As the incidence of childhood obesity continues to increase globally to near epidemic proportions, there is an associated increase in the prevalence of metabolic syndrome and Type 2 diabetes in adolescence. In the past 20 years, the prevalence of obesity has increased in all age groups, in both adults and children. This increase has been especially marked in adolescent girls. As a result, more than 1 in 3 overweight adults showed no benefit. The limitation of testing LDL-C is that cholesterol is only one lipoprotein apolipoprotein profile marker among the many that contribute to cardiovascular disease risk. Metformin therapy in adults with type 2 diabetes has also been shown to slow progression to diabetes and to reduce body weight. Metformin has also been shown to have beneficial effects on lipids as well as long-term CV event reduction as studied in the adult population. Metformin therapy in adults with type 2 diabetes has also been shown to slow progression to diabetes and to reduce body weight. Treatment Goals. All pediatric patients presenting to the lipid clinic received a trial of therapeutic lifestyle changes as noted in table 2. Defining Treatment Goals. Table 5: Percent of Subjects with Discordance Between LDL-C, Non-HDL-C, and LDL-P

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Metformin + TLC</th>
<th>TLC Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>p &lt; 0.005</td>
<td>0.127</td>
</tr>
<tr>
<td>Family history of diabetes</td>
<td>p &lt; 0.005</td>
<td>NS</td>
</tr>
<tr>
<td>LDL-P size (nm)</td>
<td>10.0%</td>
<td>10.1%</td>
</tr>
<tr>
<td>HDL-C (mg/dL)</td>
<td>20.5%</td>
<td>19.8%</td>
</tr>
<tr>
<td>LDL-C (mg/dL)</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>HDL-C (mg/dL)</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Non-HDL-C (mg/dL)</td>
<td>15%</td>
<td>15%</td>
</tr>
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<td>Non-HDL-C (mg/dL)</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**TABLE 1**: Patient Selection Criteria

- Pediatric population: 4 to 10 years of age.
- Minimum of 2 visits.
- All pediatric patients presenting to the lipid clinic received a trial of therapeutic lifestyle changes as noted in table 2.
- Compliance and increased cardiometabolic risk: defined by having any of the following: diabetes, obesity, impaired fasting glucose or less than 10 years of age.
- Previous showing of atherogenic markers, a clinical sign of insulin resistance.

**TABLE 2**: TLC - Patient Management Protocol (Specific TLC Recommendations)

- First Visit:
  - Complete history and physical examination
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Second Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Third Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Fourth Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Fifth Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Sixth Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Seventh Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise

- Eighth Visit:
  - Progress report on lifestyle changes
  - Laboratory work-up
  - Biochemical evaluation
  - Initial lipid analysis
  - Education on lifestyle changes
  - Dietary evaluation
  - Medication review
  - Exercise