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Non-Medical Treatment
of Tics:

An Overview of CBIT and the
Rutgers Tourette Syndrome
Clinic

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Webinar Agenda

- 1. Overview of TS and Non-Medical Treatment
- 2. CBIT Overview
- 3. The Process of Conducting CBIT
- 4. The Rutgers Tourette Syndrome Clinic
- 5. Resources

Overview of TS and Non-
+ Medical Treatment

+ Overview of TS and Non-Medical Treatment

- Tourette Syndrome is a neurological disorder characterized by tics
- Tics are sudden, rapid, recurrent, non-rhythmic, repetitive **motor movements or vocalizations**
- Two categories of Tics:
 - Motor: movements Vocal (phonic): sounds
- Tics may be Simple or Complex
 - Simple tics: Involve only a few muscles or simple sounds
 - Complex tics: Involve multiple groups of muscles

+ Overview of TS and Non-Medical Treatment

- **Tic Disorders – DSM-V**
- Tourette's Disorder
 - Duration of more than 12 months, **both** multiple motor tics, and at least one vocal tic present during illness, although not necessarily concurrently, tics throughout day, nearly every day, onset before age 18
- Persistent (Chronic) Motor or Vocal Tic Disorder
 - Duration of more than 12 months, either motor tics or vocal tics, **but not both**, have been present, onset before age 18
- Provisional Tic Disorder
 - Motor and/or vocal tic lasting 4 weeks but not longer than 12 months

+ Overview of TS and Non-Medical Treatment: Key elements of tics for CBIT

1. **Tics are usually preceded by a physical urge**
2. **Tics naturally wax and wane**
3. **Tics can be influenced by internal and external environments**
4. **Tics are mostly involuntary, but there is often some temporary voluntary control with sustained effort**

+ Overview of TS and Non-Medical Treatment: Premonitory Urge

- Individuals can usually anticipate tics
- **Premonitory sensory urges generally precede tics**
 - "Tic Signal" "Tic Urge"
- A sensation occurring in muscles expressing the tic
- Described as a tension, or other physical feeling that is relieved (temporarily) by performing tic
- Like having an itch to scratch or having to sneeze

+ Overview of TS and Non-Medical Treatment: Wax and Wane

- Tics wax and wane (change/vary) naturally over time and context in multiple areas:
- Type, Number, Frequency, Intensity, Complexity, Presentation
- "Anything goes" "Expect the unexpected"
- Why the waxing and waning?
 - Neurobiological factors responsible for tic initiation, urges, and general waxing and waning
 - Interaction with environment may explain tic variability in specific contexts

+ Overview of TS and Non-Medical Treatment: Influenced by environment

- Tics are influenced by internal and external environments
 - Tics are often exacerbated by fatigue, illness, stress, excitement or environmental factors
 - The environment can be modified to promote tic increase or reduction

	Before a tic occurs (Antecedents)	After a tic occurs (Consequences)
Internal	Tic urge/stress/mood	Reduction of tic urge, other emotional reactions
External	Setting, presence of specific people, places, things	Disrupt preferred (video games) or non preferred activity (homework), reaction from others, comfort, teasing

+ Overview of TS and Non-Medical Treatment:

Involuntary Nature of Tics

- Tics are, for the most part, involuntary
- Neurological basis
- Premonitory urge is not “made up” or caused by the individual
- Would/could you make your body have an uncomfortable physical urge?

+ Overview of TS and Non-Medical Treatment:

Involuntary Nature of Tics

- The thing is ...there is a slight voluntary component to tics
- Can hold back somewhat, but not resist in long term
- On some occasions, with some tics
- Can usually be suppressed for only short periods of time
- Often requires much energy and is very distracting
- Tension builds and ultimately becomes unbearable
- “Voluntary” = only a short-lived element of control
- **Like trying to: Not scratch an itch or hold back a sneeze**

+ Overview of TS and Non-Medical Treatment:

Involuntary Nature of Tics

- “Voluntary” here only means there is an element of voluntary (Like you can voluntarily breathe)
- Important to resist being a “Tic Detective”
 - “I know they did that on purpose”
 - Almost always not helpful
- We do know the individual has tics so...
 - Assume that the behavior is at least partially (and possibly fully) related to TS and/other associated neurobiologically based conditions
 - i.e. ADHD, OCD, anxiety, emotional regulation

+ **Overview of TS and Non-Medical Treatment: Causes, Data, Course, Diagnosis**

- **Etiology: Unknown cause**
 - Neurobiological in nature, many genes involved, brain areas related to motor and reward (Basal ganglia, striatum) systems, prenatal factors
- **Epidemiology:**
 - 1 out of 100 children, higher percentage have transient tics
 - Males 3 to 4 times more likely
 - Widely reported across ethnic, cultural, and racial groups
- **Course:**
 - Usually begins between ages 5-10, mean onset 6-7
 - Tends to be most severe between 9-13
 - Tics typically diminish in adolescence, but some have tics into adulthood
- **Diagnosis: Physical/ Neurological exam, rule out other conditions**

+ **Overview of TS and Non-Medical Treatment: Treatment Guidelines**

American Academy of Neurologists (Pringsheim et al., 2019)
Guidelines for the treatment of tic disorders

- Educate individuals families/ caregivers about tic disorders
- Watchful waiting – for those without functional impairment
 - Aka keep an eye on it, many tics are transient and will go away on their own
- **Comprehensive Behavioral Intervention for Tics (CBIT)**
 - “High” confidence CBIT is more likely than supportive therapy and psychological education to reduce tics
- Medication
 - Depending on the medication, “Medium” to “Low” confidence that medication was more likely than placebo to reduce tics

+ **Overview of TS and Non-Medical Treatment: Tic Treatment Overview**

- **Medication-Medical**
 - Medications (anti-hypertensive, neuroleptics are common)
 - Botox, Deep brain stimulation has been tried in more severe cases
- **Non Medical Treatment**
 - Behavioral Treatment - CBIT (Habit Reversal, FBA, relaxation)
 - Supportive psychological treatment
 - Education, coping strategies, social skills, monitoring
- **Alternative Treatments**
 - Limited or anecdotal evidence but some families try
 - Ex. THC/CBD, supplements

+ Overview of TS and Non-Medical Treatment: Tic Treatment Overview

BIG (TREATMENT) PICTURE...

TS individuals often have their own combination of:

- **Coping strategies that work for them**
 - (Ex. chew gum, breaks, stress ball, environmental adjustments, etc..)
- **Standard treatments (medical, psychological)**
 - (Ex. Medication, habit reversal (CBIT), CBT, talk therapy)
- **Educational accommodations**
- **Helpful activities and alternative treatments**
 - (Ex. Sports, music, art, yoga, supplements, diet, mindfulness)

And these may change as kids change

+ Comprehensive Behavioral Intervention for Tics Overview

+ CBIT Overview

- Structured evidenced-based non-medical intervention for tics based on cognitive behavioral therapy
- CBIT is for children, adolescents and adults
- CBIT works on one tic at a time to help individuals learn tic management strategies through three main components:
 - Increasing awareness of the tic and the urge to tic (awareness training)
 - Using a competing behavioral response when the urge to tic is felt (competing response)
 - Making adjustments to daily activities that help to reduce the tics
- Developed by Woods et. al 2008

+ CBIT Overview

- Treatment is based on the Comprehensive Integrated Model of TS (Woods, Piacentini, and Walkup, 2007)
- 1. Tics have a neurological basis and occur due to genetic/neurological factors
- 2. Tic expression influences and is influenced by a person's internal and external environments
- The environment in interaction with the underlying neurobiology shape tic expression

+ CBIT Overview: Randomized Controlled Studies

- CBIT compared with supportive therapy and education, resulted in greater improvement in symptom severity among children with Tourette and chronic tic disorder (Piacentini, Woods, Scahill, et al., 2010)
- CBIT was found to significantly decrease tic symptoms and was determined to be a safe and effective intervention for adults with Tourette syndrome (Wilhelm, Peterson, Piacentini, et al., 2012)

+ CBIT Overview: Components

- Psychoeducation of TS/Tic disorders
- Function-based assessment and intervention
- Habit Reversal Training (HRT)
 - Awareness Training
 - Competing Response
 - Social Support
- Relaxation training

+ CBIT Overview: Goals

The goals of CBIT are:

- Reduce the symptoms of the tic and tic urge
- Develop and teach tic management strategies
- Boost social confidence and self-efficacy
- Learn about tics

(Remember CBIT is not a cure)

+ CBIT Overview: Treatment overview

- Treatment is typically about 8-12 sessions
 - Can be shorter or longer in duration depending on the individual
- Appropriate for children 9+, teens and adults
- Can be adapted and work for younger children 5-8 years old ("CBIT Jr")
 - Really depends on the child, includes rewards system
 - Can focus more on function-based interventions if child is not ready for HRT
- Can use one or all components of CBIT depending on need
 - Often HRT can be effective on its own

+ CBIT Overview: Treatment overview

- Treatment is often
 - Delivered by a psychologist or other mental health professional using an individual therapy model
- Involves family collaboration/involvement in:
 - Assessment
 - Education
 - Modeling and demonstrating
 - Practicing Habit Reversal
 - Implementing and monitoring function-based interventions
 - Practicing relaxation

+ CBIT Overview: Treatment overview

- Along with an individual therapy model, CBIT has been delivered via:
 - Online training program (tichelper.com)
 - Groups
- A diverse group of trained professionals such as nurses, physical therapists, occupational therapists, social works, neurologists, and autism specialists

+ CBIT Overview: Psychoeducation

- Very important!
- Learn about tic disorders
- The behavioral model of tic disorders
- How CBIT works
- Answers questions for individuals and families
- Addresses treatment motivation (is the child ready, willing, and able to get started)

+ CBIT Overview: Functional Assessment/ Intervention

Functional assessment/intervention involves

- Identifying situations that precede/trigger tics, and responses to the tics after they occur that can make them worse.
 - Antecedents: Assesses whether tic seems better or worse in a particular situation (ex. home, school)
 - Consequences: What happens after a tic occurs and may be reinforcing it (ex. Other's reactions)
- Using this information to develop strategies for modifying the environment to reduce tics

+ CBIT Overview: Functional Assessment/ Intervention

Examples of some interventions that could be used

- Antecedent intervention examples:
 - Educate others (siblings, teachers)
 - Establish routines
 - Prompt practicing of Habit Reversal in situations tic happens more often
- Consequence intervention examples:
 - Have others ignore tics
 - Reinforce practicing of Habit Reversal
 - If have to leave classroom bring work

+ CBIT Overview: Habit Reversal

- Habit Reversal Training is at the core of CBIT – Essential component
- Not a new evidenced based treatment, was developed and studied by Azrin and Nunn nearly 50 years ago– Was shown to be effective for tics then
 - (Can check out their book Habit Control in a Day, 1977)
- “Rediscovered?” and studied in the 1990s-2000s (Dr. Woods)
- Three main components
 - Awareness training
 - Competing response
 - Social Support

+ CBIT Overview: Habit Reversal Training

Behavioral reinforcement of tics

- Negative reinforcement: Removing something increases behavior (avoidance, escape)
- Tics are negatively reinforced because they temporarily remove the unpleasant sensation from premonitory sensory urges (“Tic urges”)
- Tics make an unpleasant urge go away, but only temporarily, so the cycle continues
- Like scratching an itch

**+ CBIT Overview:
Habit Reversal Training**

- HRT breaks the cycle of reinforcement through:
 - Awareness training (AT)
 - Describing the tic in detail
 - Perceiving, describing, and practicing awareness of the "Tic Urge"
 - Competing Response (CR)
 - Catching the tic before it happens and engaging in an incompatible or opposite behavior
 - Holding this CR for 1 minute or until the urge goes away
- Social Support from family, and at home practice

**+ CBIT Overview:
Habit Reversal Training**

- The process of being aware of a sensory urge, resisting the urge to tic, and holding the Competing Response for 1 minute or until the urge goes away is very difficult
- Individual is asked to endure the unpleasant urge until it naturally subsides (Habituation/ Inhibitory Learning)
- This process creates new learning, and a reduction in the "tic signal" being sent ("Retrain your brain")
- Less "Tic signal" = less tic
- **HRT is easier to describe than it is to do**
 - Imagine not scratching a bad mosquito bite, or holding back a sneeze

**+ CBIT Overview:
Habit Reversal Training**

- It is not just learning skills or a method, the experience of holding a CR is necessary
 - Need to "go through it"
- Key elements of a competing response for tics:
 - It is not a replacement behavior for a tic which would satisfy the urge another way
 - Must be incompatible with tic and not satisfy the urge
 - Must not be obvious to others, so individual can use it in real life
 - No external or other objects used
 - **Unique for each tic, and individual**

+ CBIT Overview: Habit Reversal Training

- Social Support
 - Often parent or guardian
- Role:
 - Positive reinforcement for effort in doing CRs
 - Prompts/reminders when forget to engage in CR
- Focus should be on CRs not tics
- External reinforcement may be helpful
 - Rewards for efforts

+ CBIT Overview: Relaxation Training

- Can be helpful for managing tic symptoms in the moment, but not core element of CBIT
- Teaches relaxed breathing and progressive muscle relaxation (PMR)
 - Relaxed breathing – slow “belly” breathing
 - PMR – tightening and relaxing groups of muscles
- Works on practicing these methods in situations where tensions might arise

+ The process of conducting CBIT

+ Process of Conducting CBIT

- Typically short-term, but can be used over longer periods of time
- A goal is to have individual do CBIT on their own when they finish treatment
 - What to do if tics return
 - Booster sessions are often helpful
- Goes at a pace that is right for the individual
- Habit Reversal is often primary focus involves:
 - Weekly review and rating of tics, data collection
 - Homework, practice (more on this...)
 - Support and understanding from families (schools)
 - Can be fun to practice
 - talk, games, videos

+ Process of Conducting CBIT: Example of a HRT session

- Check in with parent and client and review homework
- Review and rate all tics using a 1 to 10 scale (SUDS)
- Select tic to work on that day
 - Often the one that is bothering the individual the most
- Work on AT, CR, and do as many trials as needed
- Review with parent and client at the end of the session
- Give homework

+ Process of Conducting CBIT: Motivation and avoiding burn-out

- Motivation for treatment is essential
- Who is bothered by tics? Who wants treatment?
 - Parents? Kids?
- If kids are not ready, willing, and able
 - Assess if child is developmentally ready
 - If child is on the fence: might try some rewards to motivate
 - Could be best to wait until the child is ready
- Parents are strongly encouraged to not "hover" and overly push child to practice

+ Process of Conducting CBIT: Practice

- HRT is practiced in session and then individual is asked to practice at home
- The ideal would be to practice as much as possible, until tic stops, but usually not practical to practice that much
- Kids can quickly learn to hate CBIT/HRT if they feel a lot of pressure to "Stop the tic"
 - This is probably the most serious side effect of CBIT
- Often having one structured practice a day, with participation in session leads to tic reduction
- The coach effect
 - People often do the best job while with their therapist

+ Process of Conducting CBIT: What results to expect

- Each individual, and each tic will respond differently
- Can see rapid tic reduction in some cases
 - Often report back: "Haven't really noticed tic this past week"
- Best case: tic is greatly reduced in frequency, intensity and duration
- Some tics are "tricky" and do not respond as well
 - At least can learn how to manage the tics in the moment
 - Can often get some reduction
 - Might want to come back to it later, reassess

+ Process of Conducting CBIT: Side effects/ Concerns

- Research has not supported:
 - Tic suppression strategies will backfire
 - Treating one tic will make untreated tics worse
 - Replaces an old tic for a new tic
 - Paying attention to tics in therapy makes them worse

+ Rutgers University
Tourette Syndrome Clinic



+ Rutgers University
Tourette Syndrome Clinic



- Partnership between the Rutgers University Graduate School of Applied and Professional Psychology (GSAPP) and NJCTS
- Approaching it's 20th anniversary!
- Specialty outpatient clinic located at Rutgers GSAPP in Piscataway NJ
- Focuses on the psychological treatment of TS, and associated conditions (OCD, Anxiety, ADHD, Depression)
- Utilizes evidence-based treatments
 - Cognitive behavioral therapy including CBIT

+ Rutgers University
Tourette Syndrome Clinic



- Clinic therapists are advanced doctoral students from the GSAPP clinical and school psychology programs who are trained and supervised by Director Dr. Graham Hartke, PsyD.
- Our clients are referred from NJCTS, the Rutgers community, and the surrounding communities, schools and human service agencies. They consist of children, adolescents, adults with tics, and the parents and other family members of individuals with TS
- Services offered: Individual and family therapy, assessment, and groups for children, teens and college students

**+ Rutgers University
Tourette Syndrome Clinic**



- Our offices are located at 41 Gordon Rd Piscataway NJ, 08854
- During COVID-19 the TSC is working remote
- <https://gsapp.rutgers.edu/centers-clinical-services/tourette-syndrome-clinic/about-us>
- Phone: (848) 445-6111 ext. 40150
Email: tsc@gsapp.rutgers.edu



+ Resources

- If interested in finding CBIT treatment:
- In New Jersey you can contact the Rutgers TS Clinic or NJCTS.org
- Nationally the Tourette Association of America has a listing of trained CBIT certified providers on its website
 - <https://tourette.org/research-medical/cbit-overview/>
- Online CBIT training: tichelper.org

+ Questions

- Questions? Thank you
- Contact information
 - Graham Hartke, Psy.D.
 - Licensed Practicing Psychologist (NJ License # 5014)
 - NJ Certified School Psychologist
 - Private Practice Info
 - (973) 228-2299 www.westessexpsych.com 104 Eagle Rock Ave Roseland, NJ 07068

+ References

- Woods, D. W., Piacentini, J. C., & Walkup, J. T. (2008) Treating Tourette Syndrome and Tic Disorders: A Guide for practitioners. Gilford: NY
