Objective

- Identify and define symptoms of dizziness
- Differential diagnosis of pediatric dizziness
- Assessment of dizziness in children
- Treatment

"It may be his inner ear."
Balance Sensory Input

Input

- Visual
- Rotation
- Gravity
- Pressure

Output

- Ocular reflex
- Postural control
- Nausea

Signs of Dizziness in Children

- “Frightening” – Clutching caretakers
- Clumsiness (sudden falls or tipping over)
- Periodic N/V
- Delayed motor function
- Loss of postural control
- Difficulty with ambulating in the dark
- Abnormal movements or behavior
- Infant may lie face down against side of crib with eyes closed, not wanting to be moved
## Causes of Dizziness in Children and Adolescents

<table>
<thead>
<tr>
<th>True Vertigo*</th>
<th>Pseudovertigo</th>
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<tbody>
<tr>
<td>Benign paroxysmal positional vertigo</td>
<td>Migraine</td>
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<tr>
<td>Benign positional vertigo of childhood</td>
<td>Motion sickness</td>
</tr>
<tr>
<td>Cholesteatoma</td>
<td>Multiple sclerosis</td>
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<tr>
<td>CNS infection**</td>
<td>Otitis media</td>
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<tr>
<td>Congenital defects Δ</td>
<td>Perilymph fistula</td>
</tr>
<tr>
<td>Head trauma</td>
<td>Poisoning or adverse effect of medication</td>
</tr>
<tr>
<td>Labyrinthitis (Vestibular neuritis)</td>
<td>Ramsay Hunt syndrome</td>
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<tr>
<td>Mastoiditis</td>
<td>Seizure</td>
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<tr>
<td>Meniere disease</td>
<td>Stroke</td>
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<tr>
<td>Middle ear trauma</td>
<td>Tumor</td>
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</tbody>
</table>

### Red indicates serious or life-threatening conditions

### Blue indicates common conditions

*True vertigo refers to dizziness with a sense of spinning

** Meningitis, encephalitis, or intracranial abscess

Δ Eg, Mondini dysplasia, Usher syndrome, Joubert syndrome, Schiebe deformity, enlarged vestibular aqueduct syndrome

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### History

- Prenatal or perinatal infection
- Ototoxic medications
- Syndromes
- Craniofacial anomalies
- Family hx of hearing loss, vertigo, migraine, seizure disorders or demyelinating disease
History

• Episodic vs. continuous
• Acute vs. slow onset
• Provoked by changes of head position
• Paroxysmal vertigo with or without HL
• Loss of postural control
• Unremitting, neurological signs

Physical Exam

• Otologic exam
• Neurological exam
• Check visual acuity
• Static and dynamic imbalance of vestibular function
Gait & Gross Motor Abilities

- Vestibulospinal testing
  - Fukuda
  - Romberg test
  - Tandem gait

- Age appropriate gross motor assessments available (Bruininks- Oseretsky test 4-21yrs)

Workup

- Audiology evaluation
- Eye examination
- Vestibular function test
- EEG
- Hematological workup (CBC, electrolytes, glucose, thyroid tests)

Imaging indication
- Focal neurological symptoms or findings
- Worsening symptoms – Prolonged LOC (> 1 min)
- Failure of symptoms to improve

Vestibular Function Testing

- ENG battery
- Rotation testing
- Platform posturography
- Dix-Hallpike - PSSC
- Gaze testing
- Caloric ENG – LSSC
  - >30% difference between side indicates a unilateral peripheral lesion
Imaging

• CT of Temporal Bone
  - Further evaluate craniofacial syndromes & PLF
  - Defects in bony labyrinth, cholesteatoma
  - Suspect tumor or previous trauma

• MRI with gadolinium
  - Children with CNS findings
  - Suspect schwannomas and other tumors
  - Granulomatous disorders