Prader Willi Syndrome

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What is Prader Willi Syndrome

- Uncommon genetic condition
- Caused by absence of segment 11-13 on chromosome 15
- Characterized by mental retardation, hypotonia, short stature, hyperphagia, hypogonadism, obesity
- 1/10,000 – 1/30,000
Classical Diagnosis

Consensus Diagnostic Criteria

- Neonatal/infantile hypotonia with poor suck
- Feeding problems
- Onset of rapid weight gain causing central obesity
- Hyperphagia
- Characteristic facial features
- Hypogonadism – delayed puberty, infertility
- Developmental delay/ learning disabilities

Examples
Manifestations

- Obesity = greatest problem to health
- Diabetes
- Skin problems e.g. chronic edema
- Behavioral and Psychiatric problems:
  - Temper tantrums
  - Stubbornness
  - Manipulative Behaviors
Treatment Options

- Feeding techniques
- Physical Therapy
- Low calorie diet/exercise plan
- Human Growth Hormone
- Serotonin reuptake inhibitors
Genetic Explanation

- Epigenetics: modification of activation of certain genes but not basic structure of DNA
- Genomic Imprinting: preferential expression of a gene from only one of the two parental alleles
- Not Mendelian Genetics
- PWS caused from loss of paternally inherited genes on chromosome 15q11.2-q13
Genetics Continued

- Causes of Prader Willi
  - 70% Deletion of paternal chromosome 15
  - 29% Maternal Uniparental disomy
  - 1% Imprinting defect
## Even More Genetics

<table>
<thead>
<tr>
<th>Explanation</th>
<th>Better Diagnostics</th>
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<tbody>
<tr>
<td>- Random genetic changes – not usually inherited</td>
<td>- Molecular Genetic Testing</td>
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<tr>
<td>- No predisposition</td>
<td>- Methylation analysis</td>
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<tr>
<td>- Parents unaffected</td>
<td>- FISH</td>
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<td>- Risk to sibling based on underlying cause of lack of expression</td>
<td>- Uniparental Disomy studies</td>
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<td>- Complete penetrance</td>
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Better Therapies?

- Not at this time
- Irreversible condition
- Studies - manifestations not cause
- Prenatal diagnoses
Resources

- Gene Reviews, Prader Willi Syndrome
- Medline Plus, Prader Willi
- OMIM, Prader Willi Syndrome
- Diseases Associated with Imprinted Genes
- NCBI
- Genetics Home Reference