 4 pediatric RCT: effect size 0.6
- Risks: rash. Side effects: see stimulants

# AD/HD: Omega-3/Omega-6

- 10 study meta-analysis, n=699
- Effect size: 0.28 monotherapy

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