Hyperbilirubinemia is one of the most common conditions requiring clinical diagnosis. It is currently being assumed that clinics in developing countries will have access to necessary reagents. Specific information on reagents can be found at chemhousediagnostics.com.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Specimen Type</th>
<th>Method</th>
<th>Amax (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilirubin</td>
<td>Serum</td>
<td>Malloy-Evelyn</td>
<td>546</td>
</tr>
<tr>
<td>Hg</td>
<td>Serum, plasma</td>
<td>Drabkin's Reagent</td>
<td>546</td>
</tr>
<tr>
<td>Glucose</td>
<td>Serum, plasma</td>
<td>Glucose Oxidase</td>
<td>505</td>
</tr>
</tbody>
</table>

Table 1: Common tests for clinical diagnosis. It is currently being assumed that clinics in developing countries will have access to necessary reagents. Specific information on reagents can be found at chemhousediagnostics.com.

Our team is also considering sending "kits"-- individually packaged reagents for each run of a specific clinical test.

Power grids are unstable and often surge or exhibit power outages. Our device will be self powered via rechargeable batteries.

LED Selector Wheel:
- Five LED lights will be mounted in the wheel slots
- Diameter of each opening is 5 mm
- User will rotate the rim of the wheel to select a wavelength that is required to run a particular test
- Wavelength values will be displayed on the rim for easy visualization
- The selector can only rotate once around the axial preventing wire entanglement
- When user has reached the farthest point, the wheel will hit a notch preventing it from turning

Figure 3: Schematic of Spectrophotometer http://www.boomer.org/c/sp1/Ch02/Ch2007.html

Figure 4: Device Schematic

Device is powered and operated using an Arduino Uno R2 Microcontroller.
- Programmed using C/++ derived language
- Detector: B6Q02-2
- Phototransistor
- Voltage drop occurs at input of microcontroller when light activates phototransistor

Figure 6: Spectrophotometer Enclosure

Figure 7: Proposed Final Design Layout

Figure 8: Seven segment display can be controlled to display any desired output.

Conclusion and Future Work
- Currently have a working prototype that needs clinical testing
- Finalize design, order parts, and assemble prototype
- Order standards and calibrate device
- Develop pictorial user manual
- Finalize prototype for summer testing in Rwanda