兒童行為障礙與常見精神問題

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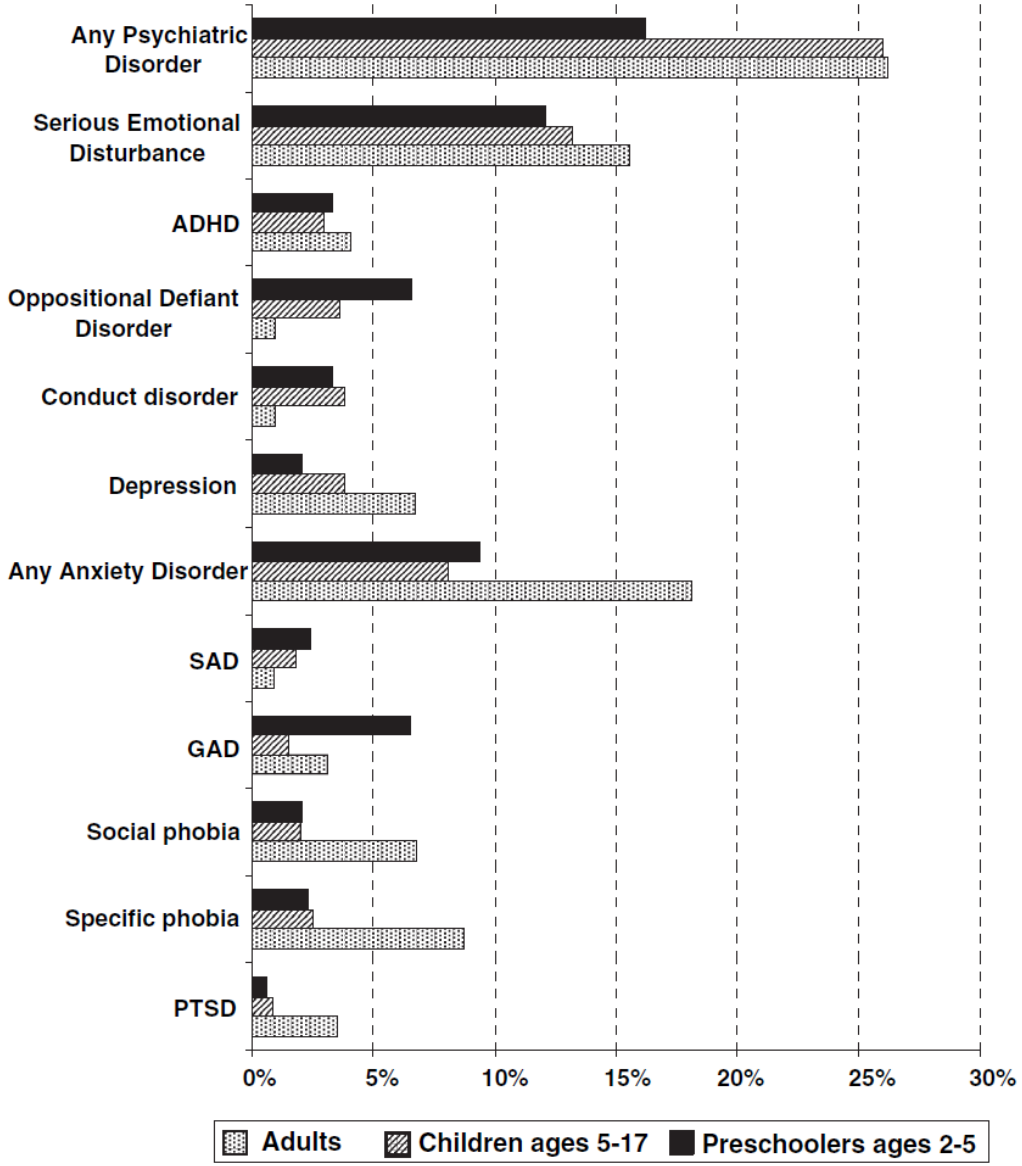
Case-control population-based study in Taiwan

Characteristic	No.(%) of Individuals With EP n=2629	Without EP n=7887	P-value
Comorbidity			
Depression	44(1.7)	24(0.3)	<0.001
Anxiety disorder	188(7.2)	104(1.3)	<0.001
Autism spectrum	25(1)	15(0.2)	<0.001
Conduct disorder	20(0.8)	12(0.2)	<0.001
Bipolar disorder	2(0.1)	1(0)	0.096
Sleep disorder	63(2.4)	52(0.7)	<0.001
Obsessive compulsive disord	8(0.3)	4(0.1)	<0.001
Learning difficulties	35(1.3)	12(0.2)	<0.001
Mental retardation	181(6.9)	39(0.5)	<0.001
Attention deficit disorder	200(7.6)	137(1.7)	<0.001
Migraine	78(3)	33(0.4)	<0.001

Res Dev Disabil. 2016;51-52:173-80

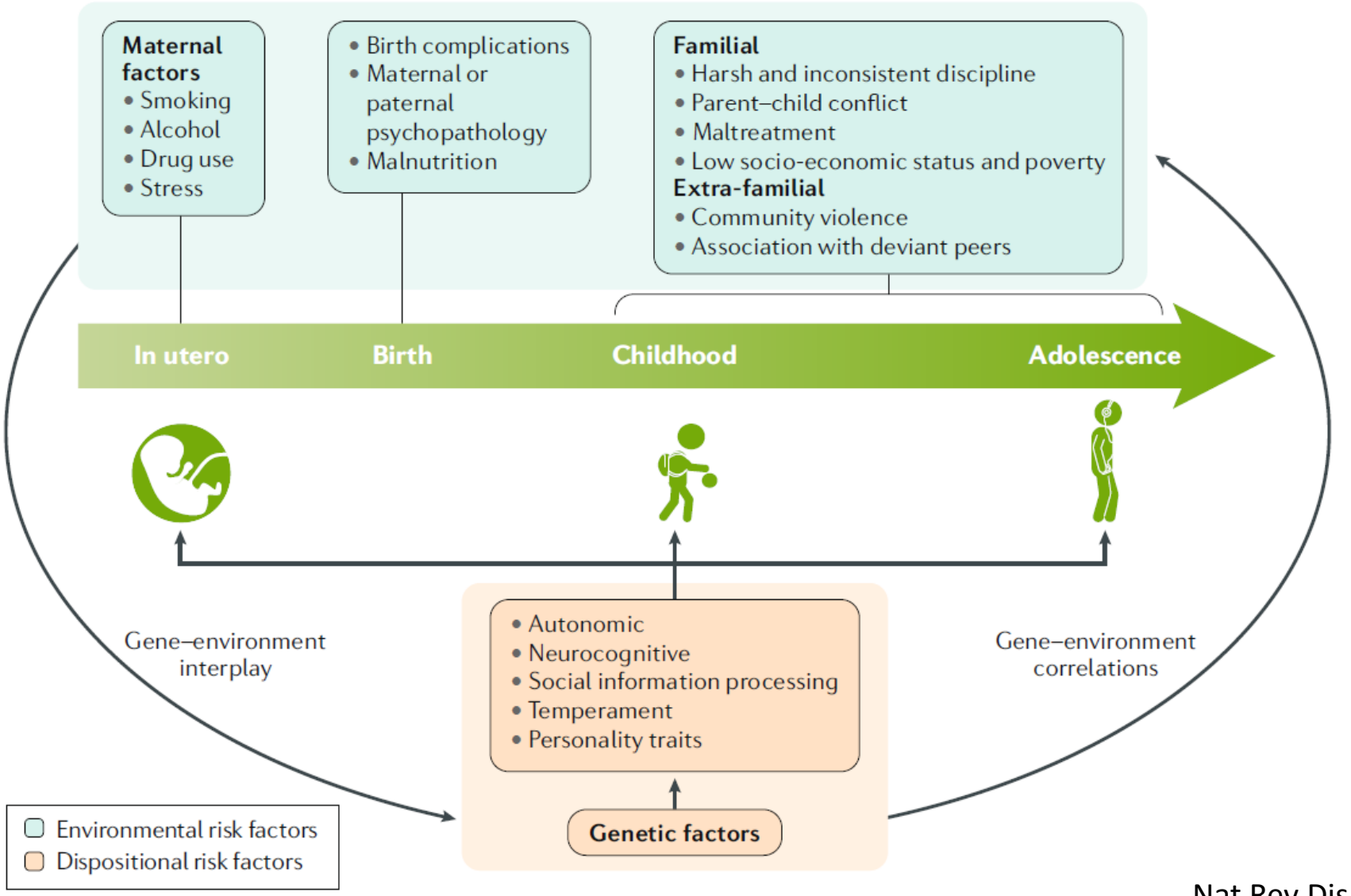


SAD: separation anxiety disorder
GAD: generalized anxiety disorder;
PTSD: post-traumatic stress disorder

Conduct disorders in children

- Conduct disorder (CD) often emerges in childhood or adolescence and is characterized by behavior that violates the rights of others, such as physical aggression towards people or animals, theft, property damage and rule violations.
- The prevalence of CD is ~3% in school-aged children.
- Up to 60% of adults who developed a mental disorder had CD.
- Although 50% of individuals show desistance or remission of symptoms, others have chronic symptoms and develop personality disorders and criminal behavior in adulthood.

Mechanisms/pathophysiology



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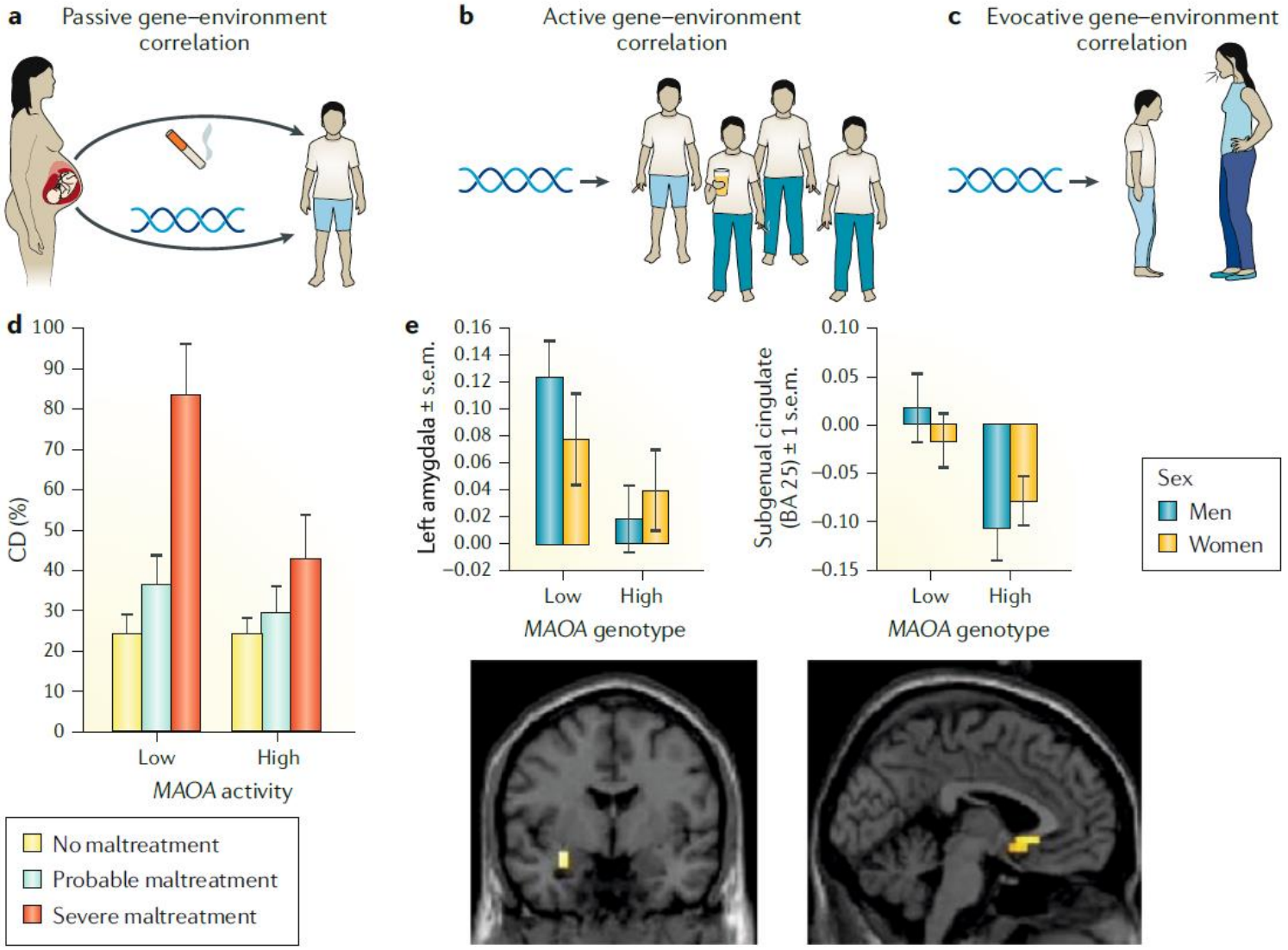
Genetic influence on conduct disorder



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Screening methods

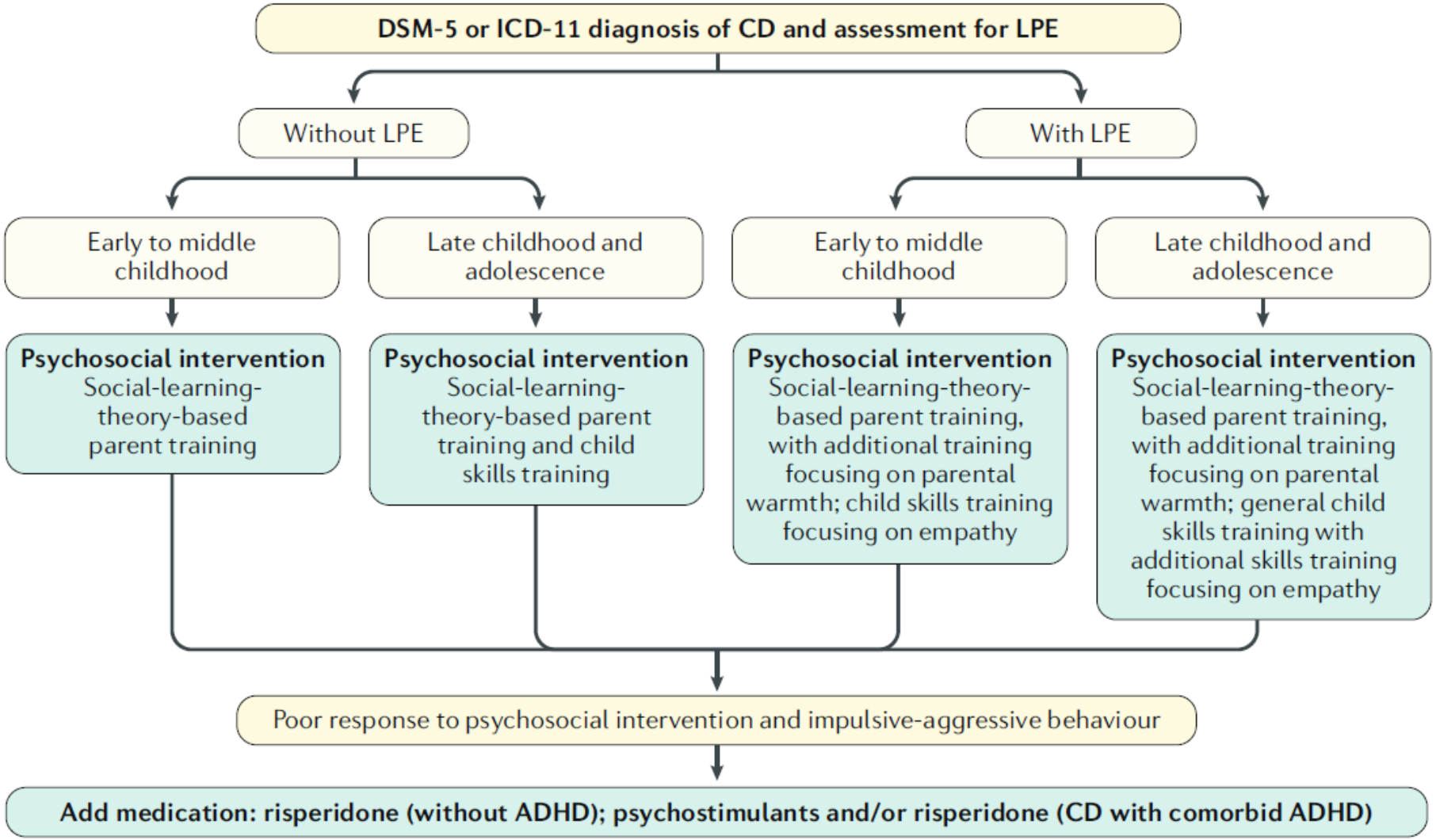
Approach	Methods	Reasoning
• Assess a wide range of conduct problems • Assess the amount of harm a child's behaviour is causing to other individuals • Assess the level of impairment that the child's behaviour is causing in multiple situations and settings (such as home, school, work and interpersonal relationships)	• Norm-referenced behaviour rating scales from multiple informants who interact with the child in different settings (such as ASEBA, BASC-3, ECBI, SDQ and SESBI-R)[a] • Unstructured clinical interviews with the child and other adults who see the child in different settings[a] • Behavioural observations of the child interacting with adults and peers (such as BASC-3 SOS or DPICS)[b] • Structured or semi-structured diagnostic interviews with the child and other adults who see the child in different settings (such as DISC or K-SADS)[b]	Children with CD can vary greatly in the types and severity of their antisocial behaviours
• Screen broadly for a wide range of common problems that often occur with CD, including psychiatric disorders (for example, ADHD, anxiety, depression, substance use disorders and self-harm), legal problems, educational difficulties (such as academic underachievement or dropping out of school) and social problems (such as poor peer relationships[280,286]) • Follow up positive screens with more in-depth assessments	• Norm-referenced behaviour rating scales that cover a broad range of potential problems in adjustment (such as ASEBA, BASC-3 or SDQ)[a] • Unstructured clinical interviews with the child and other adults who know the child well[a] • Structured or semi-structured diagnostic interviews with the child and other adults who know the child well (such as DISC or K-SADS)[b] • Review of school records[b] • Standardized measure of academic achievement (such as WJ–IV-TA)[b]	Children with CD often have multiple comorbid disorders and/or problems in adjustment
• Screen for a wide range of individual risk factors, such as low intelligence, sensation-seeking, inattention or impulsivity, rebelliousness and emotion regulation problems • Screen for a wide range of contextual risk factors that could contribute to the child's behaviour problems, such as harsh and inconsistent parenting, parental psychopathology, family conflict, friendships with delinquent peers and exposure to violence both inside and outside the home	• Norm-referenced behaviour rating scales that cover key domains of personality and temperament (such as ASEBA, BASC-3 or SDQ)[a] • Rating scales assessing parenting and family conflict (such as APQ or BASC-3)[a] • Unstructured clinical interviews with child and other adults who interact with the child[a] • Observations of parent–child interactions (such as DPICS)[b] • Standardized tests of intelligence (such as WISC-V or WASI)[b]	CD often results from multiple risk factors within both the child and his or her context
• Obtain history of when the child's behaviour problems first emerged (such as before or after age 10 years) • Assess for the presence of callous-unemotional traits	• Unstructured clinical interview with child and parents to provide history of behavioural problems[a] • Behaviour rating scales assessing callous-unemotional traits from child, parents and other informants (such as CPTI or ICU)[a] • Structured or semi-structured diagnostic interviews with child and parents that assess age at onset of behaviour problems (such as DICA, DISC or K-SADS)[b] • Review of school records[b]	There can be multiple causal pathways to CD, each involving somewhat distinct risk factors that could necessitate an individualized approach to treatment

ADHD, attention-deficit/hyperactivity disorder; APQ, Alabama Parenting Questionnaire; ASEBA, Achenbach System of Empirically Based Assessment; BASC-3, Behavioral Assessment System for Children, Third Edition; BASC-3 SOS, BASC-3 Student Observation System; CD, conduct disorder; CPTI, Child Problematic Traits Inventory; DICA, Diagnostic Interview for Children and Adolescents; DISC, Diagnostic Interview Schedule for Children; DPICS, Dyadic Parent-Child Interaction Coding System; ECBI, Eyberg Child Behavior Inventory; ICU, Inventory of Callous-Unemotional traits; K-SADS, Kiddie-Schedule for Affective Disorders and Schizophrenia; SESBI-R, Sutter-Eyberg Student Behavior Inventory-Revised; SDQ, Strengths and Difficulties Questionnaire; WASI, Wechsler Abbreviated Scale of Intelligence; WISC-V, Wechsler Intelligence Scale for Children-5th Edition; WJ–IV-TA, Woodcock Johnson 4th Edition Tests of Achievement. [a]Essential. [b]Helpful.

Management of conduct disorders

- Effective management of CD aims to reduce the core symptoms, improve emotion regulation in individuals with reactive aggression and emotion dysregulation, to enhance moral development and social skills and to reduce symptoms of comorbid psychiatric and developmental disorders.
- Effective management and treatment rely heavily on the involvement of mental health professionals and services.

Management of CD without comorbid disorders



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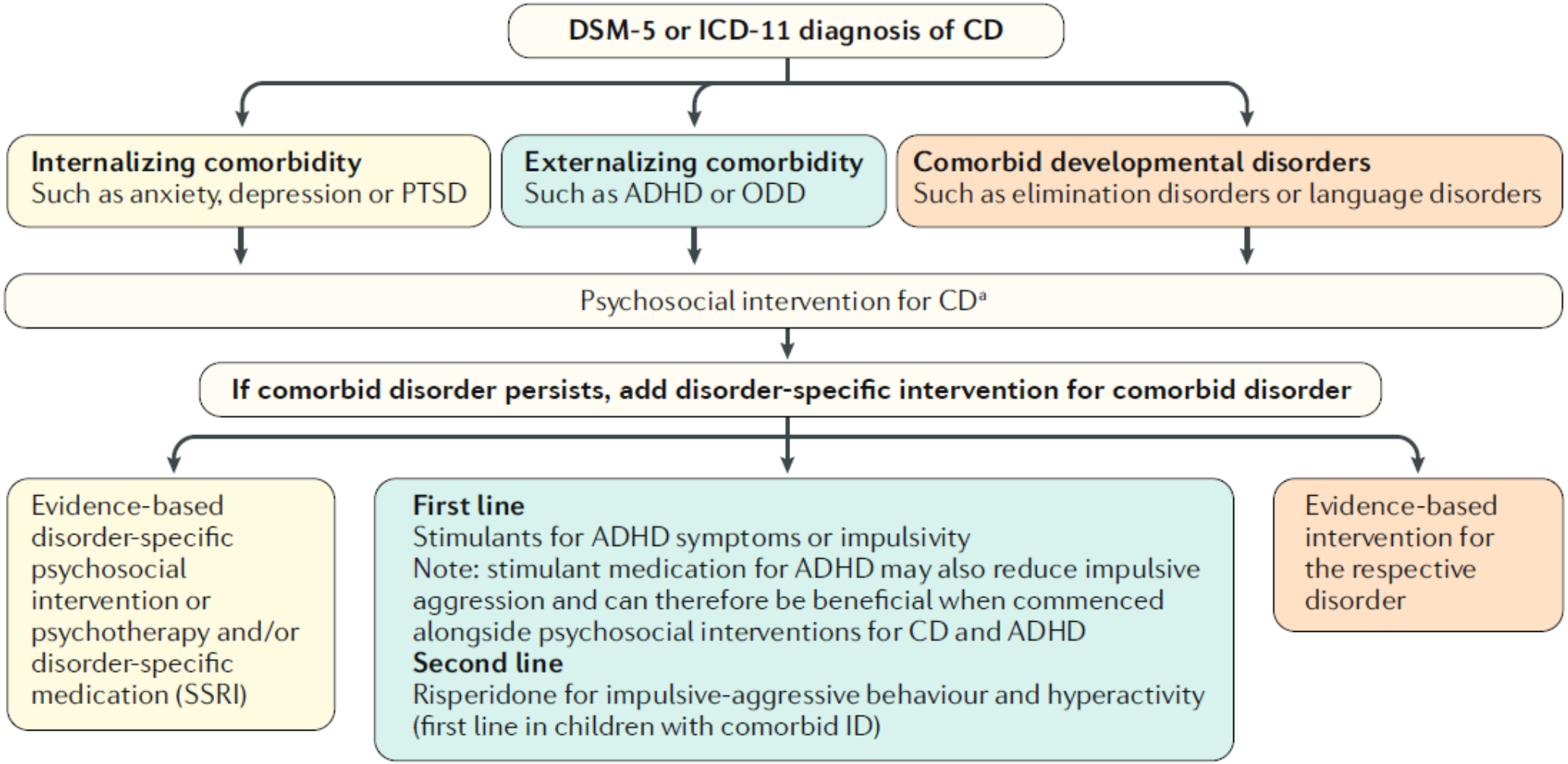
Management of CD in those with comorbid disorders



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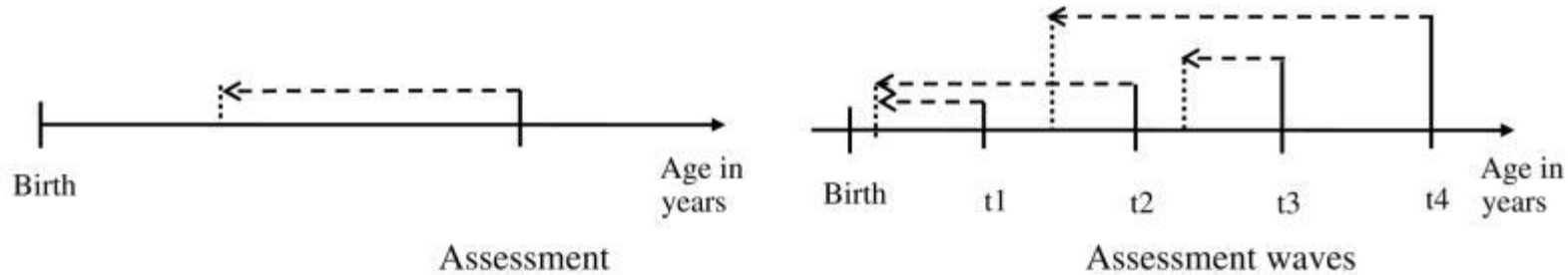
Anxiety disorders in children

- Childhood and adolescence is the core risk phase for the development of symptoms and syndromes of anxiety that may range from transient mild symptoms to full-blown anxiety disorders.
- Anxiety disorders are the most frequent mental disorders in children and adolescents.
- Although early anxiety syndromes may remit spontaneously, the vast majority of children and adolescents that have developed a threshold anxiety disorder will be affected by the same condition or other mental disorders (including other anxiety disorders, depressive disorders, or substance use disorders) over the further course of life.
- The secondary development of depressive disorders is a particularly frequent complication across the range of anxiety disorders.

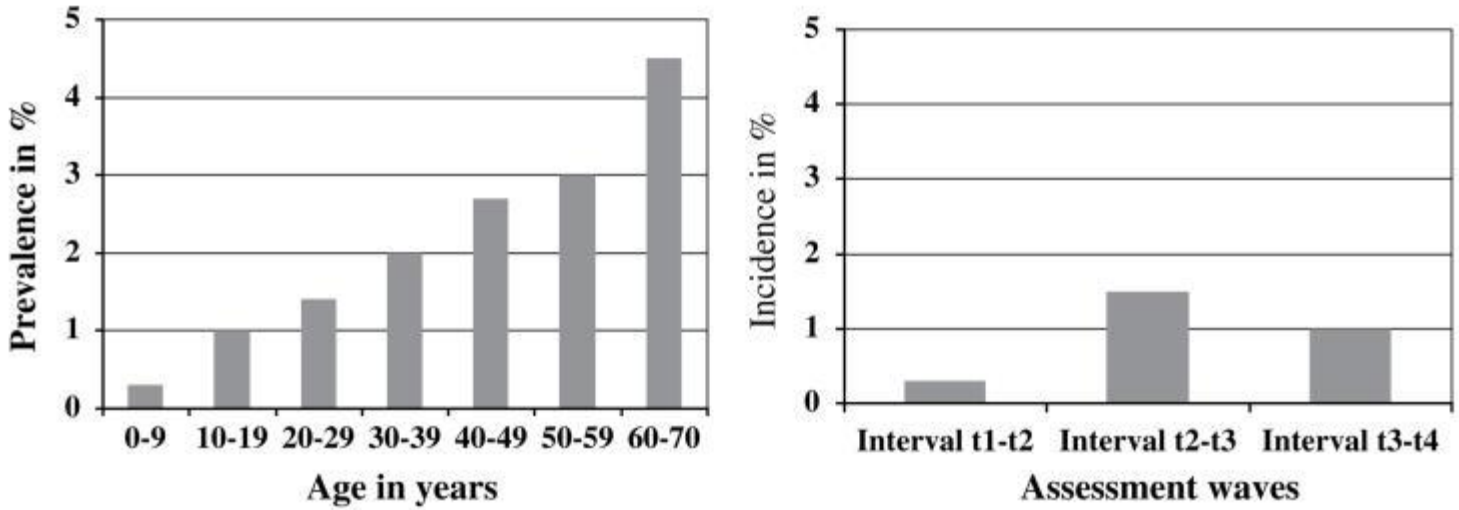
Cross-sectional studies

Longitudinal studies

Direct information on age of onset based on retrospective age of onset reports



Indirect information on age of onset based on prevalence and incidence estimates



Psychiatr Clin North Am. 2009

Symptoms of anxiety in children

- finding it hard to concentrate
- not sleeping, or waking in the night with bad dreams
- not eating properly
- quickly getting angry or irritable, and being out of control during outbursts
- constantly worrying or having negative thoughts
- feeling tense and fidgety, or using the toilet often
- always crying
- being clingy
- complaining of tummy aches and feeling unwell

Treatments for anxiety disorders in children

- Counselling can help child understand what's making them anxious and allow them to work through the situation.
- Cognitive behavioral therapy (CBT) is a talking therapy that can help child manage their anxiety by changing the way they think and behave.
  - It's most commonly used to treat anxiety and depression, but can be useful for other mental and physical health problems.
  - Although CBT cannot cure the physical symptoms of these conditions, it can help people cope better with their symptoms.
- Anxiety medicines may be offered to child if their anxiety is severe or does not get better with talking therapies.

What is Tourette Syndrome?

**Tourette Syndrome is a neurological disorder characterized by tics- involuntary, rapid movements and/or vocal outbursts
that occur repeatedly.**

The first case of Tourette Syndrome was diagnosed in 1825 by a French Physician and neurologist, Georges Gilles de la Tourette.

Tourette Syndrome

Causes

- No one knows.
- It is thought to be genetic.
  - Genes may just increase susceptibility for the disorder.
  - Monozygotic twins show a 50-70% concordance.
  - Dizygotic twins show a 9% concordance.
- Some studied noted abnormal frontal lobe discharges.

Prevalence

- 3 of every 1,000 children through 17 years of age and living in the United States.
  - Other studies using different methods have estimated the rate of TS at 6 per 1,000 children.
- 27% are reported as having moderate or severe forms of the condition.
- Tourette's affects all racial and ethnic groups.
- Males are affected 3 times more than females.
- More common in children.
  - Tourette's often decreases or goes away with age.

Clinical Features

- Involuntary movement
- Spasmodic
- Repetitive
- Stereotyped
- Nonrhythmic

- Affect any muscle group
- Exacerbated by stress
- Partially suppressible
- Subside at sleep

Characteristics of tics

- Simple Tics: sudden, brief, repetitive movements that involve a limited number of muscle groups
  - Motor Tics: tics involving movement of the body
  - Vocal Tics: noises that a person makes with their voice
- Complex Tics: distinct, coordinated patterns of movements involving several muscle groups

Diagnostic Features

- Simple motor tics

  brief rapid movements that typically involve only one muscle group— eg, eye blink, head jerk, shoulder shrug.

- Complex motor tics

  - abrupt movements that involve either a cluster of simple movements or a more coordinated sequence of movements

  - no purpose (eg, facial or body contortions)

  - seem to be purposeful (eg, touching, hitting, smelling, jumping, or obscene gestures)

  - a dystonic character

Diagnostic Features

- Simple vocal tics

  sounds and noises such as grunting, barking, yelping, sniffing, and throat clearing

- Complex vocalisations

  - syllables, phrases

  - echolalia (repetition of other people's words)

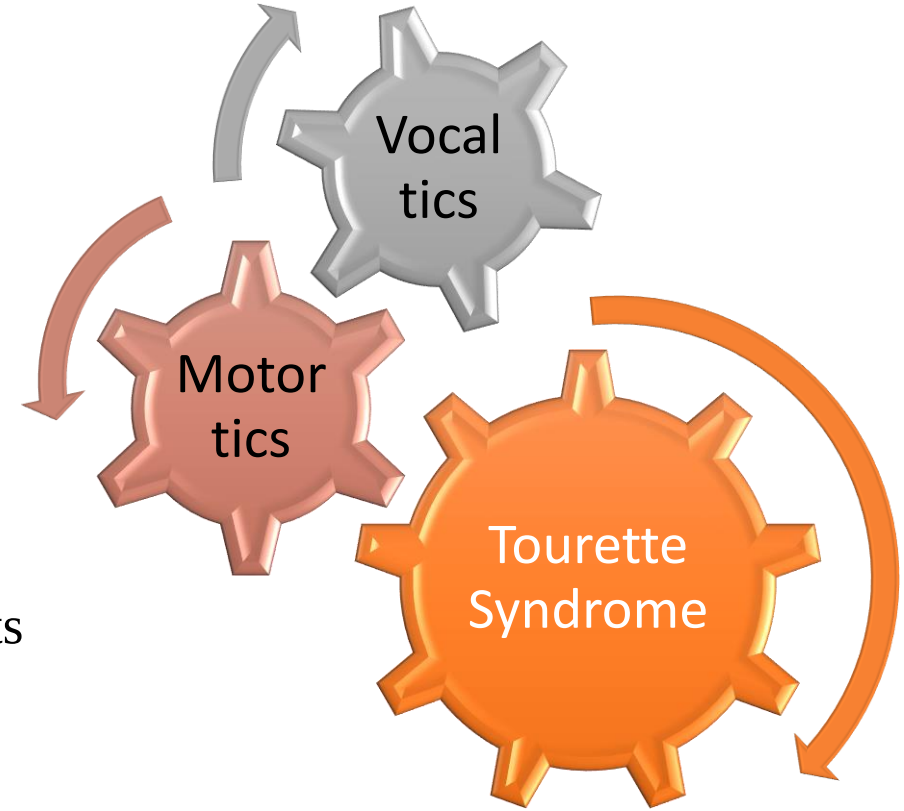
  - palilalia (repetition of one's own words)

  - coprolalia (uttering of obscene words)- 10% of patients

Diagnosis

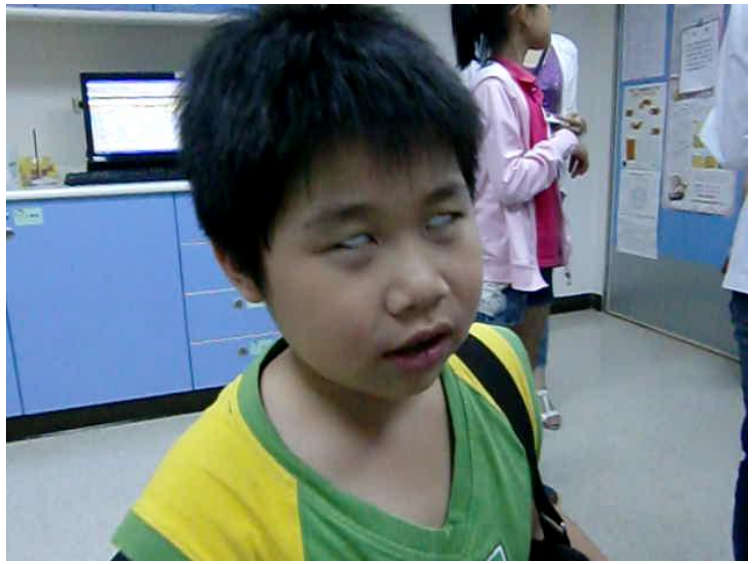
For Tourette Syndrome to be diagnosed, multiple motor tics and at least 1 vocal tic must be present over a period of 12 months, without a break of more than 3 months.

Motor	Vocal
blinking	barking
smelling	grunting
shoulder shrugs	meaningless shouts
jumping	repeating words



Tourette Syndrome

	Simple Tics	Complex Tics
Vocal Tics	Throat-clearing, Sniffing Grunting Snorting Barking Hiccupping Yelling	Using different tones of voice Repeating one's own words Repeating others' words Using swear words
Motor Tics	Blinking Facial Movements Shrugging the shoulders Arm jerking Head jerking Shoulder jerking Sticking the tongue out Finger flexing	Touching objects Hopping Jumping Bending Twisting Touching the nose Touching other people Obscene gesturing Flapping the arms



Serious Tics

- Coprolalia: uttering socially inappropriate words such as swearing
- Echolalia: repeating the words or phrases of others
- Self-harming tics: scratching oneself, punching oneself, hitting one’s head on hard objects.

Co-occurring Conditions

- 79% diagnosed with at least one additional mental health, behavioral, or developmental condition
- 64% ADHD
- 43% Behavioral or conduct problems (ODD or CD)
- 40% Anxiety problems
- 36% Depression
- Over 1/3 also have OCD
- Epilepsy

What? and When?

Attention Deficit Hyperactivity Disorder (ADHD)-

Onset-3 ½ years old/Possible remission-16-20 years

Motor tics-

Onset-5 ½ years old/Possible remission-16-20 years old

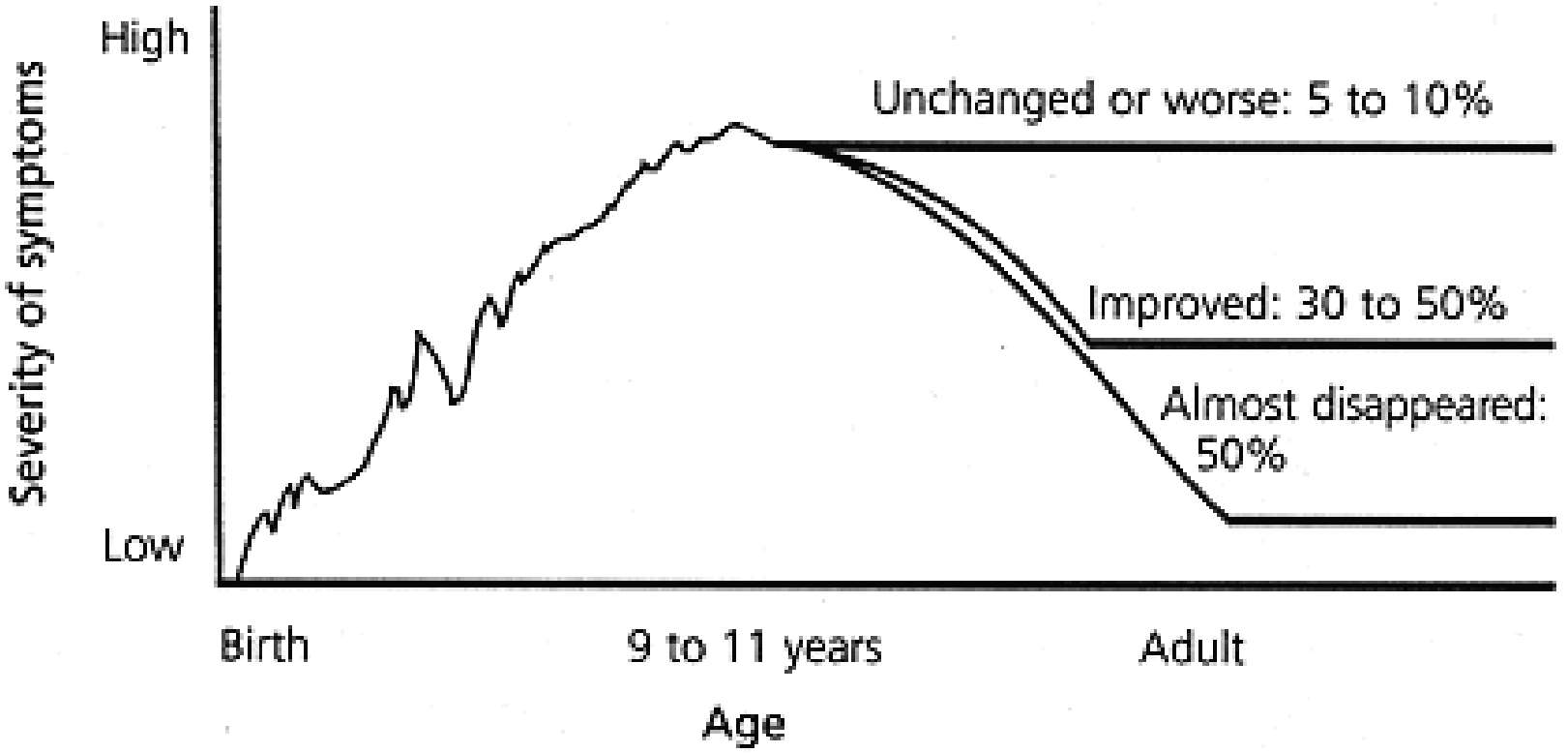
Vocal tics-

Onset-6 years old/Possible remission-16-20 years old

Obsessive Compulsive Disorder (OCD)-

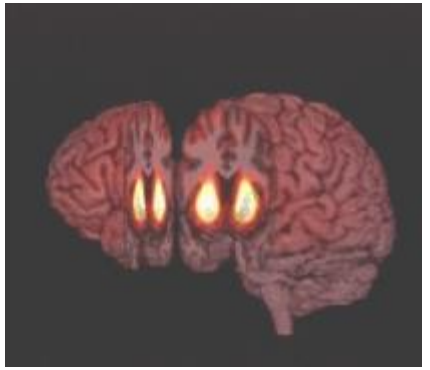
Onset-6 years old/Possible remission-16-20 years old

Clinical Course of TS



Early tic severity is not a good predictor of later tic severity and people with only chronic tic disorder are less impaired than those with coexisting disorders.

Pathogenesis



- Dopaminergic theory: enhanced synaptic dopamine release in the putamen
- Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal infection (PANDAS)
- Anti-basal ganglia antibody

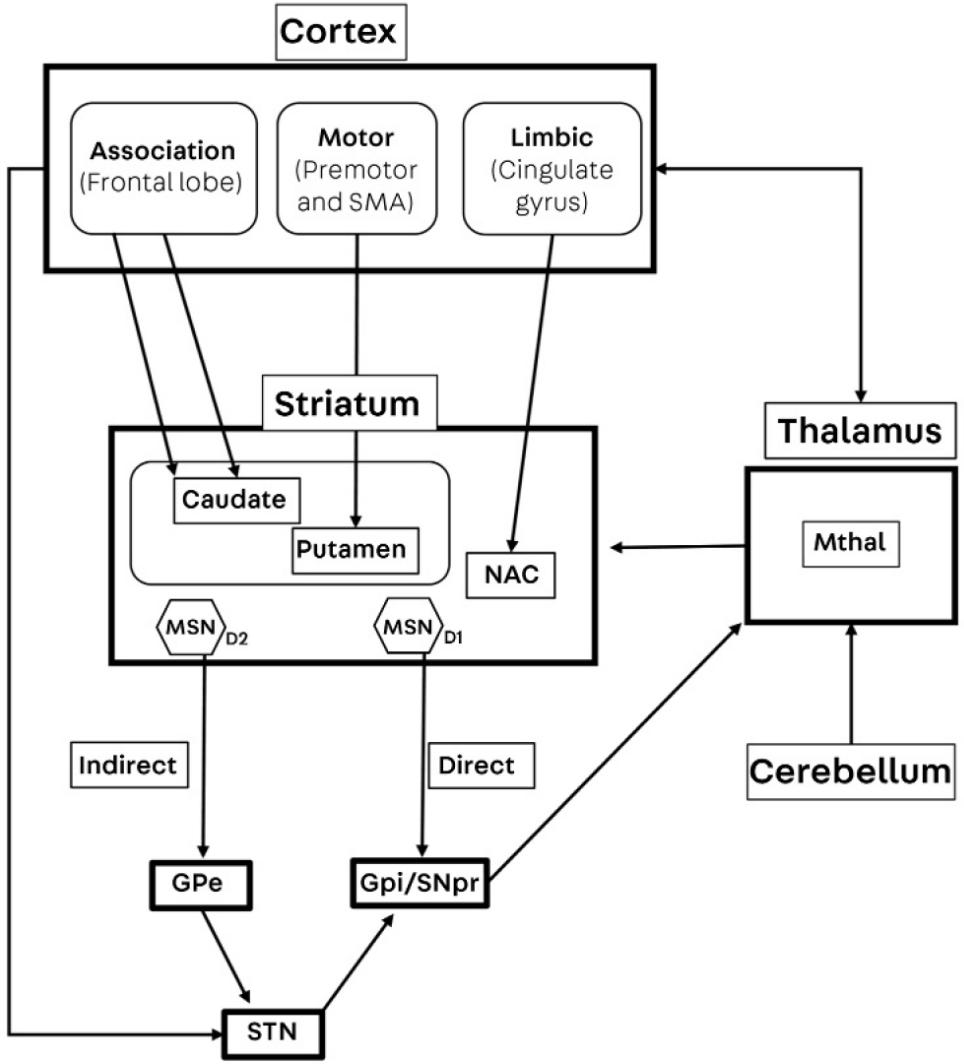


FIGURE 3-1

Cortical–basal ganglia–thalamocortical circuit.

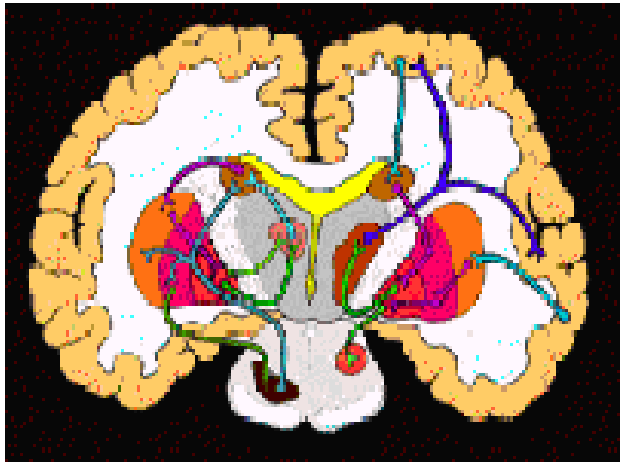
D_1 = dopamine D_1 receptor; D_2 = dopamine D_2 receptor; GPe = globus pallidus externus; GPi = globus pallidus internus; Mthal = motor thalamus; MSN = medium-sized spiny neuron; NAC = nucleus accumbens; SMA = supplementary motor area; SNpr = substantia nigra pars reticulata; STN = subthalamic nucleus.

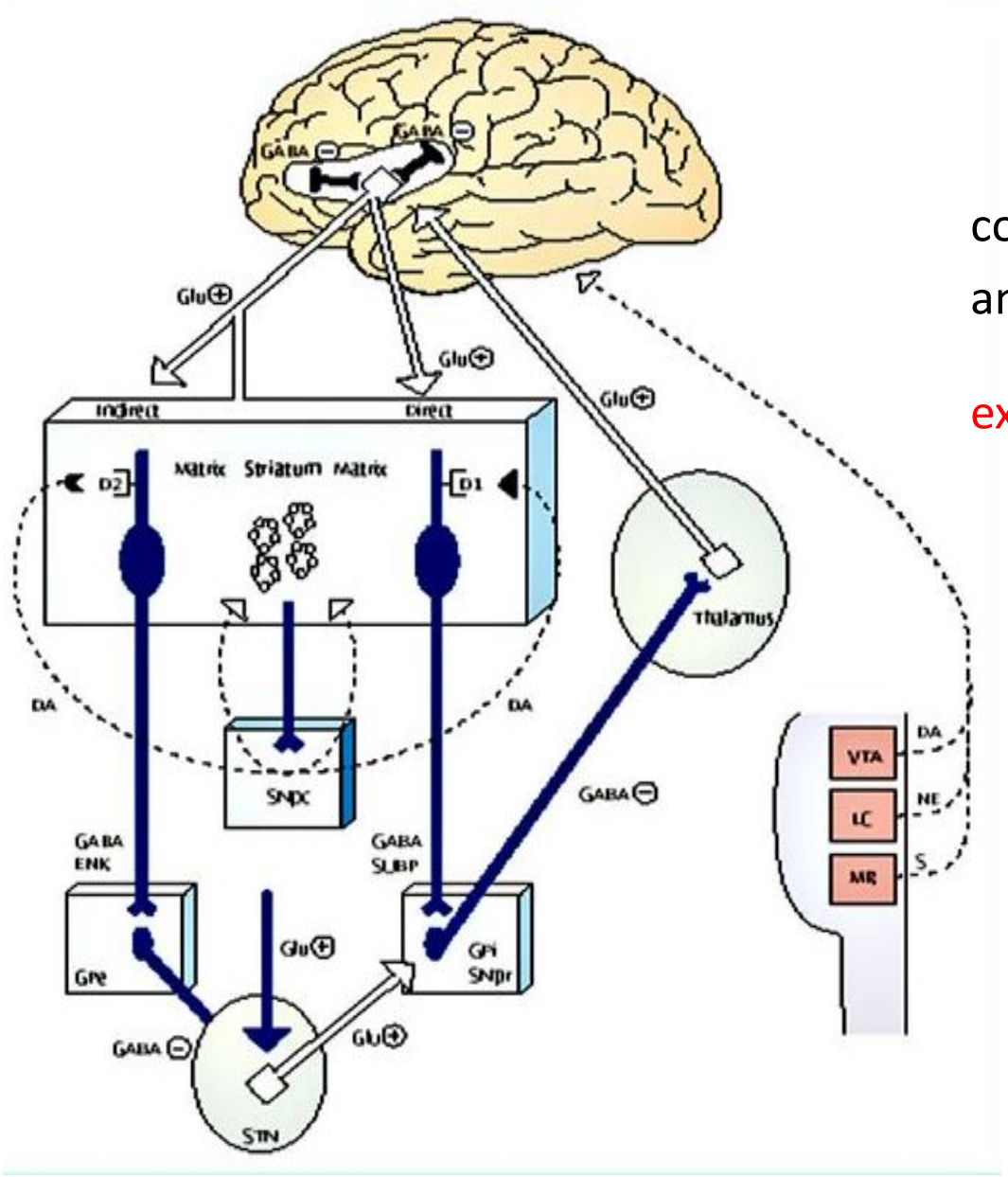
cortico-striato-thalamo-cortical circuits

GPe=globus pallidus externa

GPi=globus pallidus interna

SNpr=substantia nigra reticulata





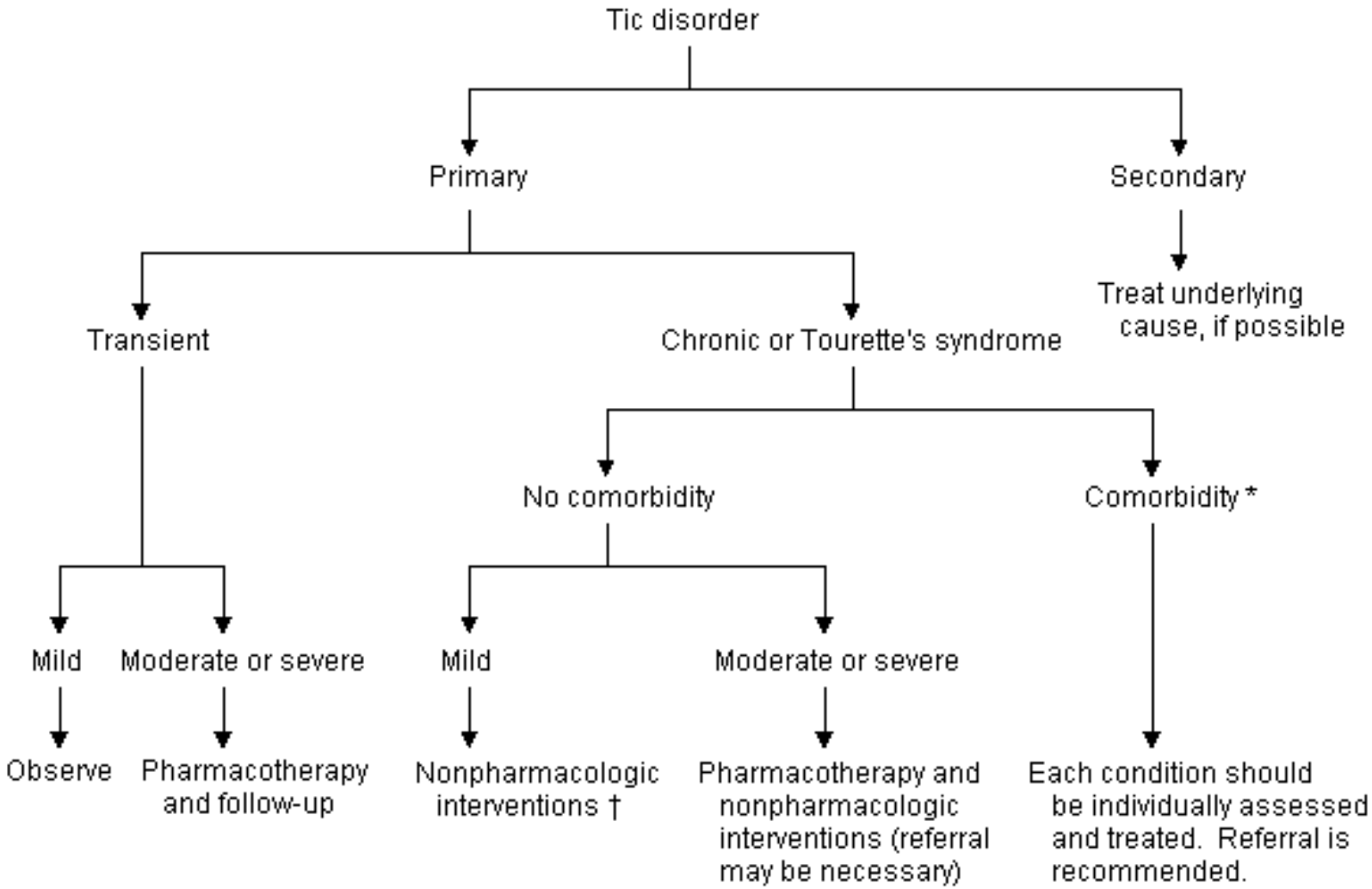
Pathophysiology of TS

cortico–striatal–thalamocortical pathway and ascending cortical inputs

excess excitation or diminished inhibition

DA=dopamine; ENK=enkephalins; Glu=glutamate; GPe=globus pallidus externa; GPi=globus pallidus interna; LC=locus coeruleus; MR=median raphe; NE=norepinephrine; S=serotonin; SNpc=substantia nigra pars compacta; SNpr=substantia nigra pars reticulata; SUBP=substance P; STN=subthalamic nucleus; VTA=ventral tegmental area.

Management


Tic disorder
Primary
Secondary
Transient
Chronic or Tourette's syndrome
Treat underlying cause, if possible
No comorbidity
Comorbidity *
Mild
Moderate or severe
Mild
Moderate or severe
Observe
Pharmacotherapy and follow-up
Nonpharmacologic interventions †
Pharmacotherapy and nonpharmacologic interventions (referral may be necessary)
Each condition should be individually assessed and treated. Referral is recommended.

Medications

Tics

- Clonidine (Catapres)
- Neuroleptics
  - Risperidone
  - Abilify
  - Pimozide (Orap)
  - Fluphenazine (Prolixin)

OCD

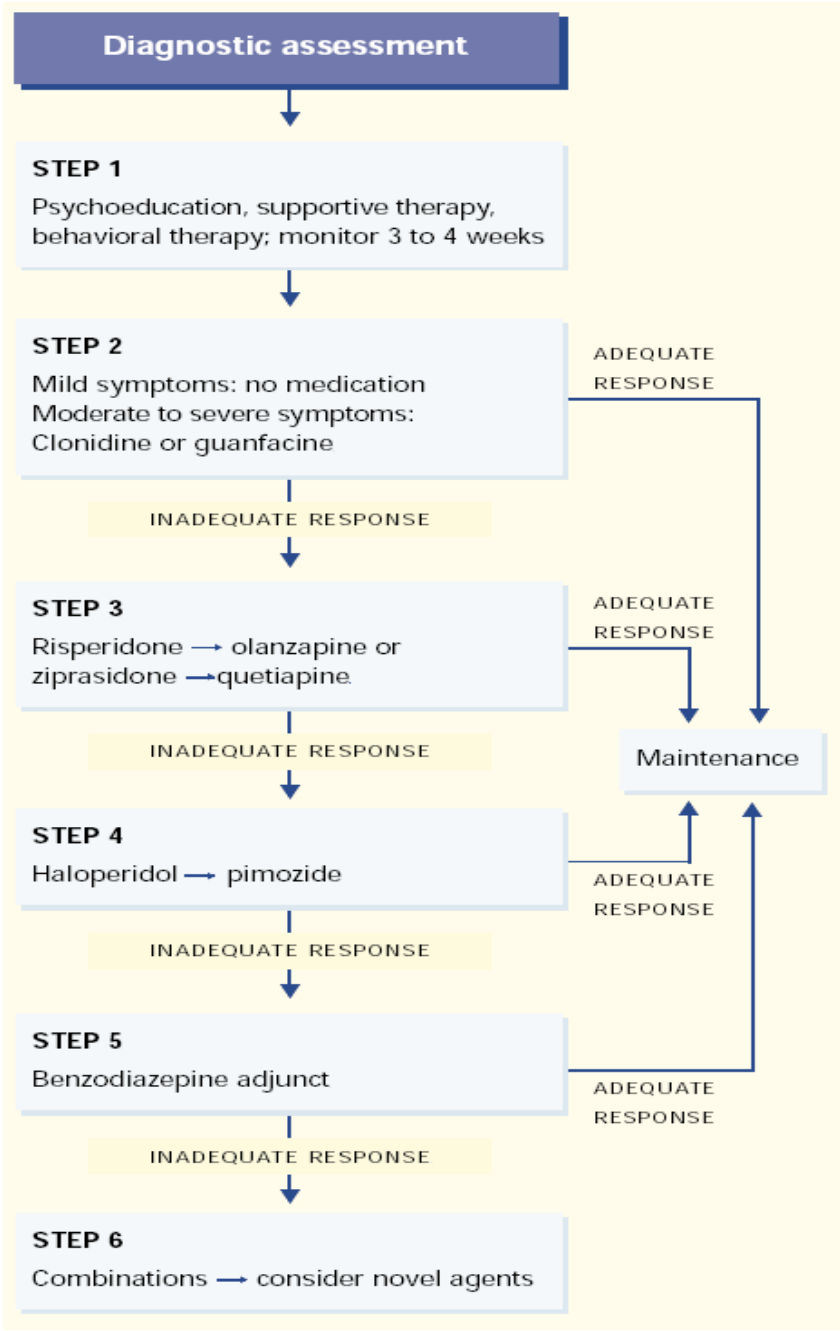
- Clomipramine (Anafranil)
- Fluoxetine (Prozac)
- Sertraline (Zoloft)

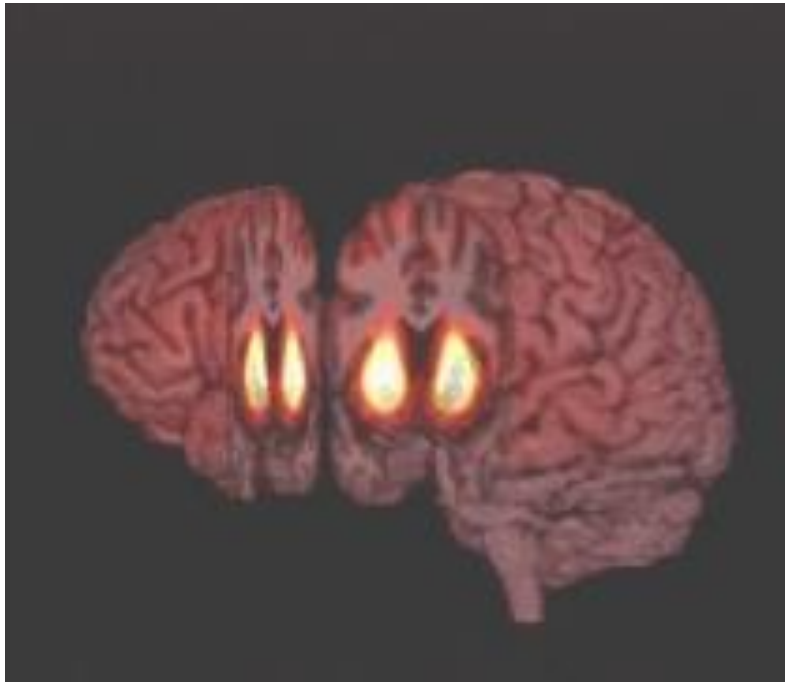
ADHD

- Clonidine (Catapres)

Stimulants

- Methylphenidate (Ritalin)
- Pemoline (Cylert)
- Dextroamphetamine (Dexedrine)





Six-step treatment approach to tics and TS

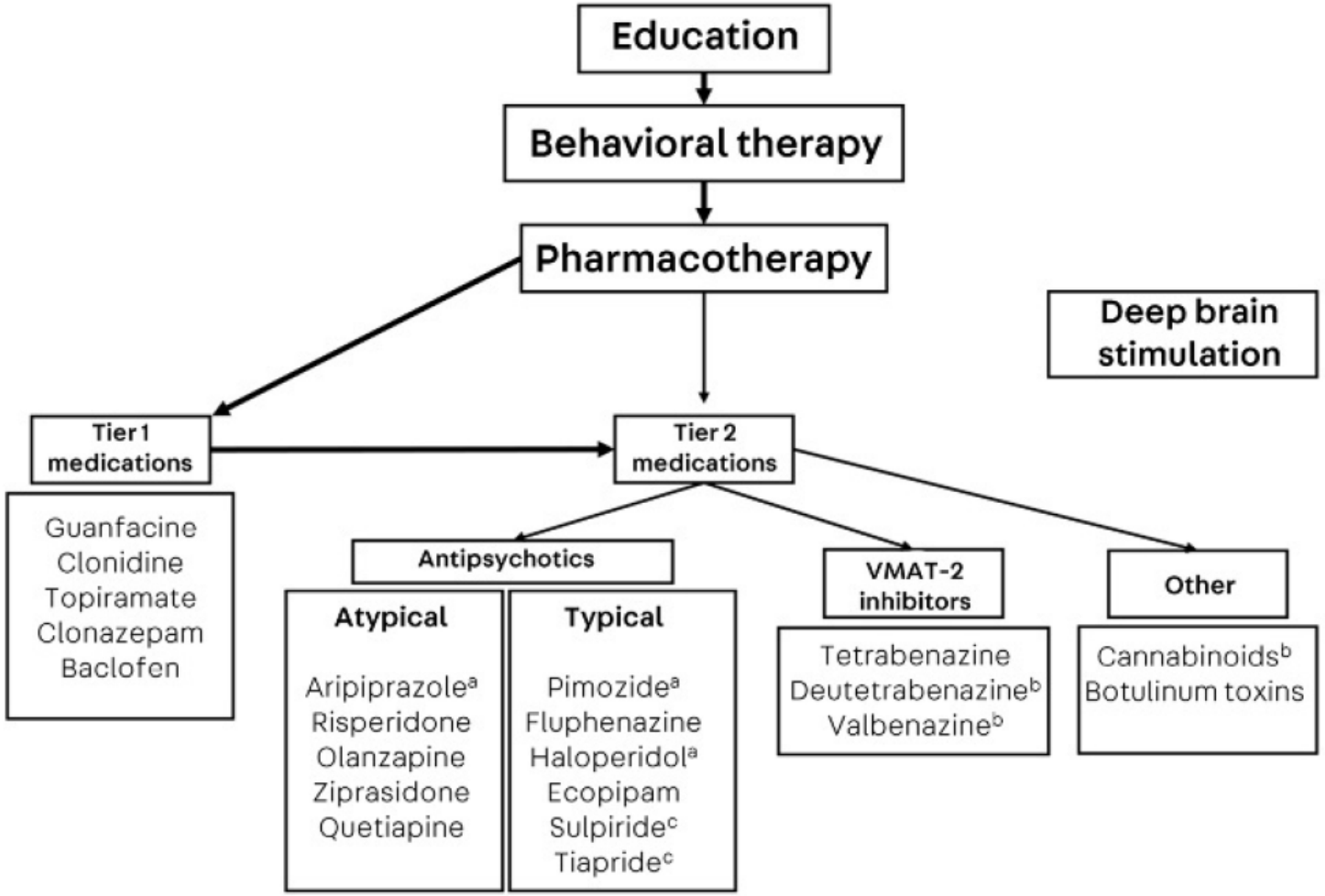


FIGURE 3-2

Approaches to the treatment of tics.

VMAT-2 = vesicular monoamine transporter-2.

[a] Approved by the US Food and Drug Administration for the treatment of tics.

[b] Medications are under investigation.

[c] Medications are not available in the United states.

Attention Deficit Hyperactivity Disorder Definition

- Attention Deficit Hyperactivity Disorder (ADHD), sometimes called Attention Deficit Disorder (ADD), involves hyperactivity, difficulty paying attention and a tendency to act impulsively.

Prevalence

- begins in childhood and can affect all areas of a patient's life.
- 3% - 5% of school-aged children-2 million children in the US (National Institute of Mental Health (NIMH))
- 7.5% of school-aged children in Taiwan
- Boys outnumber girls 3 to 1 (Mental Health America) However, girls may be under diagnosed.

Three Major Types

- Predominantly inattentive (ADHD/I)
- Predominantly hyperactive/impulsive ADHD (ADHD/HI)
- Combined ADHD

Predominantly inattentive (ADHD/I)

- difficulty paying attention
- struggles to concentrate and complete tasks forgetful and easily distracted
- poor organizational skills, lethargic, sluggish, shy, anxious or constantly daydreaming
- most often diagnosed in adolescent girls, and is diagnosed if six or more symptoms of inattention have persisted for more than six months, according to the American Psychiatric Association (APA).

Predominantly hyperactive/impulsive ADHD (ADHD/HI)

- difficulty controlling behavior, with an increased risk for serious aggressive or oppositional behavior and antisocial conduct.
- fidget and excessively restless.
- blurt out comments that are inappropriate and often do not think before they act.
- diagnosed if six or more symptoms of hyperactivity and impulsivity have persisted for more than six months.

Combined ADHD

- Combines symptoms of the other two forms of ADHD
- the most common form of ADHD.
- diagnosed in boys of elementary-school age.
- diagnosed when six or more symptoms associated with each of the two major forms of ADHD are present.

注意力不足過動症的臨床診斷標準

注意力缺失症狀

1. 無法注意到小細節或因粗心大意使學校功課、工作或其他活動發生錯誤。
2. 在工作或遊戲活動中無法持續維持注意力。
3. 和別人說話時，似乎沒在聽。
4. 無法完成老師或家長交辦事務，包括學校課業、家事等。(非違抗性行為或因不瞭解而使得交代的工作無法完成)
5. 缺乏組織能力。
6. 常避免、不喜歡或拒絕參與需持續使用腦力的工作，如：學校工作或家庭作業。
7. 容易遺失或忘了工作或遊戲所需的東西，如：玩具、鉛筆、書等。
8. 容易被外界刺激所吸引。
9. 容易忘記每日常規活動，需大人時常提醒。

依美國精神科醫學會DSM-IV

過動／衝動症狀

1. 在座位上無法安靜地坐著，身體扭來扭去。
2. 在課堂中常離席，坐不住。
3. 在教室或活動場合中不適宜地跑、跳及爬高等。
4. 無法安靜地參與遊戲及休閒活動。
5. 不停地動 (很像發動的馬達)。
6. 話多 (經常不間斷地持續說話)。
7. 問題尚未問完前，便搶先答題。
8. 不能輪流等待 (在需輪流的地方，無法耐心地等待)。
9. 常中斷或干擾其他人，如：插嘴或打斷別人的遊戲。

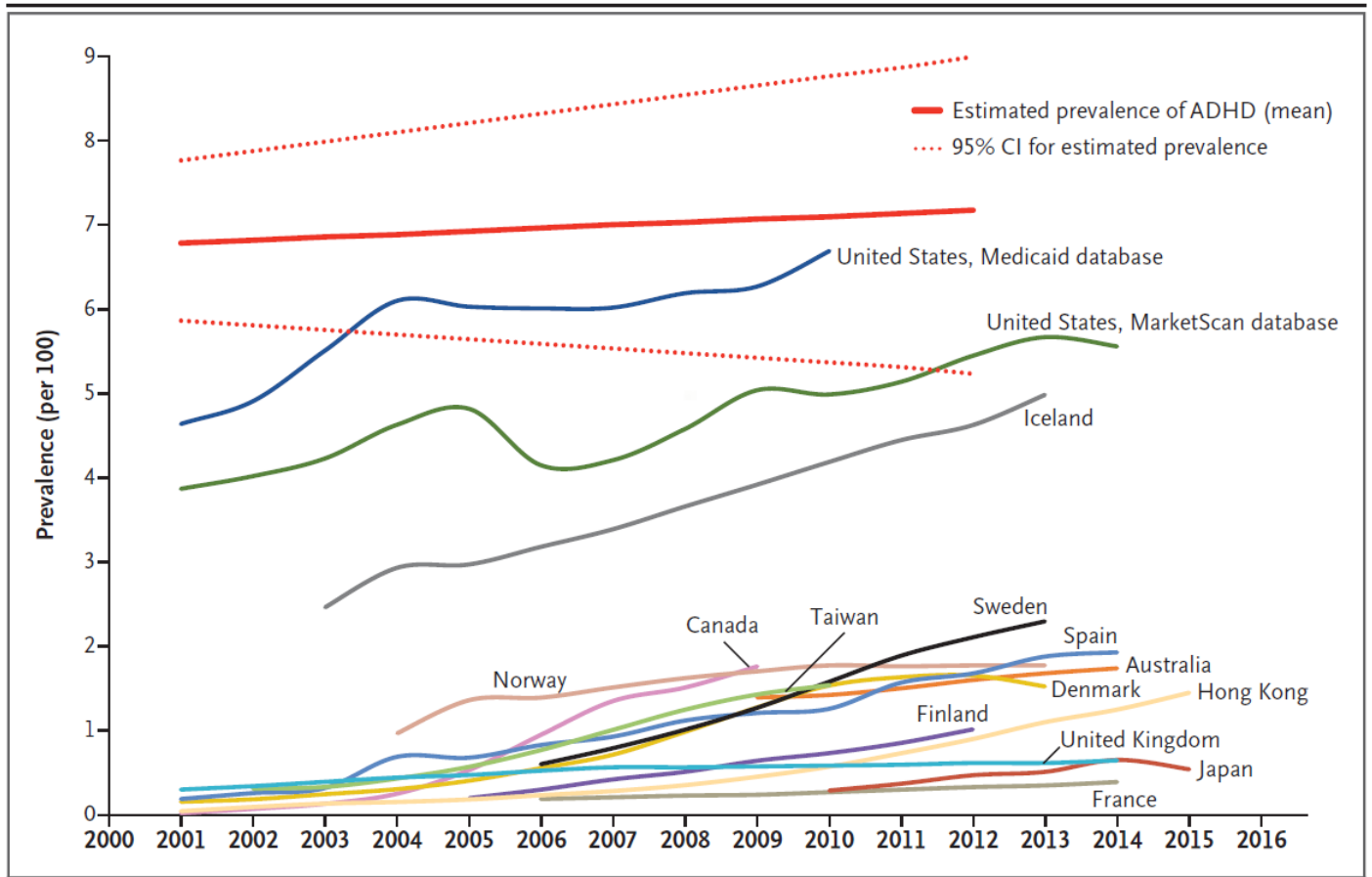
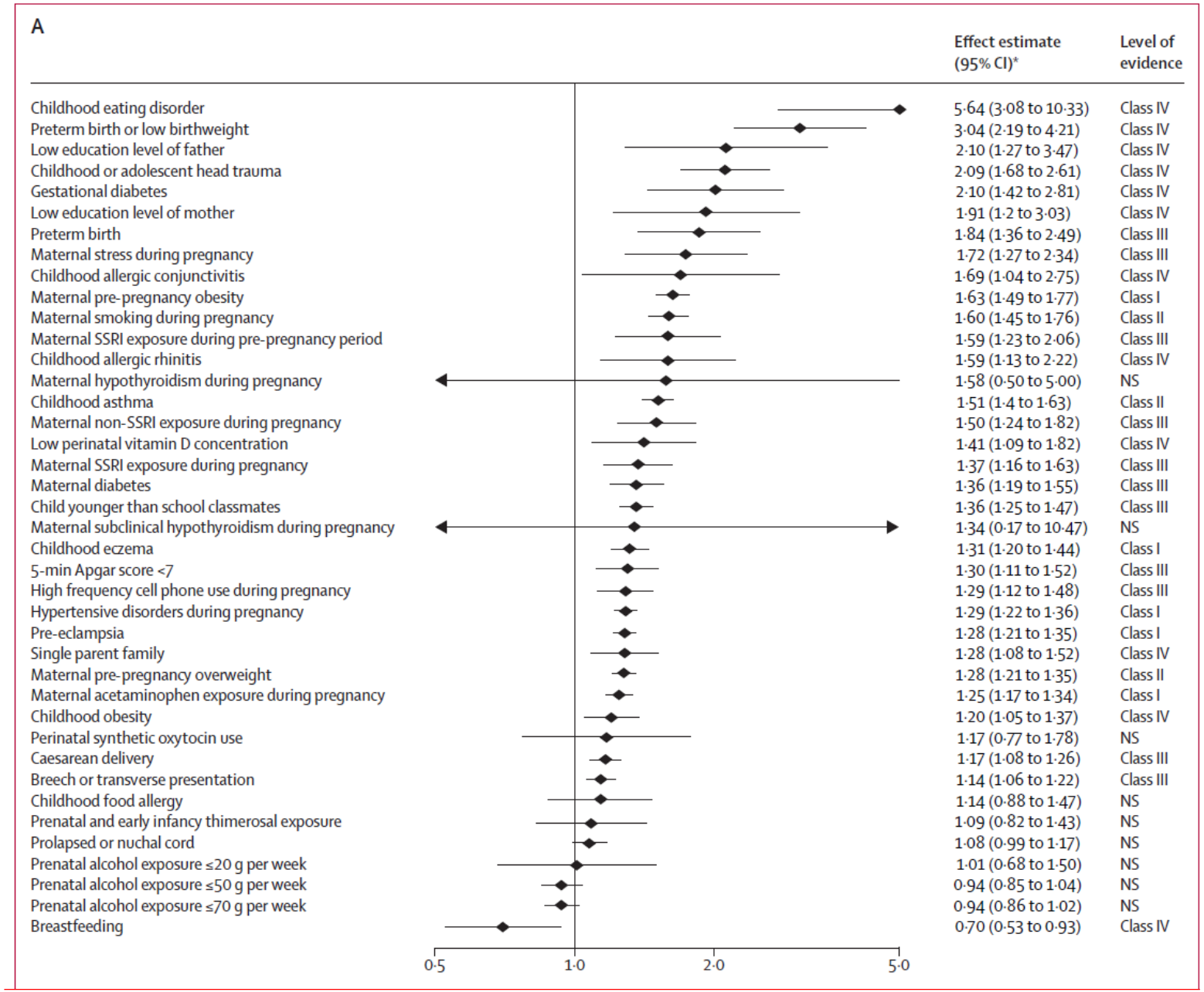


Figure 1. Annual Prevalence of Medication Use for Attention Deficit–Hyperactivity Disorder (ADHD) among Persons 3 to 18 Years of Age, According to Country.

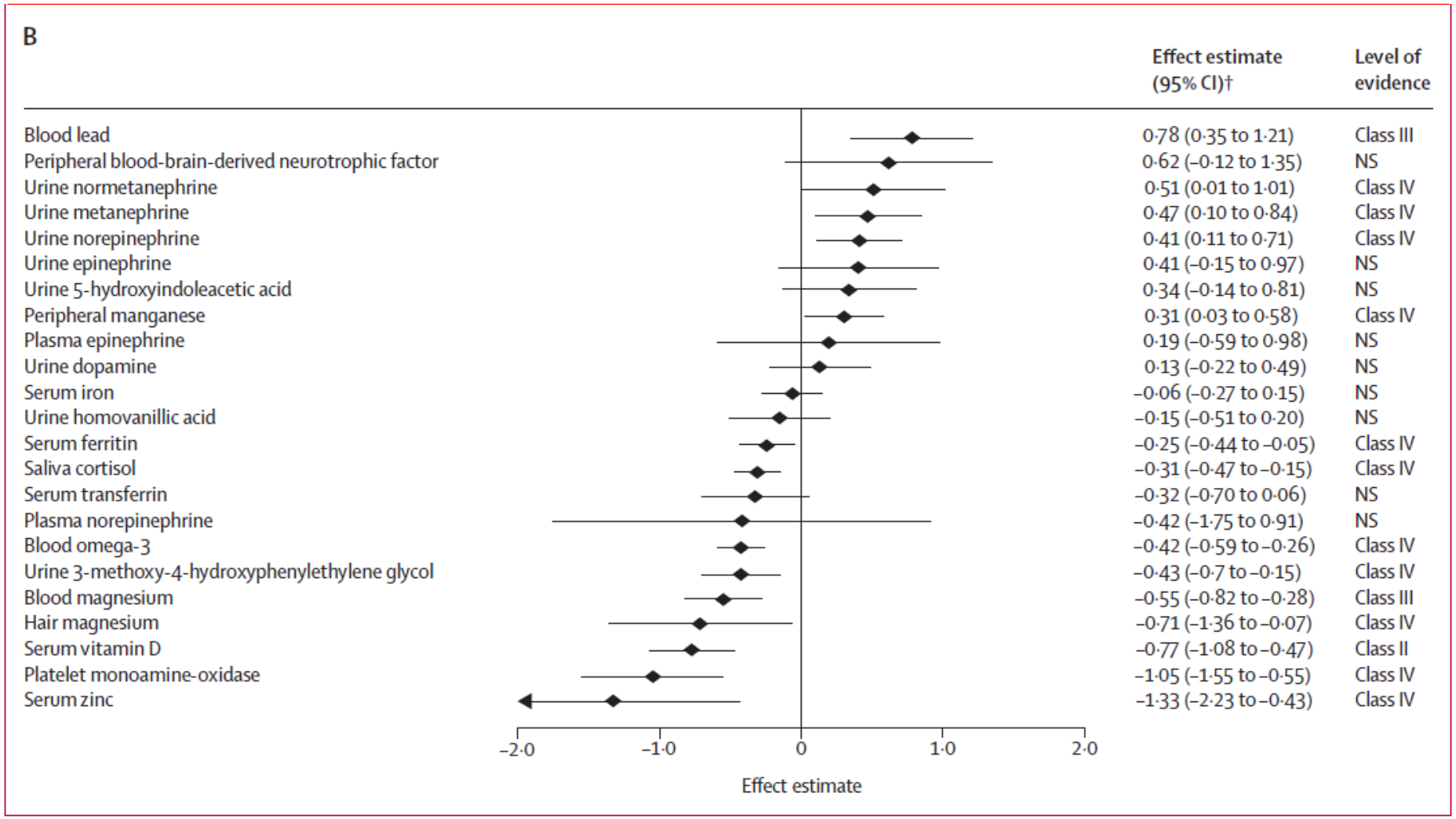
Data on the prevalence of medication use are based on a retrospective observational study by Raman et al.[6] The bold red line shows the estimated mean prevalence of ADHD, with the dotted red lines indicating the 95% confidence interval (CI), on the basis of a mixed-effects meta-regression model from Polanczyk et al.[7] The model showed that, after adjustment for study methods, the prevalence estimates of ADHD did not vary significantly as a function of the year of study or geographic location. Detailed data on the annual prevalence of medication use among adults with ADHD are provided in Section S3 and Tables S1 through S4 in the Supplementary Appendix. The MarketScan database includes data on enrollees in health insurance plans in the United States, and the Medicaid database includes statistical data on Medicaid beneficiaries (persons in the United States with low incomes).

NEJM 2020



Lancet Psych 2020

potential environmental risk factors, environmental protective factors, and biomarkers for ADHD



potential environmental risk factors, environmental protective factors, and biomarkers for ADHD

Lancet Psych 2020

Attention Deficit Hyperactivity Disorder

- A higher risk of ADHD in children with generalized or frontal epilepsy.
- The prevalence for interictal epileptiform discharges ranges from 4.9% to 60% in ADHD children without clinical seizures
- The background incidence of epileptiform abnormalities in normal school-aged children is estimated around 2–3%.

Table 1 Demographic and clinical characteristics of 42 children with ADHD

Mean (age)	8.9 years, SΔ 2.8
Sex (M/F)	35 males/7females
Intelligence quotient	94.7, SΔ 15.2
ADHD subtype (%)	
Hyperactive and combined	76.1
Inattentive	23.8
ODD	64.2
Co-morbidity (%)	
Dyslexia	33.3
Language disorder	12.8
Tic disorder	6
Eating disorder	7.6
Sleep disorders	86
Dyspraxia	12.8
EEG variables (%)	
Abnormal routine EEG	18.7
Nocturnal seizures	7.1
IEDs (video-PSG)	53.1
Frontal	12.5
Centro-temporal	28.2
Temporal–occipital	9.3
Generalized S–W	2.3
Sleep disorders by structured sleep interview (%)	
Total disorders	86
Restless Leg Syndrome (RLS)	26
Sleep disorders by video-PSG (%)	
Sleep related movement disorders	73.8
Disorders of arousal	47.6
Sleep related breathing disorders	21.4

Drug Treatments

- The most popular drug treatments are stimulants. “Stimulant medications work by causing the brain to synthesize more nor epinephrine; non stimulants work by slowing the rate at which nor epinephrine is broken down. Once the level is where it should be the brain functions normally,” (Silver, 2006).

- Popular stimulants include:
  - *Ritalin*
  - *Concerta*
  - *Ritalin LA*
- Non stimulant:
  - *Straterra*

Treatment of ADHD guideline

Table 2. Recommendations for ADHD Treatment from Recent Clinical Guidelines.

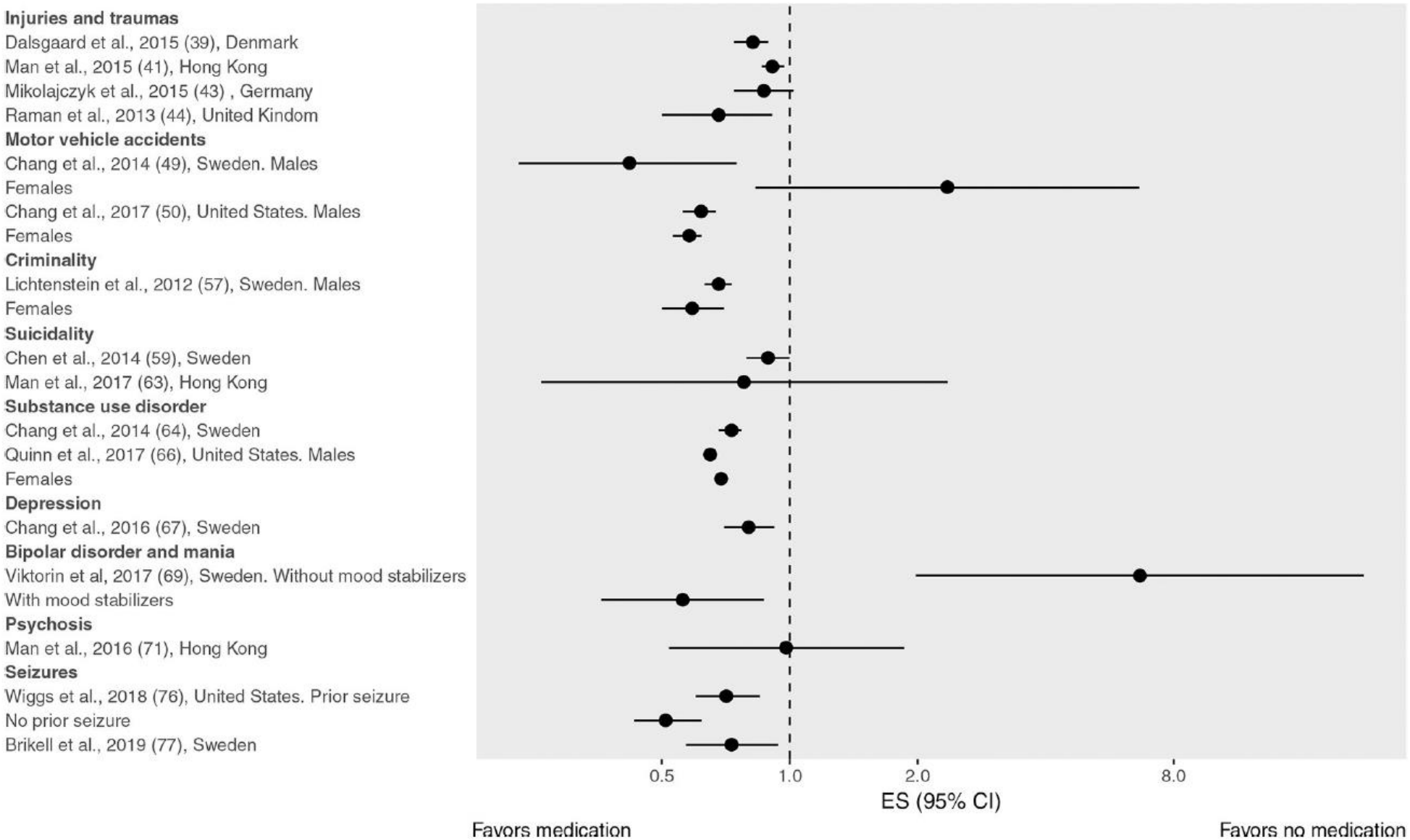
Organization and Patient Age	Treatment Recommendations
American Academy of Pediatrics[3]	
Preschool children (4–5 yr old)	First line: parental training in behavior management, behavioral classroom interventions, or both Second line: methylphenidate (off-label)
Children 6–11 yr old	FDA-approved medications (in descending order according to strength of evidence: stimulants, atomoxetine, extended-release guanfacine, extended-release clonidine) with parental training in behavior management, behavioral classroom interventions, or preferably both; educational interventions
Adolescents 12–17 yr old	FDA-approved medications; training or behavioral interventions, if available, or both; educational interventions

NEJM 2020

Treatment of ADHD guideline

National Institute for Health and Care Excellence, United Kingdom[4]	
Children <5 yr old	First line: ADHD-focused group training for parents Second line: medication only after second specialist opinion
Children ≥5 yr old and young people	ADHD-focused support (e.g., education and information on the causes and effects of ADHD, advice on parenting strategies, and liaison with school) If ADHD symptoms persist in at least one area of functioning after environmental modification, start medication (in descending order of preference): methylphenidate, lisdexamfetamine (or dexamphetamine if unacceptable side effects with lisdexamfetamine), atomoxetine or guanfacine For symptoms of oppositional defiant disorder or conduct disorder: parental training Cognitive behavioral therapy for young people if symptoms still impairing at least one area of functioning after pharmacologic treatment
Adults	If ADHD symptoms persist in at least one area of functioning after environmental modification: medication (in descending order of preference): methylphenidate or lisdexamfetamine (or dexamphetamine if lisdexamfetamine associated with unacceptable side effect profile), atomoxetine Supportive psychological intervention if medication is ineffective or associated with unacceptable side effects

NEJM 2020



Biol Psychiatry. 2019

Current Status of Autism Spectrum Disorder

Prevalence: 1 in 68

30% increase from 2012 to2014
no change from 2014 to 2016

(Center for Disease Control, 2016)

Gender Ratio: Higher Incidence in Males (5:1)

Males: 1 in 42

Females: 1 in 189

Siblings: Increased prevalence (19%)

Increased risk in twins

Different genes for ASD

- Multiple genes contribute to autism
- Biological difference in autism for females vs. males
- Many disorders have a male predominance pattern
  - Genetic transmission Male XY vs Female XX
  - Males have single X chromosome; girls have two – carrier or cancel
- Evidence of multiple genetic subtypes
- Show support for autism gene on chromosome 7
- Less compelling evidence for gene on chromosome 3,4,11

Advance for SLP-August 14, 2006 (p.10,50) Washington Autism Center
Schellenberg, G., Wijsman, E., & Dawson, G.-Molecular Psychiatry Online -8-1-06

DSM 5: Autism Spectrum Disorder

- A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history
  - Deficits in social-emotional reciprocity
  - Deficits in nonverbal communication behaviors used for social interaction
  - Deficits in developing, maintaining, and understanding relationships

- B. Restricted, repetitive patterns of behavior, interest, or activities, as manifested by at least two of the following, currently or by history
  - Stereotyped or repetitive motor movements, use of objects, or speech
  - Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior
  - Highly restricted, fixated interests that are abnormal in intensity or focus
  - Hyper- or hypoactivity to sensory input or unusual interest in sensory aspects of the environment

Note: Must specific severity in A & B using chart, based on social communication impairments and restricted, repetitive patterns of behavior.

DSM 5: Autism Spectrum Disorder

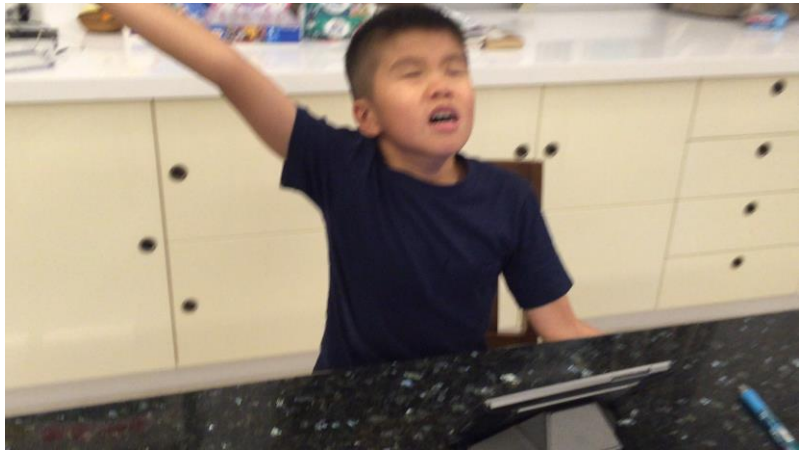
- C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life).
- D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning
- E. The disturbances are not better explained by intellectual disability or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make co-morbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level

Specify if:

- With or without accompanying intellectual impairment
- With or without accompanying language impairment
- Associated with known medical or genetic condition or environmental factor
- Associated with other neurodevelopmental, mental, or behavioral disorder
- With catatonia

Primary Symptoms

- **Communication**
  - 40% mute / nonverbal / apraxia
  - Echolalia, Perseveration, Jargon, Monotone, Delays & Differences
- **Social interaction**
  - Abnormal Relationships
  - Difficulty relating to self, others, environment
- **Stereotyped Behaviors**
  - Rituals & Routines
  - Insistence on sameness
- **Abnormal Sensory Response**
  - Hypersensitive
  - Hyposensitive
- **Present at Birth**



Autism is Lifelong Disorder

- Research suggests etiology of autism based in DNA
- Not caused post-birth; happens before born (NOT diet, vaccinations)
- Intervention can positively impact evolution of the disorder, mitigate severity of symptoms
- Cannot “cure” the disorder
- Symptoms should modify with age and treatment

Challenge to Diagnose Developmental Delays

- Good observation assessments/tests
- No definitive medical test (i.e., blood test, chromosome analysis) for autism spectrum
- Rely on knowledge of behavioral characteristics to compile profile that meets diagnostic criteria

ASD Screening: Pediatricians Unfamiliar with Tools

- Few pediatricians screen regularly for ASD
- Total 82% screen for developmental delays, but only 8% for ASD.
- Of those who reported screening for ASD, most were prompted by parent concerns.
- The main reasons reported for not screening for ASD were:
  - lack of familiarity with tools (62%)
  - referred to a specialist (47%)
  - not enough time (32%)

J Dev Behav Pediatr 2006;27(2 Suppl):S88-94.

Most referrals for ASD testing initiated by parents who notice developmental differences

National Institute of Child Health and Human Development (NICHD)

Five Warning Behaviors for ASD Evaluation

- Does not babble or coo by 12 months
- Does not gesture (point, wave, grasp) by 12 months
- Does not say single words by 16 months
- Does not say two-word phrases on his/her own by 24 months
- Has any loss of any language or social skills at any age

Screening of ASD

- Early signs of ASD can include, but are not limited to
  - Avoiding eye contact,
  - Having little interest in other children or caretakers,
  - Limited display of language (for example, having fewer words than peers or difficulty with use of words for communication), or
  - Getting upset by minor changes in routine.

Possible “Red Flags”

- Not respond to their name by 12 months of age
- Not point at objects to show interest (point at an airplane flying over) by 14 months
- Not play “pretend” games (pretend to “feed” a doll) by 18 months
- Avoid eye contact and want to be alone
- Have trouble understanding other people’s feelings or talking about their own feelings
- Have delayed speech and language skills
- Repeat words or phrases over and over (echolalia)
- Give unrelated answers to questions
- Get upset by minor changes
- Have obsessive interests
- Flap their hands, rock their body, or spin in circles
- Have unusual reactions to the way things sound, smell, taste, look, or feel

台大醫院兒童醫院 NTUCH

Modified Checklist for Autism in Toddlers, Revised

M-CHAT-R™

Please answer these questions about your child. Keep in mind how your child usually behaves. If you have seen your child do the behavior a few times, but he or she does not usually do it, then please answer **no**. Please circle **yes** or **no** for every question. Thank you very much.

1.	If you point at something across the room, does your child look at it? (**FOR EXAMPLE**, if you point at a toy or an animal, does your child look at the toy or animal?)	Yes	No
2.	Have you ever wondered if your child might be deaf?	Yes	No
3.	Does your child play pretend or make-believe? (**FOR EXAMPLE**, pretend to drink from an empty cup, pretend to talk on a phone, or pretend to feed a doll or stuffed animal?)	Yes	No
4.	Does your child like climbing on things? (**FOR EXAMPLE**, furniture, playground equipment, or stairs)	Yes	No
5.	Does your child make unusual finger movements near his or her eyes? (**FOR EXAMPLE**, does your child wiggle his or her fingers close to his or her eyes?)	Yes	No
6.	Does your child point with one finger to ask for something or to get help? (**FOR EXAMPLE**, pointing to a snack or toy that is out of reach)	Yes	No
7.	Does your child point with one finger to show you something interesting? (**FOR EXAMPLE**, pointing to an airplane in the sky or a big truck in the road)	Yes	No

1.	如果你指向房間內的某樣物件，你的子女會注視著它嗎？（**例如**，你指著一個玩具或動物時，你的孩子會看著這個玩具或動物嗎？）	是　否
2.	你有沒有想過你的子女可能是聾的？	是　否
3.	你的子女會玩假想遊戲嗎？（**例如**，假裝從空的杯子喝水，假裝打電話，假裝餵洋娃娃或毛公仔）	是　否
4.	你的子女喜歡攀爬嗎？（**例如**，攀爬傢俱、遊樂場設施、或樓梯）	是　否
5.	你的子女會在自己的眼睛附近作出一些異常的手指擺動嗎？（**例如**，你的子女會在自己眼睛附近擺動手指嗎？）	是　否
6.	你的子女會用一隻手指指著物件以表達需要或尋求協助嗎？（**例如**，指著他/她觸碰不到的小食或玩具）	是　否
7.	你的子女會用一根手指指著有趣的東西向你展示嗎？（**例如**，指向天空中的飛機或馬路上的貨車）	是　否
8.	你的子女對其他孩子感興趣嗎？（**例如**，你的子女會注視其他孩子、對他們笑或走近他們嗎？）	是　否
9.	你的子女會純粹因與你分享而不是求幫助，而從別處把東西拿過來給你看，或是會把東西舉著讓你看嗎？ (**例如**，給你看一朵花，一隻動物毛公仔，或是一輛玩具貨車)	是　否
10.	當你叫子女的名字時，他/她會有反應嗎? (**例如**，當你叫子女的名字時，他/她會抬頭，說話或咿呀學語，或停止他/她正在做的事嗎?)	是　否
11.	當你向子女微笑時，他/她會向你回以微笑嗎?	是　否
12.	你的子女會因日常的噪音感到不安嗎? (**例如**，你的子女會因為吸塵機或大聲的音樂而尖叫或哭嗎？)	是　否
13.	你的子女會走路嗎?	是　否
14.	當你與子女說話時，或與他/她遊戲時，或替他/她穿衣時，他/她會看著你的眼睛嗎?	是　否
15.	你的子女會嘗試模仿你做的事嗎? (**例如**，模仿你揮手再見，鼓掌，或發出有趣的聲音?)	是　否
16.	如果你轉頭去看某些東西，你的子女會周圍看看你在看什麼嗎?	是　否
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19.	如果有新的事情發生，你的子女會望著你的臉，去看看你有什麼感覺嗎? (**例如**：如果他/她聽到一道奇怪或有趣的聲音，或是看到一件新玩具，他/她會看你的臉嗎?)	是　否
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Modified Checklist for Autism in Toddlers, Revised

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2.	你有沒有想過你的子女可能是聾的？	達標/不達標
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Modified Checklist for Autism in Toddlers, Revised, with Follow-Up

Modified Checklist for Autism in Toddlers, Revised

- LOW-RISK: Total Score is 0-2; if child is younger than 24 months, screen again after second birthday. No further action required unless surveillance indicates risk for ASD.
- MEDIUM-RISK: Total Score is 3-7; Administer the Follow-Up (second stage of M-CHAT-R/F) to get additional information about at-risk responses. If M-CHAT-R/F score remains at 2 or higher, the child has screened positive. Action required: refer child for diagnostic evaluation and eligibility evaluation for early intervention.
- HIGH-RISK: Total Score is 8-20; It is acceptable to bypass the Follow-Up and refer immediately for diagnostic evaluation and eligibility evaluation for early intervention.

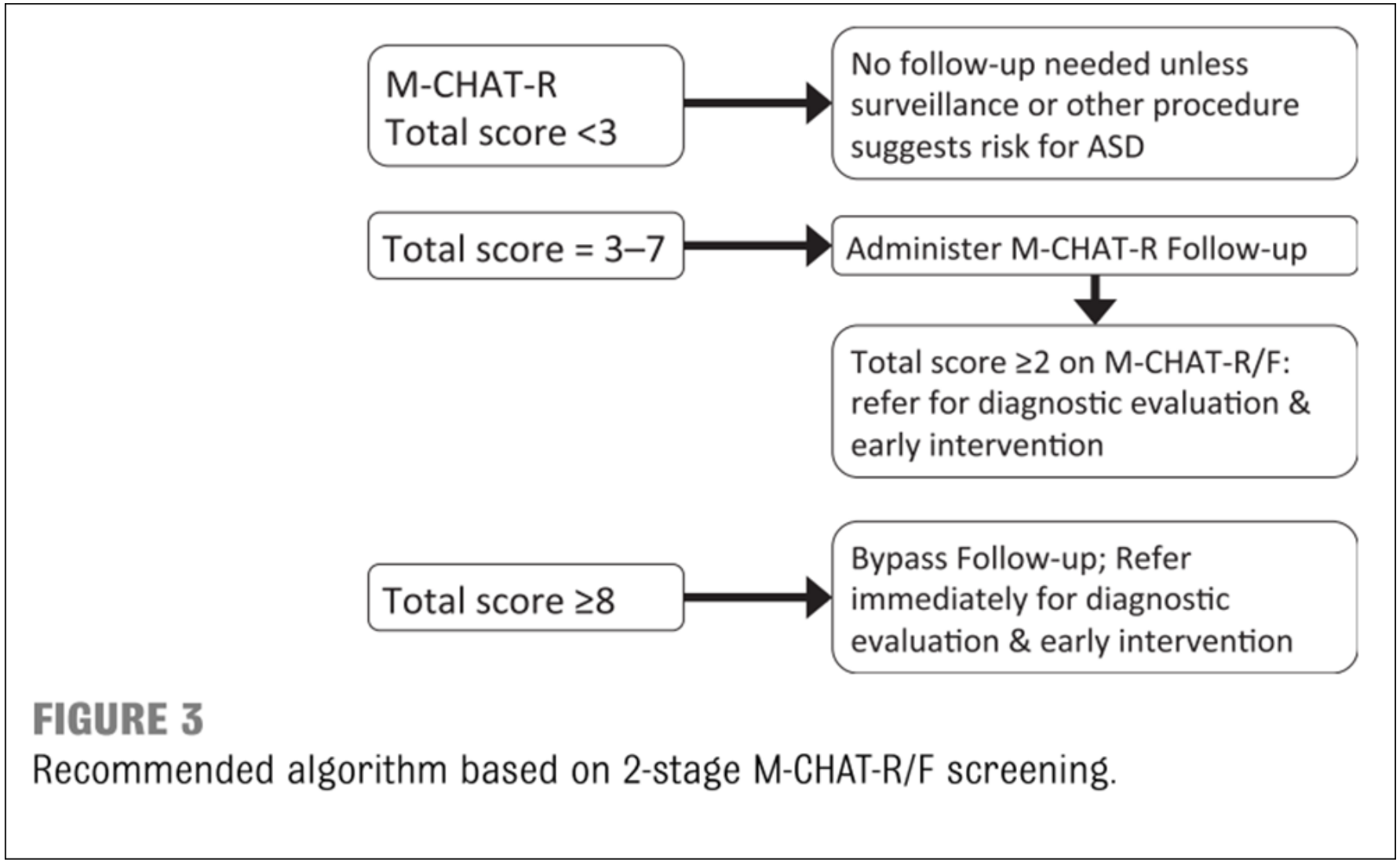

FIGURE 3
Recommended algorithm based on 2-stage M-CHAT-R/F screening.

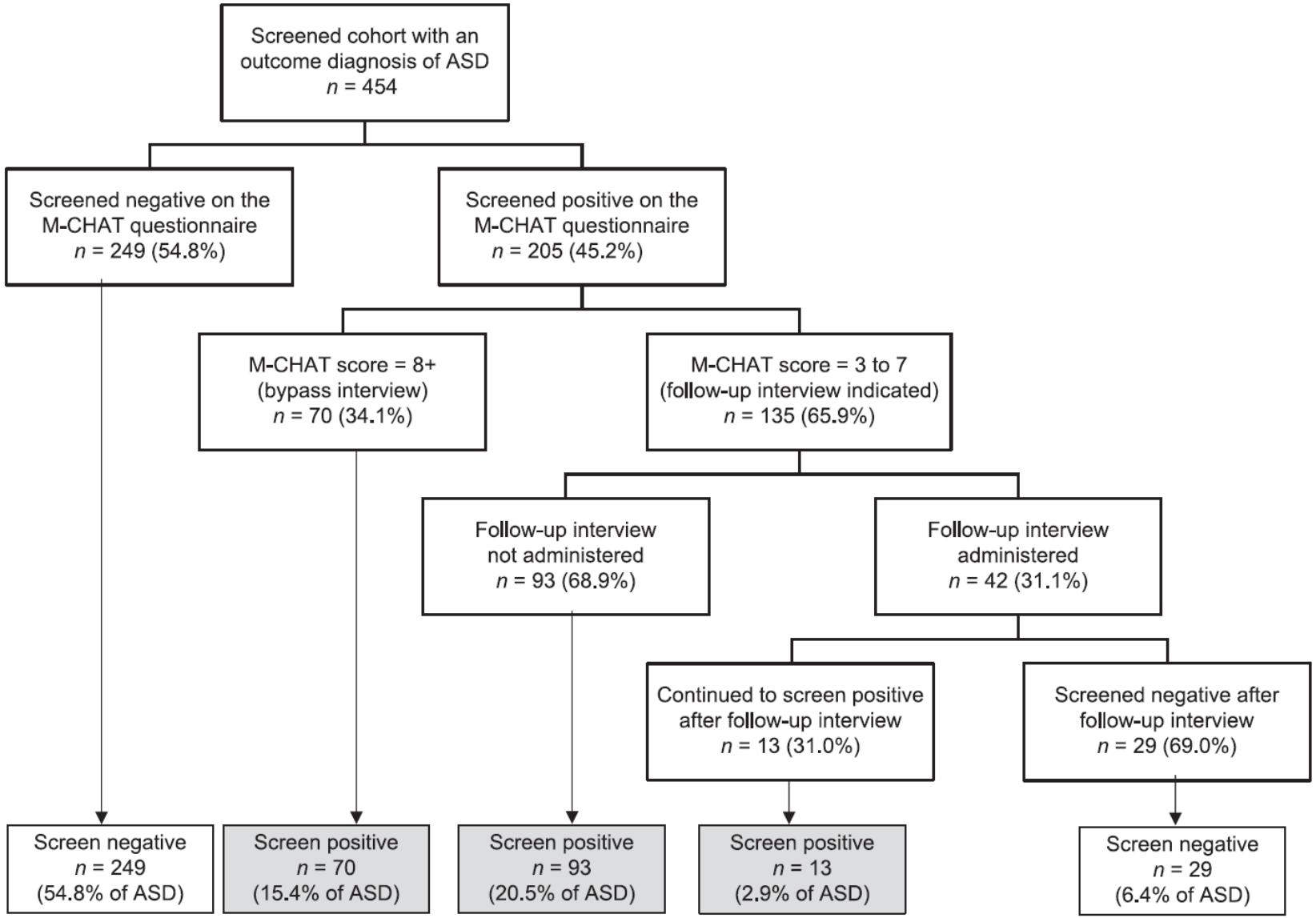

FIGURE 3
M-CHAT/F results for screened cohort with outcome diagnosis of ASD.

Pediatrics 2019

DSM-5 Autism Diagnostic Criteria

Autism spectrum disorders

- Autism is a neurologically based developmental disability that seriously affects a person's ability to communicate, socialize and make judgments.
- Autism can affect the person's sensory responses to even normal level of lights, sounds, touches, odors and taste.
- Autism is typically observed by age three and is more common in males than females.
- Despite ongoing research, there is no known cause or cure.
- Autism is referred to as a spectrum disorder. It affects each person differently and ranges from mild to severe. It is an umbrella term.

Take home messages

- There are different behavioral and psychiatric diseases in children.
- One behavioral problem may comorbid with other behavioral or psychiatric disorders.
- Most children with tic disorders don’t need treatment.
- Abnormal EEG in behavioral and psychiatric disorders doesn’t need treatment.
- Early detection of autism using screening tool can improve the outcome.
- Neurodevelopmental disorders are important to pediatricians.

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Thank you very much for your attention