Glutaric acidemia type I:
Clinical features

- Prevalence = ~1/100,000
- No other clinical symptoms at birth-normal development
- Acute encephalopathic episode usually preceded by infection w/ fever and dehydration (2-36 months)
- **During episode**: profound hypotonia, loss of motor skills, athetoid movements, stiffness, convulsions
- In minority of patients, motor delay, hypotonia, dystonia & dyskinesia develop gradually over several years
Glutaric acidemia type I: Difficulty in making laboratory diagnosis

- “Low excretors”
  -- Normal or slightly elevated C5-DC in plasma
  -- Normal or slightly elevated excretion of glutaric and/or 3-OH-glutaric acid
  -- Higher residual enzyme activity
  -- Same clinical outcome as “High excretors”
  -- Are patients being missed by NBS and/or follow-up testing?
  -- Urine C5-DC analysis more sensitive?
- Elevated C5-DC observed in other metabolic conditions
- Elevated glutaric and/or 3-OH-glutaric acid excretion caused by intestinal bacteria, severe ketosis or certain infant formulas
- No common mutation in general population (over 100 known)
- No genotype/biochemical phenotype : clinical phenotype correlation
<table>
<thead>
<tr>
<th>Glutaric aciduria type I</th>
<th>NBS (&lt;0.32 uM)</th>
<th>plasma (&lt;0.13 uM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAI-1</td>
<td>0.79</td>
<td>0.54</td>
</tr>
<tr>
<td>GAI-2</td>
<td>0.35</td>
<td>0.18</td>
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<tr>
<td>GAI-3</td>
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<td>0.16</td>
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</tbody>
</table>
Glutaric acidemia type I:

- Each patient had normal to mild increases in their urine organic acids
- Either had two mutations or low enzyme activity
- All three are doing well
## South Carolina GA1

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Original C5DC result with NeoGram ( \geq 0.32 ) uM</th>
<th>C5DC Retest result 2 yrs. Later with NeoGram ( \geq 0.32 ) uM</th>
<th>C5DC Retest result 2 yrs. Later with NeoBase ( \geq 0.45 ) uM</th>
</tr>
</thead>
<tbody>
<tr>
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<td>20083451356</td>
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