An update on behaviour therapy for Tourette syndrome and chronic tic disorder

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Summary of treatment guidelines

- Psychoeducation is generally recommended as an initial intervention to all patients regardless of symptom severity

- Behaviour therapy (BT) is generally recommended as a first-line treatment
  - Fewer adverse effects compared to medication
  - Two modalities of BT are recommended
    - CBIT/HRT
    - ERP

- Medication is also an evidence-based treatment option
New studies on BT since 2019

- Roughly an update since the 2019 ESSTS Hannover conference
- My selection of studies is not exhaustive
- I have identified a couple of themes

Making treatment more available: Younger population

Development and Open Trial of a Psychosocial Intervention for Young Children With Chronic Tics: The CBIT-JR Study

Making treatment more available: Younger population

**Bennett et al. (2020)**

- **Aim:** Adapt CBIT manual for children younger than 9 years of age, evaluate feasibility, acceptability, and preliminary efficacy
- **Design:** Open pilot trial
- **Sample:** N=15; 5-8 years; USA
- **Intervention:** Some of the adaptations included fewer sessions, larger parent involvement, HRT was delivered through “The Opposite Game”
- **Key results:** High attendance, high satisfaction, medium within-group effect size \((d=0.73)\) on the YGTSS-TTSS, effect maintained at 1-year follow-up

Making treatment more available: Fewer sessions

**Effectiveness of a modified comprehensive behavioral intervention for tics for children and adolescents with tourette’s syndrome: A randomized controlled trial**

Chia-Wen Chen, Huel-Shyong Wang, Hsul-Ju Chang, Chang-Wei Hsueh

Chen et al. (2020)

- **Aim**: Limited availability of therapists. Evaluate a shortened version of CBIT (4 sessions instead of 8)
- **Design**: Single-blind superiority RCT
- **Sample**: N=46, 6-18 years; Taiwan
- **Intervention**: CBIT+TAU vs. TAU
- **Key results**: Small between-group effect ($d=0.44$) on the YGTSS-TTSS. The CBIT-TAU group further improved (in a within-group analysis) between post-treatment and the 3-month follow-up.
Heijerman-Holtgrefe et al. (2020)

- **Aim:** Limited availability of treatment. Evaluate an intensive ERP treatment in a group format, with focus on both tic severity and quality of life outcomes.
- **Design:** Open pilot study.
- **Sample:** N=14, 9-14 years; The Netherlands.
- **Intervention:** “Tackle your tics”-programme: Group-delivered intensive format (same dose as with 12 weekly sessions but delivered over 3 + 1 days) including: ERP, smartphone-app to assist with ERP-practice, coping strategy workshops led by young adult patients, relaxation training, and separate parent meetings.
- **Key results:** Decrease in YGTSS-TTSS between baseline and the 2-month follow-up ($\eta_p^2=0.41$). Increase in quality of life measured by the C&A GTS-QOL between the same timepoints ($\eta_p^2=0.58$). High treatment satisfaction.

Making treatment more available: Group-format


Zimmerman-Brenner et al. (2021)

- **Aim:** Evaluate CBIT in a group format
- **Design:** Single-blind superiority (?) RCT
- **Sample:** N=61, 8-15 years, Israel
- **Intervention:** Group-delivered CBIT vs. group-delivered education
- **Key results:** No between-group effect on the primary outcome measure (YGTSS-TTSS?). Between-group effect on the YGTSS Motor Tic Severity Score, as well as the PTQ. Increase in YGTSS Vocal Tic Severity in both groups at post-treatment.


Nissen et al. (2019)

- Aim: Evaluate combined HRT and ERP, in two delivery formats
- Design: Single-blind open RCT
- Sample: N=59, 9-17 years, Denmark
- Intervention: HRT+ERP, individual vs. group
- Key results: No between-group effect on the primary outcome measure YGTSS (any score). Large within-group effects on the YGTSS-TTSS for both the individual (ES=1.21) and the group format (ES= 1.38).

Internet-based guided self-help comprehensive behavioral intervention for tics (ICBIT) for youth with tic disorders: a feasibility and effectiveness study with 6 month-follow-up

Lilach Rachamim1,2, Sharon Zimmerman-Brenner1,3, Osnat Rachamim4, Hila Mualem1,2, Netanel Zingboim1, Michael Rotstein4

Rachamim et al. (2020)

- **Aim:** Evaluate the feasibility and preliminary efficacy of internet-delivered CBIT, with minimal therapist support
- **Design:** Single-blind (?) RCT
- **Sample:** N=41, 7-18 years, Israel
- **Intervention:** Internet-delivered CBIT, with parent- and minimal therapist support, vs. wait-list.
- **Key results:** Feasible to implement. Large between-group effect ($\eta_p^2 = 0.20$) on the primary outcome measure YGTSS-TTSS at post-treatment. Participants in the wait-list group were crossed over to CBIT at post-treatment, but a continued large within-group effect ($d=2.25$) was found for the CBIT group at the 6-month follow-up.
Andrén et al. (2019)

- Aim: Evaluate the feasibility, acceptability and preliminary efficacy of internet-delivered HRT and internet-delivered ERP, with minimal therapist support
- Design: Pilot (open) RCT
- Sample: N=23, 7-18 years, Sweden
- Intervention: Internet-delivered HRT and internet-delivered ERP, referred to as "BIP TIC"
- Key results: Feasible and acceptable. Preliminarily efficacious (ERP only). Large within-group effect ($d=1.12$) on the YGTSS-TTSS for the ERP group at the 3-month follow-up. Treatment gains were maintained up to the 12-month follow-up.

Hall et al. (2019)

- Aim: Evaluate the efficacy, long-term durability and cost-effectiveness of internet-delivered ERP, with minimal therapist support (BIP TIC)
- Design: Multicentre single-blind superiority RCT
- Sample: N=220, 9-18 years, United Kingdom
- Intervention: Internet-delivered ERP vs. internet-delivered psychoeducation
- Key results: Recruitment is completed but the trial results have not yet been published.

Andrén et al. (2021?)

- https://clinicaltrials.gov/ct2/show/NCT03916055
The ONLINE-TICS Study Protocol:
A Randomized Observer-Blind Clinical Trial to Demonstrate the Efficacy and Safety of Internet-Delivered Behavioral Treatment for Adults with Chronic Tic Disorders

Ewgeni Jakubovski, Cornelis Reichert, Annika Karch, Nadine Buddensiek, Daniel Breuer and Kirsten Müller-Vahl


Jakubovski et al. (2016)

- Aim: Evaluate internet-delivered CBIT, without therapist support
- Design: Multicentre single-blind superiority RCT
- Sample: N=166, >18 years, Germany
- Interventions: Internet-delivered CBIT vs. internet-delivered psychoeducation (superiority comparison), plus third smaller group of face-to-face CBIT (feasibility only, not powered for non-inferiority)
- Key results: Recruitment is completed but the trial results have not yet been published.
McGuire et al. (2020)

- Aim: Augment behaviour therapy with D-cycloserine (DCS)
- Design: Quadruple-blind RCT
- Sample: N=20, 8-17 years, USA
- Intervention: 1 session HRT + 50 mg DCS vs. 1 session HRT + placebo
- Key results: Large between-group effect in favour of HRT + 50 mg DCS ($d = 1.30$).
A new treatment for children with chronic tic disorders – Resource activation

Paula Viefhaus, Marion Feldhausen, Anja Görtz-Dorten, Helene Volk, Manfred Döpfner, Katrin Woitecki

Aim: Evaluate the preliminary efficacy of resource activation
Design: Open pilot study, with 8 weeks baseline phase
Sample: N=24; 8-19 years, Germany
Intervention: Resource activation
Key results: Small to medium within-group effects (ES=0.38-0.51) on the primary outcome (parent-rated SCL-TIC-P), the YGTSS-TTSS and video-observed motor tics, for the treatment phase.
Andrén et al. (2020)

- **Aim:** Evaluate the effectiveness of BT in a naturalistic clinical setting
- **Design:** Open naturalistic study
- **Sample:** N=74, 6-18 years, Sweden
- **Intervention:** ERP, HRT, or various combinations (including a few cases of concurrent medication), delivered at a tic disorder specialist outpatient clinic
- **Key results:** Tic severity (YGTSS-TTSS) improved after treatment with a large within-group effect size ($d=1.03$). Tic severity further improved through a 12-month follow-up period.
Summary and conclusions

- Several identified themes, primarily various ways to make BT more available to patients
  - Reduce costs
  - Reduce the need of trained therapists
  - Reduce the need of travel to specialist clinics
- No new large superiority RCTs have been published, no reason to change current treatment recommendations
- However, 3 large superiority RCTs on internet-delivered behaviour therapy are ongoing, which may have an impact on future treatment recommendations, if shown effective

Other studies published between 2019 and today


Other studies published between 2019 and today


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Thank you very much!

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