Practical Aspects

- Our whole design consists of the following components, A breadboard, a bluetooth device, the oximeter, the Led monitor, the armband and the adjoining components.

- The breadboard brings together the programmed devices and connects them to function together. It also contains resistors to help the design run without heating up due high voltage

- The bluetooth device is what connects the apparatus in the armband to the app within the phone. It connects the phone with the results of the oximeter readings.

- The oximeter may be the most vital component of our design. It detects the person's oxygen levels which are the primary indicator of an overdose. These levels determine further actions like an alarm or any emergency calls that need to be made

- The Led monitor was installed later after the oximeter so the oxygen levels and heart rate can be displayed and read by users and those around them.

- The armband's purpose is to hold everything inside while maintaining the aesthetic aspect of the device. It spares the user from seeing or dealing with any technical aspects like circuit boards or resistors. It also makes sure the device is discrete and comfortable to wear. It doesn’t have any technical purpose.

- Apart from these components we have connecters such as wires which put together the setup to ensure it is well connected and runs smoothly.

Samuel's Part

- All the parts of our device are put together to work as a single unit. Our original idea was to have two parts to our device. It would have consisted of a watch that would monitor heart rate and blood oxygen levels, and the armband portion which would contain a gps tracking chip, naloxone spray, speaker, bluetooth receiver module.

- We realized that this plan wasn't ideal. Having too many components made the device less discrete, more clunky for the user, more expensive, and it would have been more complicated to get all of the mechanical parts to work together. It would have required more wiring/soldering and more coding.

- Getting rid of the watch idea, we condensed everything to fit in just the armband alone.

- Instead of having a gps chip like originally planned, we decided to make use of the gps already implemented in the person's phone. We were able to do this by creating an app for the phone that would be linked to the device.

- The bluetooth chip transmits the information taken in by the oximeter to the smartphone. So it would be through the phone that the emergency contact would be notified of the user's current state. That way they

would be able to call the authorities, or go to wherever the user is to check up on them and provide any assistance.

- Putting together the whole device, the circuit board would be secured on the face of the armband. There is a small opening on the backside of the armband. This is for the oximeter. It sits through this opening so that it can have direct contact with the user's arm, as to get accurate readings.

- The whole device on the armband is powered by a 9V battery. It's connected with a wired battery pack which sits on the armband right beside the circuit board.

- Our armband was originally designed to contain an smartphone in it. But because our circuit wouldn't be as big as the type of smartphone that the armband was designed for, this allowed us to be able to trim down some unnecessary edges of the armband. This made it more comfortable to wear and less noticeable when under the user's clothes. After the adjustments, the armband is still big enough to hold all the necessary parts on it and it is still comfortable enough for the person to wear for a prolonged period of time.

- The velcro strap on the armband is also lightly padded and adjustable to fit arms of varying sizes.

- All of these components are covered with a flat, dome shaped casing. This casing is a 3D printed part, circular with a radius of 3 cm. The casing is hot glued to the armband in a secure position with all of the contents safe contained.