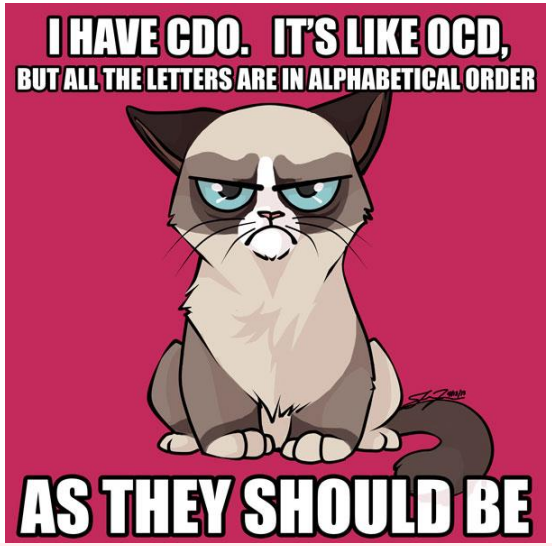
OCD Characterized by:

- Obsessions: recurrent thoughts, urges, images that are intrusive or unwanted
- Compulsions: repetitive behaviors or mental acts individual is driven to perform in response to an obsession or rigid rules
  - Not connected to feared event or clearly excessive

OCD diagnostic criteria DSM-V

Jessica Meshman

Obsessions



A. Presence of obsessions, compulsions, or both:

   Obsessions are defined by (1) and (2):

   1. Recurrent and persistent thoughts, urges, or images that are experienced, at some time during the disturbance, as intrusive and unwanted, and that in most individuals cause marked anxiety or distress.
   2. The individual attempts to ignore or suppress such thoughts, urges, or images, or to neutralize them with some other thought or action (i.e., by performing a compulsion).

Compulsions

Compulsions are defined by (1) and (2):

1. Repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly.
2. The behaviors or mental acts are aimed at preventing or reducing anxiety or distress, or preventing some dreaded event or situation; however, these behaviors or mental acts are not connected in a realistic way with what they are designed to neutralize or prevent, or are clearly excessive.

   Note: Young children may not be able to articulate the aims of these behaviors or mental acts.

Caveats

- Time-consuming (e.g. >1 hr per day) or causing clinically significant distress or impairment in area of functioning
- Not attributable to another substance or medical condition
- Not better explained by another mental disorder

Specifiers (New to DSM-V)

"Repetitive behavior. The constant licking: never clean. I'm afraid Mr. Fluffybottom has OCD."

anerroroccurredwhileprocessingthisdirective.com

Specify if:

With good or fair insight: The individual recognizes that obsessive-compulsive disorder beliefs are definitely or probably not true or that they may or may not be true.

With poor insight: The individual thinks obsessive-compulsive disorder beliefs are probably true.

With absent insight/delusional beliefs: The individual is completely convinced that obsessive-compulsive disorder beliefs are true.

Specify if:

Tic-related: The individual has a current or past history of a tic disorder.

Obsessive Compulsive Disorder

Prevalence & Outcomes

Prevalence

- 12 month prevalence of 1.2%
- Lifetime prevalence of 2.3%
- Females affected at a higher rate
- Male more common in childhood
- Mean age of onset in US is 19
  - 25% of cases age of onset is 14

Course

- Chronic course, waxing and waning
  - 40% of childhood/adolescent patients experience remission by early adulthood
- Without treatment, adult remission rate is 20%
- Pattern of compulsions is more stable in adults
  - Variable in children with advancement through developmental stages

Risk Factors

- Genetic contribution
  - Adults: Two-fold increase risk with first-degree relative
  - Children: Ten-fold increase is risk
  - High concordance rate in monozygotic twins
- Physical/sexual abuse or traumatic events in childhood
- Neurological injury

Co-morbidities

- 76% have lifetime history of other anxiety disorder
- 63% have depressive or bipolar disorder
- Up to 40% have tic disorder
  - Most common in males with childhood onset
- 12% of patients with schizophrenia/schizoaffective disorder have OCD

Associated Disorders

- Body dysmorphic disorder
- Trichotillomania
- Excoriation disorder
- Impulsivity disorders, eg Oppositional-Defiant
- Increased risk for suicide (up to 25%)

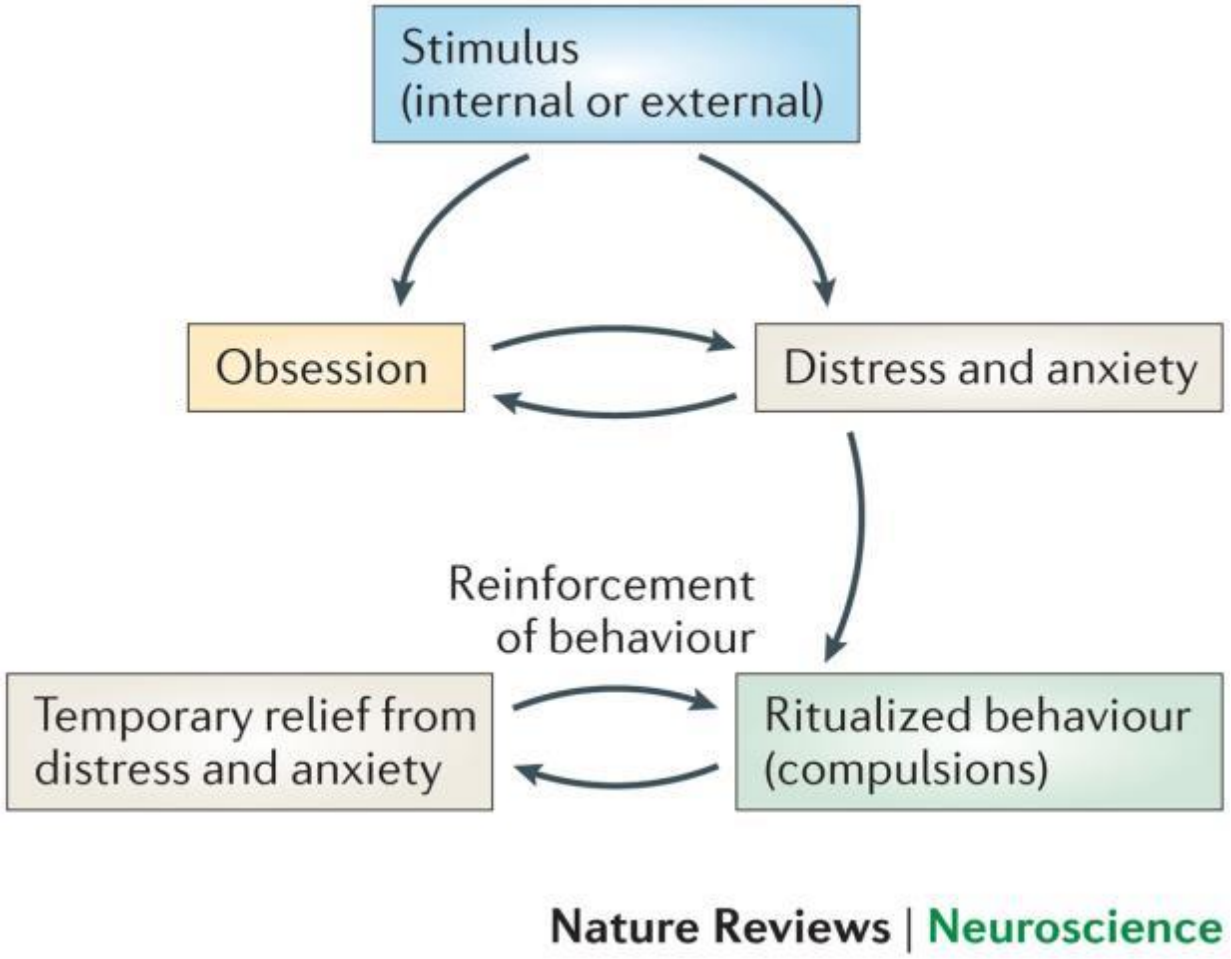
Neurobiology of OCD

10-3-2014

Obsessive–compulsive disorder: an integrative genetic and neurobiological perspective

David L. Pauls, Amitai Abramovitch, Scott L. Rauch, Daniel A. Geller Nature Reviews Neuroscience June 2014

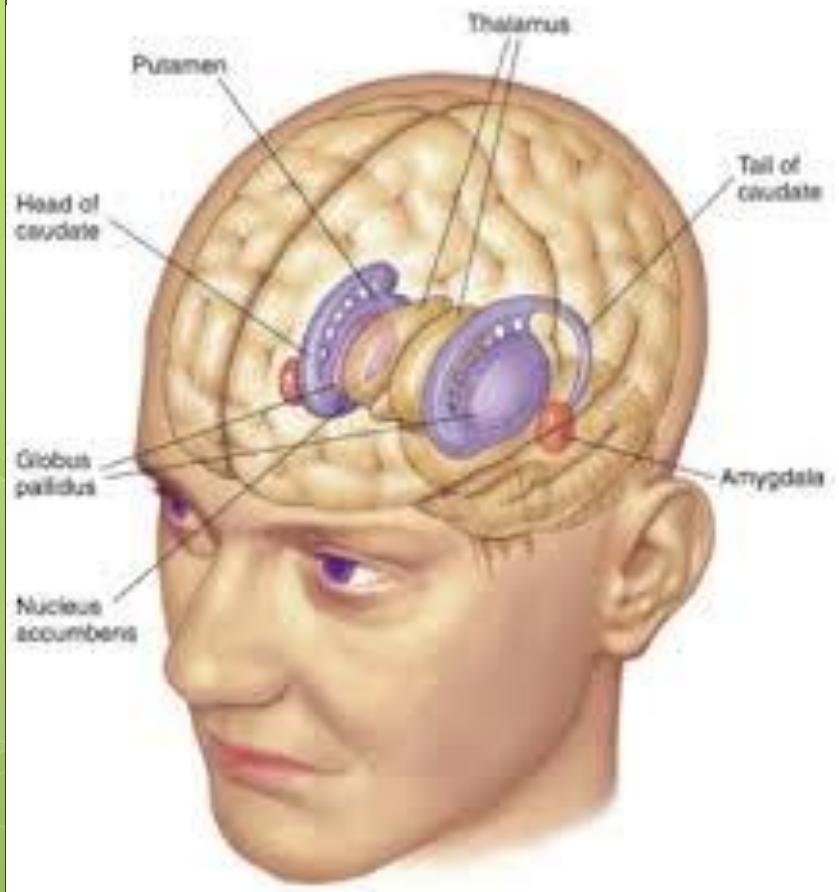
Th

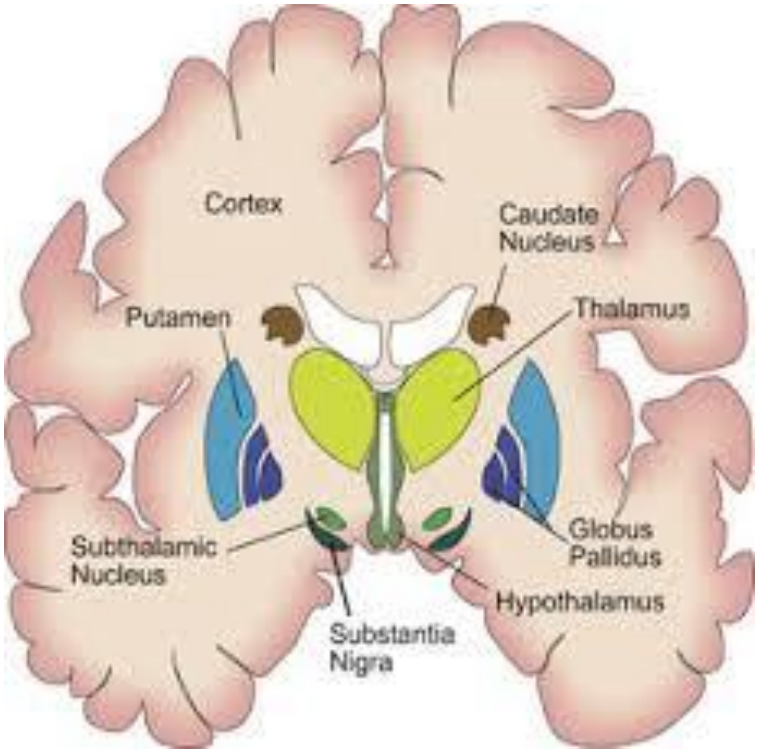

Stimulus
(internal or external)
Obsession
Distress and anxiety
Reinforcement
of behaviour
Temporary relief from
distress and anxiety
Ritualized behaviour
(compulsions)
Nature Reviews | Neuroscience

Localization of symptoms

- Repetitive and compulsory behaviors / motor tics
- Bacterial infections, hypoxia, neurotoxic agents → damage to the Basal Ganglia
- Proposed that any damage to basal ganglia might result in onset of OCD symptoms

striatum (caudate + putamen), globus pallidus, substantia nigra, nucleus accumbens, subthalamic nucleus = BASAL GANGLIA

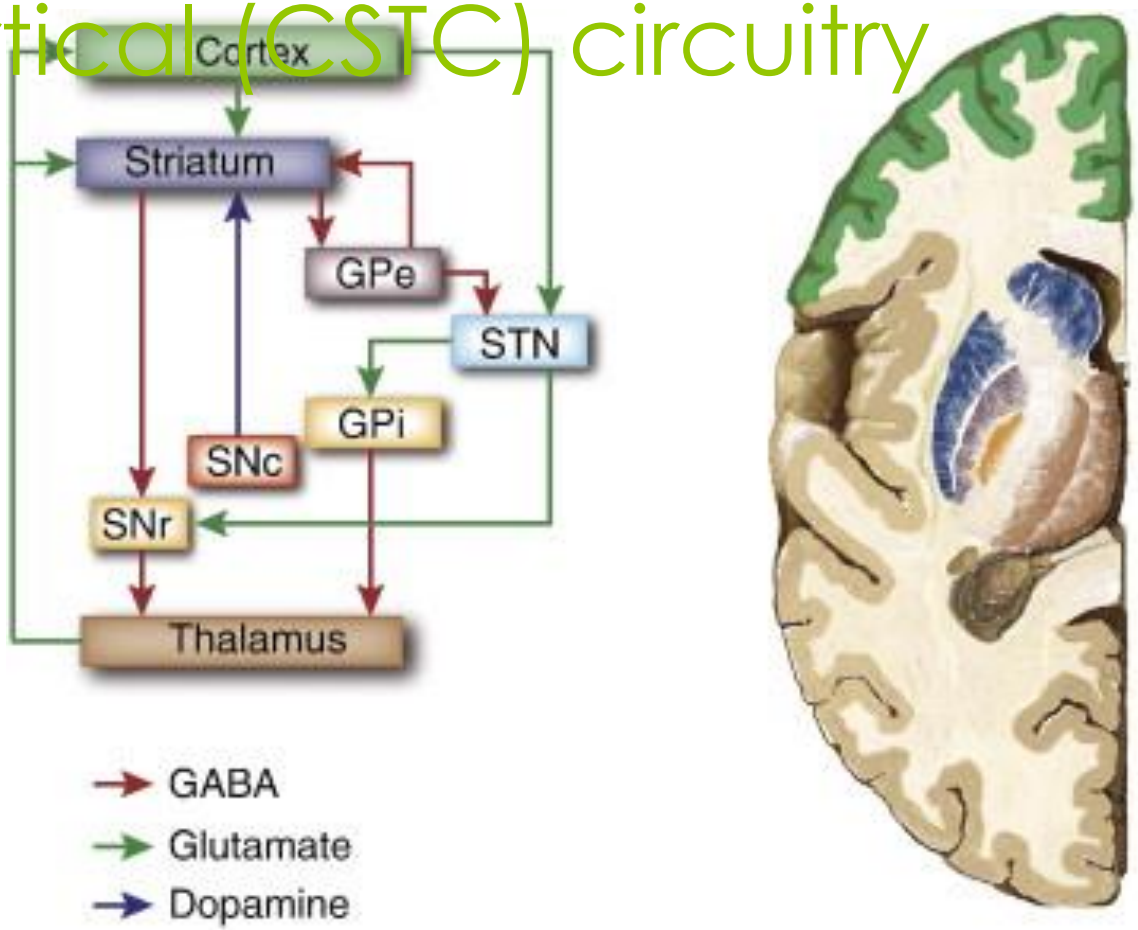




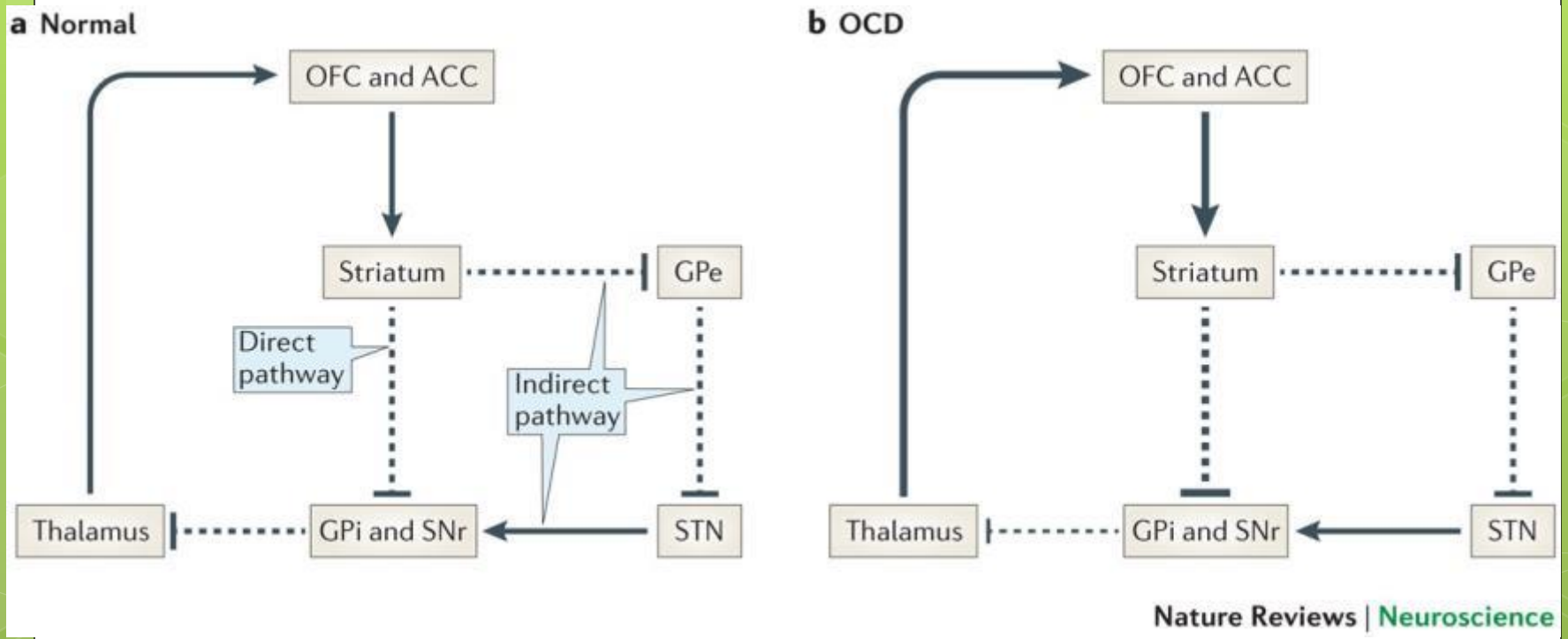
More than the basal ganglia

- Hyperactivity seen in regions that communicate with the basal ganglia including cortex and thalamus
- Pathways that connect these areas are involved in both the initiation and termination of behavior
- Imbalance in these pathways may be causing pts with OCD to get stuck in repetitive loops of thought and behavior

cortico–striato–thalamo–cortical (CSTC) circuitry

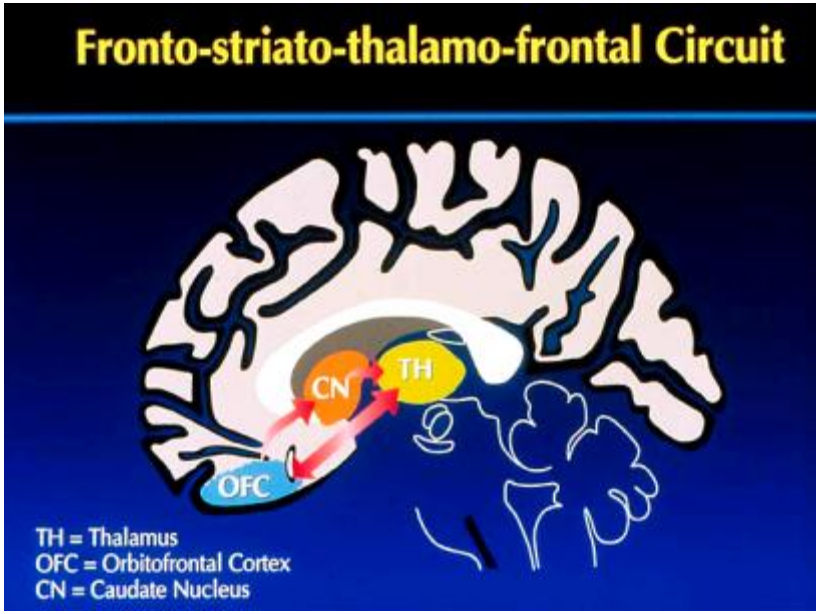


CSTC circuitry model of OCD



Hyperactivation → Brain lock

- Overstimulated areas of the brain are "locked" together as one in patients with OCD
- Exacerbated during symptom provocation
- Attenuated toward normal with successful treatment



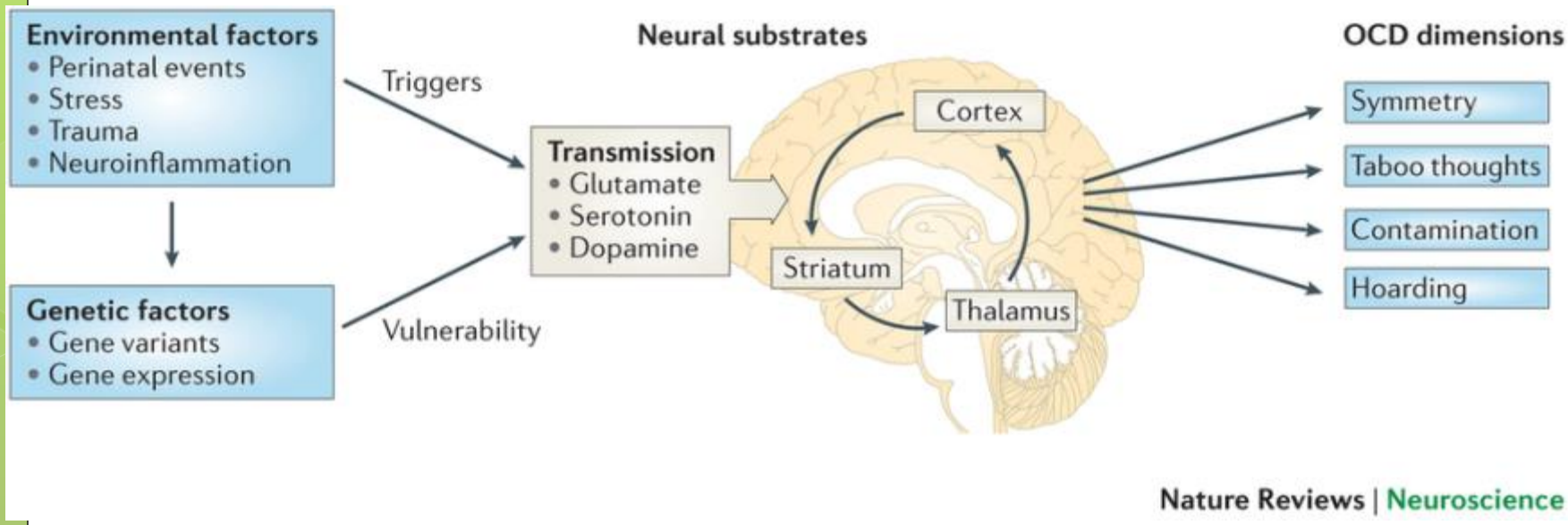
Serotonin and Dopamine

- SSRIS can be helpful…hypothesized that serotonin may play role
- Serotonin (raphe nuclei) → input to basal ganglia
- Dopamine (substantia nigra) → input to striatum
- Imbalance between serotonin and dopamine levels may also be at the root of this disorder
- Meds that affect these transmitters can have major effects on circuit dysregulation and OCD

Dysfunction of corticostriatal circuitry

- Neurosurgical interventions including DBS, Cingulotomy: may target specific regions but ultimate goal of surgery is to interrupt the circuitry imbalance in OCD
- OCD-specific pathophysiology associated with a particular imbalance between the direct and indirect pathways

Integrative model for OCD



Treatment Options

- Pharmacotherapy
- Cognitive Behavioral Therapy
- Both
- Surgery

Pharmacotherapy

Strong Evidence

- SSRIs
- TCAs

Weak evidence (Not FDA App)

- SNRIs

SSRIs

- **1st Line Pharm Tx for OCD**
- **No individual** SSRI was found to be more efficacious than the others
- All SSRIs **except citalopram + escitalopram** FDA approved for OCD

SSRI Side Effects

- Well-tolerated
- Most common side effx:
  - GI Disturbance (N/D)
  - Agitation
  - Sleep Disturbances (Insomnia/Vivid Dreams)
  - Increased tendency to sweat
  - Sexual Dysfunction

TCAs

- **2nd line Pharm tx**
- Clomipramine

TCA Side Effects

- Increased side effx vs. SSRI
  - Think "HAM" (Anti Histamine, Alpha 1, Muscarinic)
  - Sedation
  - Dry Mouth
  - Constipation
  - Urinary Delay
  - Orthostatic Hypotension
  - Cardiac Conduction Delay (QT Prolongation)

SNRIs

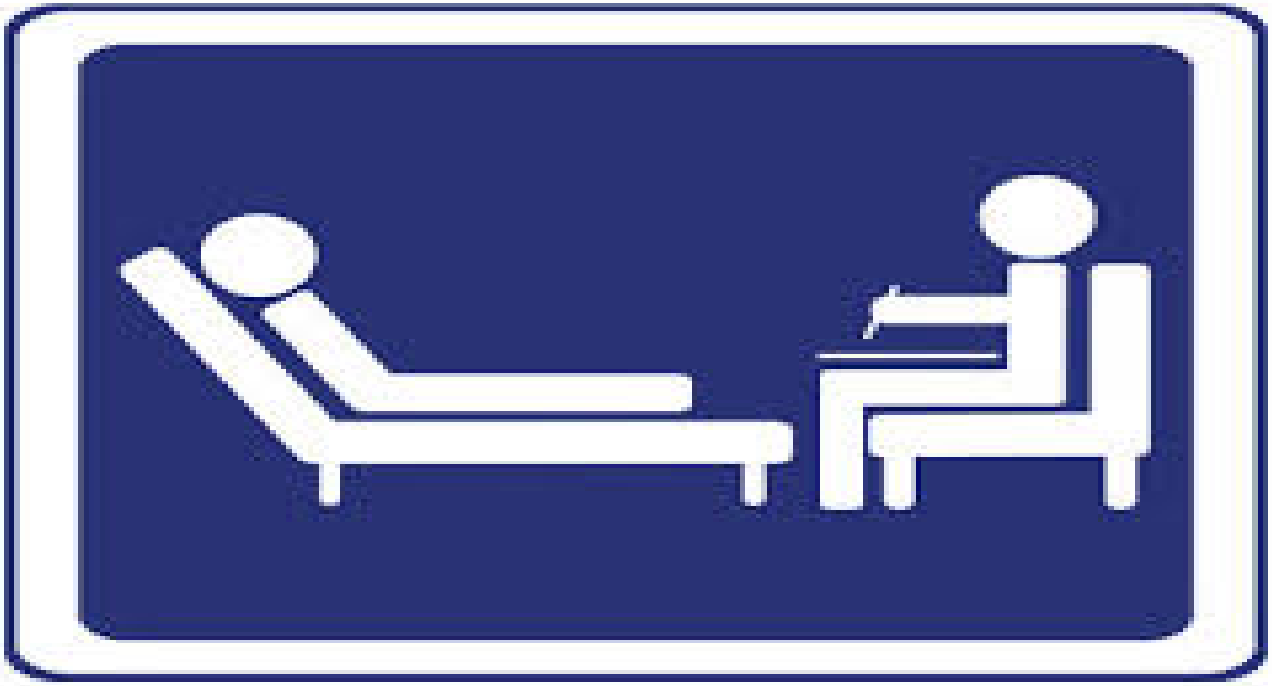
- No evidence to support use
  - Small trials at low doses show no c
  - Larger trials at higher doses currently being conducted
- Side Effects:
  - Well tolerated (like SSRIs)
  - Nausea, Constipation, Dizziness, Insomnia, Sedation, Sexual Dysfunction

Guidelines from APA

- Start w/ low dose, increase weekly to enhance tolerability
- SSRIs and Clomipramine--improvement in 40-60%
  Duration: For people who respond adequately, APA suggests people remain on therapy for **1-2 years minimum**

Psychotherapy

- Cognitive-Behavioral Therapy
  - **Exposure + response prevention (ERP)**



Monotherapy: Which one?

- CBT more effective than medications

Augmentation

- Poor response to SSRI:
  - CBT
  - Clomipramine
  - Risperidone or other antipsychotic
- Poor response to CBT:
  - SSRI
  - Clomipramine

Combined Therapy

- ERP plus clomipramine and ERP alone showed no significant difference.

Summary

- Patients w/ OCD should be treated with:
  - CBT, or
  - Pharmacologic, or
  - Both
- Individual patient response should be gauged and adjustments to treatment made

SURGERY

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Deep Brain Stimulation (DBS) in the treatment of OCD

Adam Nayeri

A great treatment for many m

Movement Disorder	Year DBS approved for treatment	Target Nucleus

A great treatment for many m

Movement Disorder	Year DBS approved for treatment	Target Nucleus
Essential Tremor (ET)	1997	Ventral Intermediate Nucleus (VIM) of Thalamus

A great treatment for many m

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A great treatment for many m

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Parkinson's Disease (PD)	2002	Globus Pallidus Pars Interna (Gpi) or Subthalamic Nucleus (STN)
Primary Generalized Dystonia	2003	Globus Pallidus Pars Interna (Gpi) or Subthalamic Nucleus (STN)

DBS for Psychiatric Disorders?

FDA has Approved

Disorder	Year DBS approved for treatment	Target Nucleus
Major Depression	…	Cingulate Gyrus, Nucleus Accumbens
Tourette Syndrome	…	Globus Pallidus Pars Interna (Gpi) or Subthalamic Nucleus (STN)

FDA has Approved

Disorder	Year DBS approved for treatment	Target Nucleus
Major Depression	…	Cingulate Gyrus, Nucleus Accumbens
Tourette Syndrome	…	Globus Pallidus Pars Interna (Gpi) or Subthalamic Nucleus (STN)
OCD	2009	Nucleus Accumbens, Subthalamic Nucleus (STN)

Neu

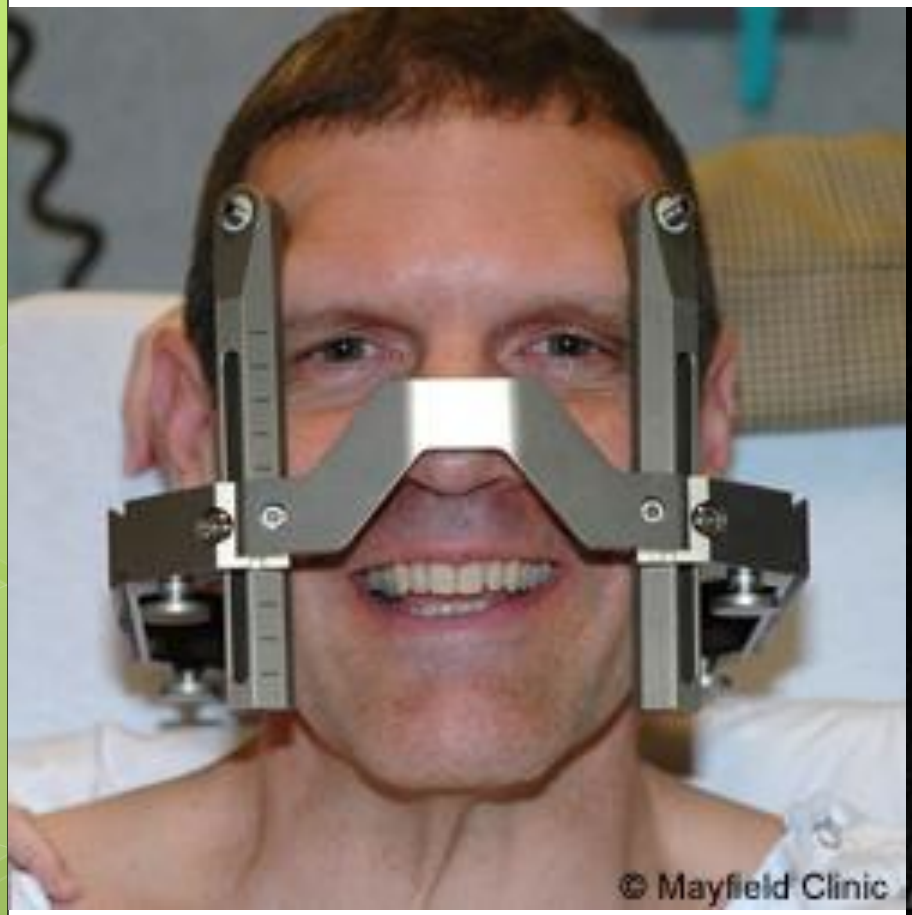
Neurosurgery for OCD??

- 10% of patient remain refractory to pharmacotherapy and CBT.
- DBS → complete resolution of symptoms in 50% of patients; some relief in over 75% of patients.
- Pretty safe (for a skull based surgery)
- Reversible + Adjustable
- Controlled!

"Mechanism of Action"

- The Nucleus Accumbens is the most common target of DBS in OCD patients.
- The nucleus is central to the limbic system: it has a key role in regulating drives, behaviors, and emotions.
- A dysregulation of the nucleus can lead to anxiety and irregular behaviors (i.e. compulsions)

How is DBS Surgery Perf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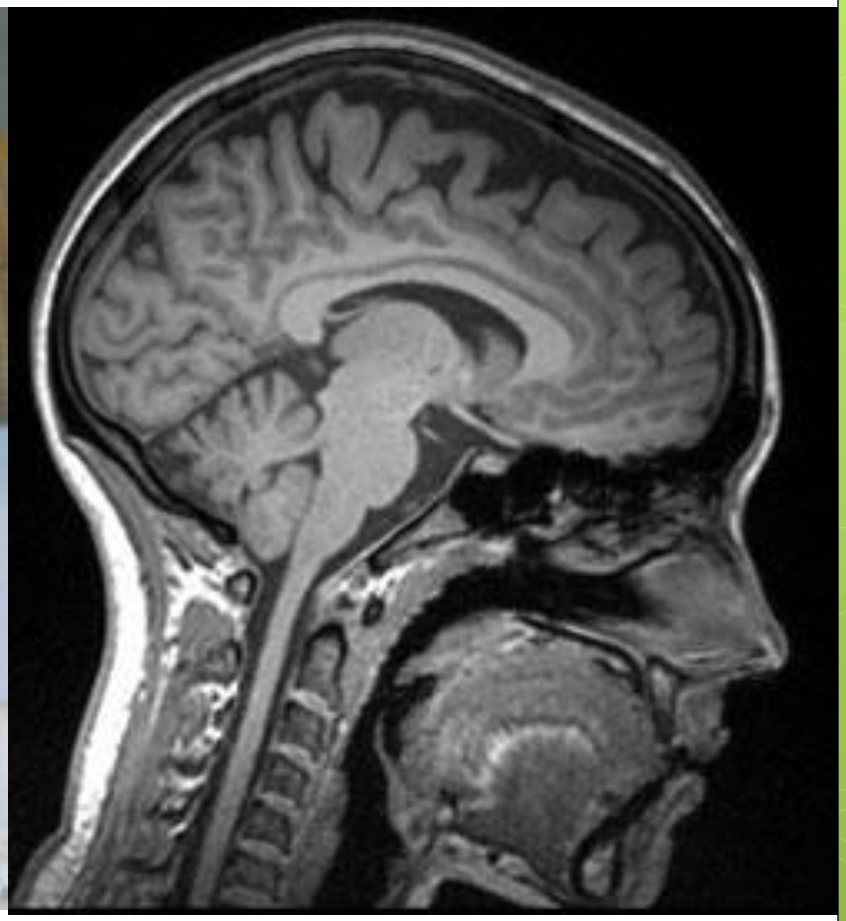

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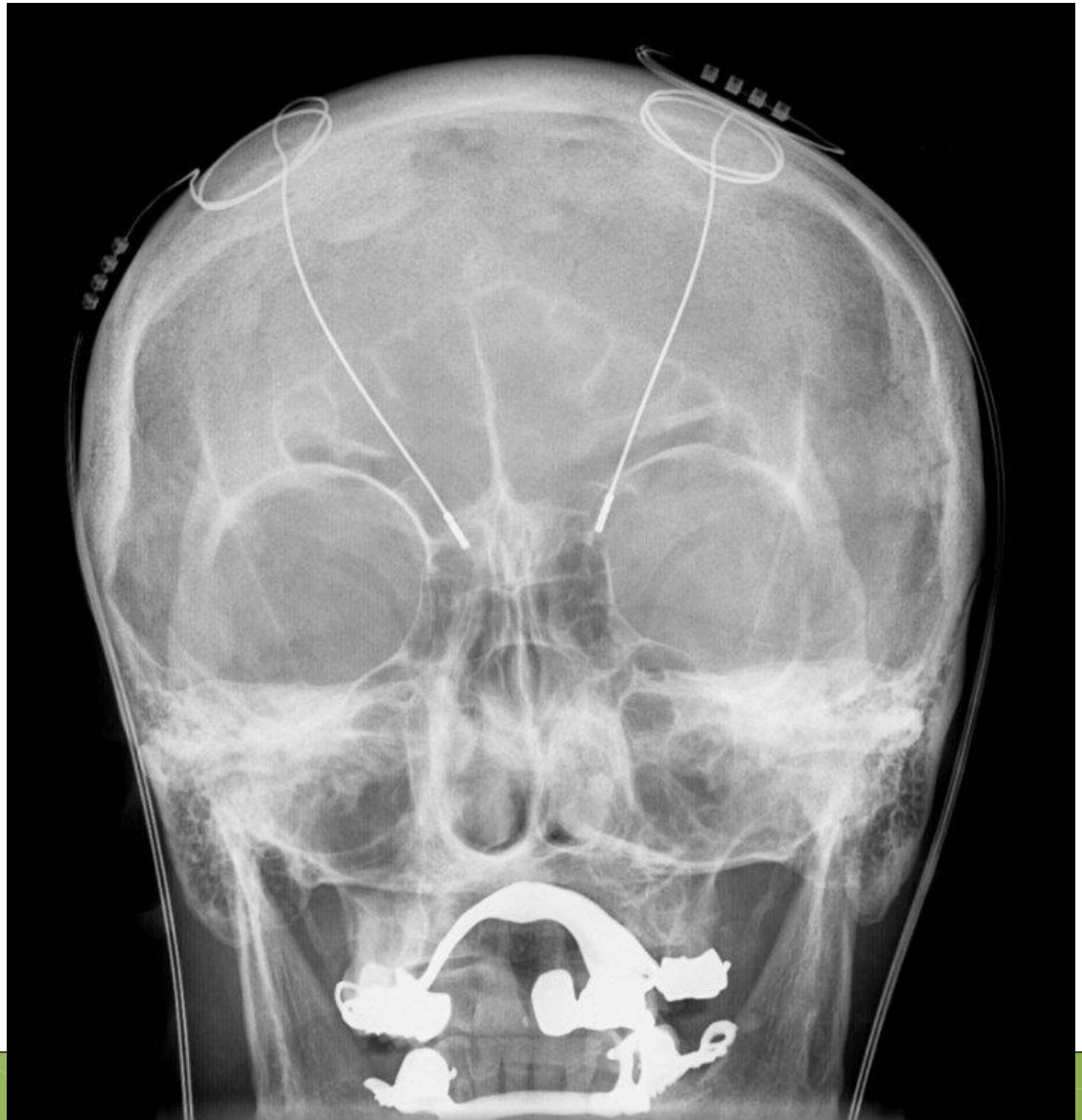

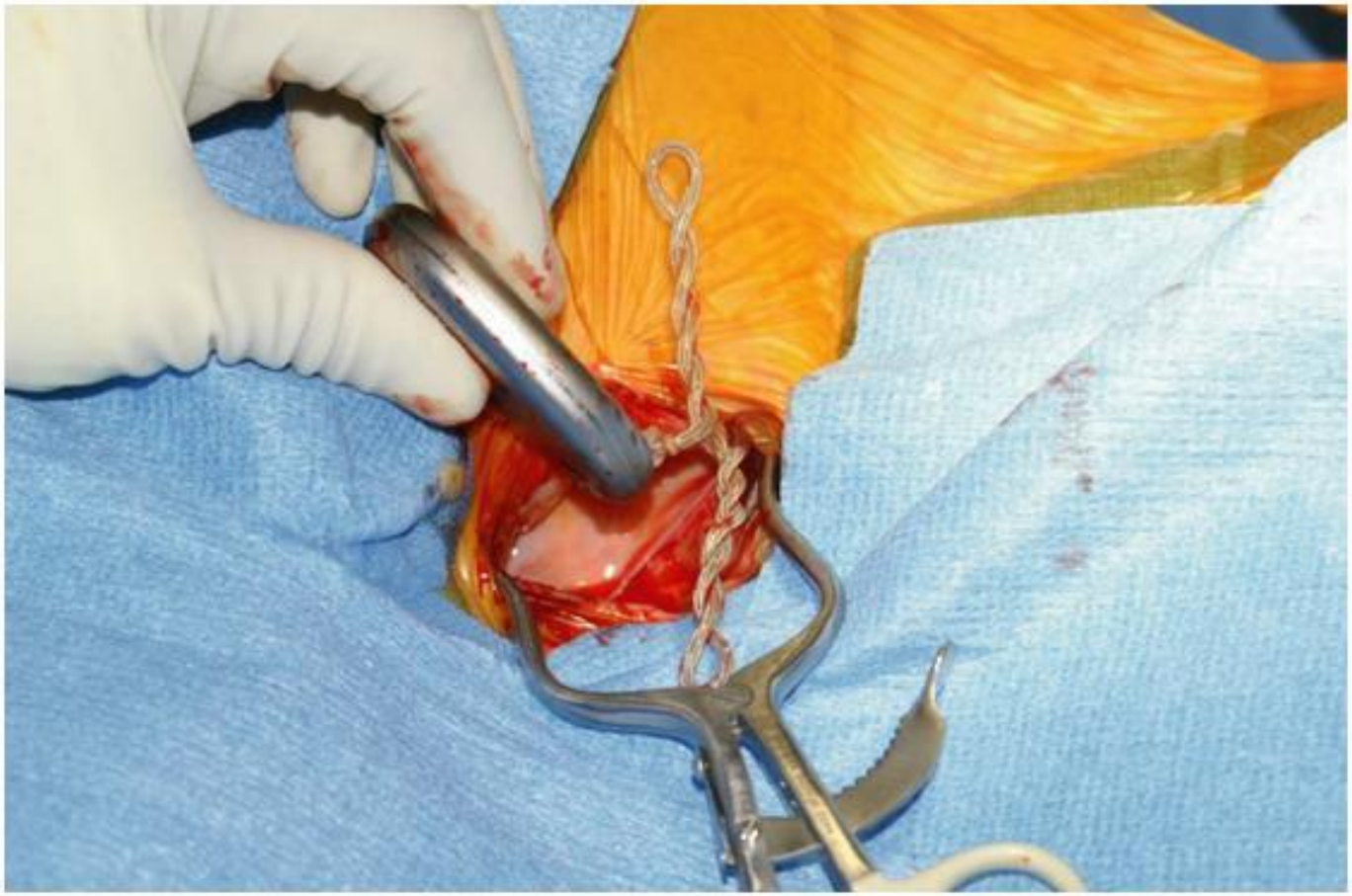

4.

Future Directions

- Addiction? ("All drugs of abuse converge on the medium spiny neurons of the Nucleus Accumbens)
- Other anxiety disorders
- Chronic pain
- Psychotic disorders