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## Tourette syndrome - An Informative Review

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### Abstract

Tourette syndrome (TS) is a childhood-onset neurodevelopmental condition characterized by multiple motor tics and at least one vocal tic persisting for more than 1 year. Research since 2020 has broadened explanatory models from dopamine-centric hypotheses toward polygenic risk, circuit dysfunction across cortico-striatal-thalamo-cortical (CSTC) loops, immune and neuroinflammatory contributions, and gut-brain interactions [1,5,6,25,29]. First-line management emphasizes evidence-based behavioral therapies (CBIT/ERP) [21,22], with pharmacotherapy reserved for more severe or functionally impairing tics [1,6]. Neuromodulation (TMS) and deep brain stimulation (DBS) are modern options for refractory cases [2-4,10,27,28], and several novel drugs such as D1-receptor antagonists are under investigation (e.g., ecopipam) [11,12]. Microbiome-targeted therapies have also shown preliminary promise [18-20,30]. This review integrates clinical, genetic, immunologic, microbiome, and therapeutic developments (2020-2025) and highlights research priorities.

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