Behavioural Problems:

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| 1. **Because behavioural problems in children are often multifactorial, maintain a broad differential diagnosis and assess all factors when concern has been raised about a child’s behaviour:**     * **Look for medical conditions (e.g., hearing impairment, depression, other psychiatric diagnoses, other medical problems).**    * **Look for psychosocial factors (e.g., abuse, substance use, family chaos, peer issues, parental expectations).**    * **Recognize when the cause is not attention deficit disorder (ADD) (e.g., learning disorders, autism spectrum disorder, conduct disorder).**   *Medical Conditions:*  Medical evaluation consists of history review and physical exam to discern presence of biologic risks (eg. prenatal or perinatal insults) or medical problems associated with behavioural problems (eg. hypothyroidism, lead poisoning, etc). Please see **Table 1** below for aspects of the history that particularly relate to development and behaviour. Aspects of the physical exam that particularly relate to behavioural problems are highlighted in **Table 2**.  The University of Utah provides a video for guidance in conducting a pediatric neurodevelopmental examination (available at: [library.med.utah.edu/pedineurologicexam/html/home\_exam.html](http://library.med.utah.edu/pedineurologicexam/html/home_exam.html)):   * Head circumference should be monitored for microcephaly, macrocephaly, and increased or decreased growth velocity. * Weight and height should be monitored for growth deficiency. * The child should be assessed for dysmorphology, including both minor (eg, hypertelorism, micrognathia) and major congenital anomalies (eg, spina bifida, midline defects). * The eyes should be examined for acuity, poor tracking, strabismus, or cataracts. * The ears should be evaluated for unusual shape or placement, recurrent acute otitis media, or chronic otitis media with effusion; hearing acuity should also be assessed. * The abdomen should be examined for hepatosplenomegaly, which may be a sign of metabolic disease. * The skin should be evaluated for neurocutaneous lesions. * The neurologic examination should include assessment of primitive and protective reflexes, symmetry, tone, muscle strength, and deep tendon reflexes.   Laboratory investigations should include evaluation for iron deficiency and lead poisoning.  *Psychosocial Factors:*  Psychosocial risk factors often are better predictors of developmental and behavioural disabilities than are medical issues. Psychosocial risk factors focus on the parents’ challenges, including:   * Having less than a high school education * Being single * Being unemployed * Mental health problems (of which depression or anxiety are particularly common) * Housing/food instability * Three or more children in the home * Limited facility with the English language * Limited literacy in any language * Belonging to an ethnic minority * Having a problematic parenting style (eg, not interested in teaching or conversing with their children)   Psychosocial risks can be objectively evaluated using a measure such as the Family Psychosocial Screen (FPS, available online through Bright Futures at [www.brightfutures.org/mentalhealth/pdf/professionals/ped\_intake\_form.pdf](http://www.brightfutures.org/mentalhealth/pdf/professionals/ped_intake_form.pdf)). The FPS takes approximately 15 minutes to administer and interpret (if an interview is required). It can be used as a clinic intake form so that each patient receives only a single administration, although repeat administrations (often of selected items, such as the two-item parental depression screen) are needed when family circumstances change and to check on family well-being, especially in the first two years of life. The FPS identifies risk factors for developmental and behavioral problems related to parents' educational status, income, marital status, number of children in the home, parental mental health problems, parents' history of abuse as a child, domestic violence, frequency of household moves, etc. The presence of four or more such risk factors is associated with developmental delay. The FPS also screens for maternal depression and substance abuse. Using larger inventories as the gold standard, the FPS has a sensitivity and specificity of 90 percent in the detection of various psychosocial risk factors.  Protective (sometimes called resilience) factors also tend to focus on parents, particularly on positive parenting styles. Resilience is likely when parents actively (and age-appropriately) teach children new things, label objects of interest, talk with children at meals, share books with their children, perceive their child as able to be soothed, and are interested in conversing with their children (including back-and-forth sound play in infancy, playing peek-a-boo, etc).  Other psychosocial risk factors as predictors of behavioural problems in children and adolescents include substance use, abuse, unstable family life, peer issues and parental expectations.  *Recognize when the cause is not ADHD*  ADHD is a syndrome composed of three categories of symptoms: hyperactivity, impulsivity, and inattention.  Consensus criteria for the diagnosis of ADHD have been defined by the American Psychiatric Association and published in the Diagnostic and Statistical Manual of Mental Disorders-IV. Several features of the DSM-IV criteria deserve emphasis:   * The symptoms must be present in more than one setting (eg, school and home) * The symptoms must persist for at least six months * The symptoms must be present before the age of seven years * The symptoms must impair function in academic, social, or occupational activities * The symptoms must be excessive for the developmental level of the child * Other mental disorders that could account for the symptoms must be excluded   The symptoms of ADHD overlap with those of learning disabilities and behavioral and emotional problems such as depression, bipolar disease, anxiety, or post traumatic stress disorder. These disorders frequently coexist with ADHD and may or may not be responsible for the symptoms. As an example, children who have learning disabilities may develop inattention as a result of inability to understand new information. The use of broadband behavior scales and psychometric testing may help to differentiate these problems from ADHD.  Other conditions to consider in children with symptoms of inattention, hyperactivity, and impulsivity include (**Table 3**):   * Cognitive problems (intellectual disability [mental retardation], fragile X syndrome) * Environmental factors (eg, stressful home environment, inappropriate educational setting) * Various medical conditions such as hearing or visual impairment, lead poisoning, asthma, fetal alcohol syndrome, thyroid abnormalities, sleep disorder, and seizure disorder (see appropriate topic reviews)   These conditions usually can be differentiated from ADHD because their symptoms fluctuate with the course of disease. In contrast, the symptoms in ADHD are persistent and pervasive. |

**Table 1: Medical history in developmental surveillance**

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| **Prenatal risk factors** |
| History of prenatal illness/infectious disease |
| Maternal drug/alcohol/tobacco use |
| Toxemia |
| Previous miscarriage or stillbirth |
| Maternal medications |
| **Perinatal risk factors** |
| Prematurity, particularly gestational age ≤30 weeks |
| Very low birth weight (<1500 g) |
| Hypoxia |
| Seizures |
| Intraventricular hemorrhage |
| Meningitis |
| Sepsis |
| Severe hyperbilirubinemia |
| Failed newborn hearing screen |
| **Pertinent past medical history** |
| History of recurrent or chronic otitis media |
| Poor growth |
| Seizures |
| Vision and hearing concerns and assessment |
| Previous hospitalizations |
| Chronic illness (eg, asthma) |
| History of head trauma |
| **Developmental and behavioral history** |
| Timeliness of acquisition of previous milestones |
| Sleep patterns and duration (eg, trouble falling asleep or staying asleep; symptoms of obstructive sleep apnea) |
| Play interests |

**Table 2: Important aspects of the medical evaluation when assessing behaviour/development**

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| **Physical examination** | **Looking for:** |
| Head circumference | Microcephaly, macrocephaly, altered growth velocity |
| Weight and height | Growth deficiency (failure to thrive, short stature)  Overgrowth |
| General appearance | Dysmorphic features |
| Eyes | Visual acuity, tracking, strabismus, cataracts |
| Ears | Unusual shape or placement, signs of recurrent otitis media or chronic otitis media with effusion, hearing acuity |
| Abdomen | Hepatosplenomegaly |
| Skin | Neurocutaneous lesions and vascular markings |
| Neurologic examination | Persistent primitive reflexes; abnormalities of symmetry, tone, strength, deep tendon reflexes, protective reflexes |
| **Laboratory evaluation\*** | **Looking for:** |
| Hemoglobin/hematocrit | Anemia |
| Blood lead level | Lead poisoning |

\* Additional evaluation may be warranted for some children with historical or examination findings suggestive of a medical etiology. The evaluation should be tailored to the clinical findings and may include thyroid function testing, genetic testing, metabolic screening, and/or neuroimaging or encephalography.

**Table 3: Differential diagnosis for attention deficit hyperactivity disorder**

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| |  | | --- | | **Developmental** | | Normal variation | | Mental retardation | | Giftedness | | Learning disability | | Perceptual processing disorder | | Language disorder | | Pervasive developmental disorder | | **Emotional/Behavioral** | | Depression or mood disorder | | Anxiety disorder | | Oppositional defiant disorder | | Conduct disorder | | Obsessive compulsive disorder | | Post-traumatic stress disorder | | Adjustment disorder | | **Environmental** | | Child abuse or neglect | | Stressful home environment | | Inadequate or punitive parenting | | Parental psychopathology | | Sociocultural differences | | Inappropriate educational setting | | Frequent school absence | | |  | | --- | | **Medical** | | Sensory impairments | | Seizure disorder | | Sequelae of CNS infection/trauma | | Fetal alcohol syndrome | | Fragile X syndrome | | Lead poisoning | | Iron deficiency anemia | | Neurodegenerative disorder | | Tourette syndrome | | Thyroid disorder | | Diabetes mellitus | | Substance abuse | | Medication side effects (eg, bronchodilators, corticosteroids, isoniazid, neuroleptics) | | Undernutrition | | Sleep disorder | | Enuresis/encopresis | | Motor coordination disorder | | Stereotypic movement disorder | |

*Data from:  
Miller, KJ, Wender, EH. Attention deficit/hyperactivity disorder. In: Primary Pediatric Care, 4th ed, Hoekelman, RA (Ed), Mosby, St. Louis 2001. p.756.   
Attention-deficit and disruptive behavior disorders. In: Diagnostic and Statistical Manual of Mental Disorders, 4th ed, Text Revision, American Psychiatric Association 2000.*

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| **2) When obtaining a history about behavioural problems in a child:**   * **Ask the child about her or his perception of the situation.** * **- Use multiple sources of information (e.g., school, daycare).** |
| Screening for behavioural problems may facilitate the detection of developmental, as well as behavioural problems. Behavioural screening tests may be broadly or narrowly focused. Broadly focused screens rely on parent-, teacher-, or child-completed questionnaires that, when socred, have subsets that include multiple mental health cateories to screen for a broad range of possible diagnoses (**Table 4**). Narrowly focused screens are directed toward a specific diagnosis (eg. autism, ADD) (**Table 5**)**.** For screening purposes, broad-band screening should precede narrow-band screening. |

**Table 4: Selected broad-band behavioral screens**

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| **Test/age range** | **Purchasing information** | **Time frame\*** |
| **Ages and Stages Questionnaire: Social-Emotional (ASQ-SE)**  3 to 66 months | Paul H. Brookes Publishing, Inc.  P.O. Box 10624  Baltimore, MD 21285  Phone: 800.638.3775  [www.pbrookes.com](http://www.pbrookes.com" \t "_blank)  Cost of purchasing a specimen set: $149 (includes reproducible questionnaires and users guide). | About 10 minutes (if interview needed) |
| **Brief-Infant-Toddler Social-Emotional Assessment (BITSEA) (2006)**  12 to 36 months | Pearson Assessments  19500 Bulverde Road  San Antonio, TX 78259  Phone: 800.211.8378  [www.pearsonassessments.com](http://www.pearsonassessments.com" \t "_blank)  Cost of purchasing a specimen set: $105 (includes manual, 25 BITSEA parent forms, and 25 BITSEA teacher forms). | About 6 minutes (if interview needed) |
| **Conners Rating Scale-Revised**  3 to 17 years | Pearson Assessments  Phone: 800.627.7271  [www.pearsonassessments.com](http://www.pearsonassessments.com" \t "_blank)  Cost of purchasing a specimen set: $276 (includes manual and 25 quick score forms of various versions). | About 20 minutes |
| **Eyberg Child Behavior Inventory/Sutter-Eyberg Student Behavior Inventory-Revised (ECBI/SESBI-R)**  2 to 16 | Psychological Assessment Resources  P.O. Box 998  Odessa, FL 33556  Phone: 800.331.8378  [www.parinc.com](http://www.parinc.com" \t "_blank)  Cost of purchasing a specimen set: $120 (includes professional manual, 50 ECBI and 50 SESBI-R test sheets). | About 5 minutes (if interview needed) |
| **Parents' Evaluations of Developmental Status (PEDS) (2010)**  Birth to 8 years | PEDS*Test*.com, LLC  1013 Austin Court  Nolensville, TN 37135  Phone: 615.776.4121  Fax: 615.776.4119  [www.pedstest.com](http://www.pedstest.com" \t "_blank)  Cost of purchasing a specimen set: $30 (includes 50 response forms, 50 score and interpretation forms, and one brief administration and scoring guide). | About 2 minutes |
| **Pediatric Symptom Checklist (PSC) and Pictorial Pediatric Symptom Checklist**  4 to 16 years | Can be downloaded for free at:  [www2.massgeneral.org/allpsych/psc/psc\_forms.htm](http://www2.massgeneral.org/allpsych/psc/psc_forms.htm" \t "_blank) | About 3 minutes |

\* Does not include score time.

*Frances Page Glascoe, 2011, Nolensville, TN: PEDSTest.com, LLC, www.pedstest.com. Adapted with permission.*

**Table 5: Selected narrow-band behavioral screens**

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| **Test/age range** | **Purchasing information** | **Time frame\*** |
| **Conners Rating Scale-Revised (CRS-R) (Subscales for Attention Deficit Hyperactivity Disorder)**  3 to 17 years | Pearson Assessments, Inc.  Phone: 800.627.7271  [www.pearsonassessments.com](http://www.pearsonassessments.com" \t "_blank)  Cost of purchasing a specimen set: $276 (includes manual and 25 quick score forms of various versions). | About 20 minutes |
| **Modified Checklist for Autism in Toddlers (M-CHAT) (1999)**  16 to 48 months | Download for free at the First Signs Web site [www.firstsigns.org/downloads/m-chat.PDF](http://www.firstsigns.org/downloads/m-chat.PDF" \t "_blank) | About 5 minutes (excluding follow-up on any failed items) |

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| **3) When treating behavioural problems in children for whom medication is indicated, do not limit treatment to medication; address other dimensions (e.g., do not just use amphetamines to treat ADD, but add social skills teaching, time management, etc.).**  Treatment for ADHD and other behavioural problems may involve medication, behavioral/psychologic interventions, or educational interventions, alone or in combination. Decisions regarding the choice of therapy should involve the patient and his or her parents, who, in conjunction with the treating clinician, must weigh the risks and benefits to determine their preferred management strategy. Some authors advocate a trial of behavioral interventions before medical therapy is initiated. Others recommend a multimodal approach including medication, counseling, and behavioral management, particularly for children with comorbid conditions.  Current guidelines recommend a management approach (pharmacotherapy and/or behaviour therapy) that is designed to improve target symptoms and takes into account individual circumstances and family preferences.  Behavioural problems requiring medication and/or behavioural therapy (eg. ADHD) should be managed in a manner similar to other chronic conditions of childhood. In addition to regularly monitoring the effectiveness of therapeutic interventions, primary care providers should provide information to the family and child about the problem, help the family set specific treatment goals, and offer information regarding support groups if they are available.  If the selected management strategy does not result in attainment of the target outcome, the original diagnosis, comorbid conditions, and adherence to management plan should be reevaluated.  Parent-child behavior therapy teaches parents how to use appropriate discipline strategies (eg, setting specific goals and providing consistent rewards and consequences depending upon whether the goals are met). For example, parents can help to shape the behavior of a child who has ADHD by:   * Maintaining a daily schedule * Keeping distractions to a minimum * Providing specific and logical places for the child to keep his schoolwork, toys, and clothes * Setting small, reachable goals * Rewarding positive behavior * Using charts and checklists to help the child stay "on task" * Limiting choices * Finding activities in which the child can be successful (eg, hobbies, sports) * Using calm discipline (eg, time out, distraction, removing the child from the situation)   Note – Managing Disruptive Behaviour: Strongest Families BC is a resource to support families with consistent child behavioural problems. Please see links below.  <http://www.gpscbc.ca/system/files/STRONGEST%20FAMILIES%20Physician%20Introductory%20Letter.pdf>  <http://www.cmha.bc.ca/files/SF_ReferralForm.pdf> |
| **4) In assessing behavioural problems in adolescents, use a systematic, structured approach to make an appropriate diagnosis:**   * **Specifically look for substance abuse, peer issues, and other stressors.** * **Look for medical problems (bipolar disorder, schizophrenia).** * **Do not say the problem is “just adolescence”.**   As outlined above, a full history and physical exam should be obtained as well as relevant investigations. A mental status examination is useful to determine if there is underlying psychiatric illness contributing to the beahvioural problems.  Adolescents should be advised about the potential dangers of drugs, such as alcohol and tobacco, which are legal (though not for their age group), as well as illegal substances. It may be helpful, when interviewing an adolescent, to begin by asking whether illicit drugs are available at school, whether the patient has close friends who use drugs, and whether the patient has access to drugs.  Drug abuse is more prevalent in patients who are depressed, anxious, or have any other psychiatric comorbidity (including personality disorders), and in those who smoke tobacco and who abuse alcohol. |

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| **5) In elderly patients known to have dementia, do not attribute behavioural problems to dementia without assessing for other possible factors (e.g., medication side effects or interactions, treatable medical conditions such as sepsis or depression).**  Behavioural symptoms in Alzheimer disease (AD) and other types of dementia are extremely common and often much more troubling than amnestic symptoms (eg. agitation, aggression, delusions, hallucinations, wandering, depression and sleep disturbances). One or more of these symptoms is observed in 61-92% of patients with dementia; the prevalence increases with disease severity.  A concomitant medical illness (particularly urinary tract infection or pneumonia) or medication toxicity (particularly anticholinergic side effects of drugs used to treat other illnesses) and other causes of delirium must be considered whenever new behavioural disturbances arise, particularly in the setting of an acute worsening in cognition (Table 6). Most behavioural symptoms have precipitants. These possibilities should be ruled out prior to initiation of any treatment. |

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| **Drugs and toxins** |
| Prescription medications (eg, opioids, sedative-hypnotics, antipsychotics, lithium, skeletal muscle relaxers, polypharmacy) |
| Non-prescription medications (eg, antihistamines) |
| Drugs of abuse (eg, ethanol, heroin, hallucinogens, nonmedicinal use of prescription medications) |
| Withdrawal states (eg, ethanol, benzodiazepines) |
| Medication side effects (eg, hyperammonemia from valproic acid, confusion from quinolones, serotonin syndrome) |
| Poisons: |
| Atypical alcohols (ethylene glycol, methanol) |
| Inhaled toxins (carbon monoxide, cyanide, hydrogen sulfide) |
| Plant-derived (eg, Jimson weed, salvia) |
| **Infections** |
| Sepsis |
| Systemic infections; fever-related delirium |
| **Metabolic derangements** |
| Electrolyte disturbance (elevated or depressed): sodium, calcium, magnesium, phosphate |
| Endocrine disturbance (depressed or increased): thyroid, parathyroid, pancreas, pituitary, adrenal |
| Hypercarbia |
| Hyperglycemia and hypoglycemia |
| Hyperosmolar and hypoosmolar states |
| Hypoxemia |
| Inborn errors of metabolism: porphyria, Wilson's disease, etc. |
| Nutritional: Wernicke's encephalopathy, vitamin B12 deficiency, possibly folate and niacin deficiencies |
| **Brain disorders** |
| CNS infections: encephalitis, meningitis, brain or epidural abscess |
| Epileptic seizures, especially nonconvulsive status epilepticus\* |
| Head injury\* |
| Hypertensive encephalopathy |
| Psychiatric disorders\* |
| **Systemic organ failure** |
| Cardiac failure |
| Hematologic: thrombocytosis, hypereosinophilia, leukemic blast cell crisis, polycythemia |
| Liver failure: acute, chronic |
| Pulmonary disease, including hypercarbia and hypoxemia |
| Renal failure: acute, chronic |
| **Physical disorders** |
| Burns |
| Electrocution |
| Hyperthermia |
| Hypothermia |
| Trauma: with systemic inflammatory response syndrome, \*head injury, fat embolism |

**Table 6: Common causes of delirium and confusional states**

\* Disorders that, while not truly systemic or "medical", may produce the clinical picture of delirium or confusional state in all other aspects.

*Reference: Uptodate.com*