

OpiAct

<https://youtu.be/SHJ2FdEimgo>

Our Team

Dr. Kenneth Katz – Dr. Katz is a board certified medical toxicologist, emergency medicine physician, internal medicine physician, and EMS command Physician. He currently serves as core teaching faculty at Lehigh Valley Health Network's Emergency Medicine program. Dr. Katz is well recognized in the field of toxicology, having testified on behalf of the American College of Emergency Physicians (ACEP) before the House Committee on Energy and Commerce Subcommittee on Health regarding synthetic drug abuse. He has been an expert consultant on several court hearings as well.

Dr. Osman Abbasi – Dr. Abbasi is a senior emergency medicine resident and EMS Command Physician at Lehigh Valley Health Network's emergency medicine program. Prior to becoming a physician, Dr. Abbasi had experience in engineering and financial consulting working for Lockheed Martin and Ernst & Young respectively.

Dr. Smeet R. Bhimani – Dr. Bhimani is an emergency medicine resident and prior EMT at Lehigh Valley Health Network's EM program. Additionally, he is the co-founder and Director of Clinical Operations for a Philly based healthcare technology start up AlgoRhythm Diagnostics.

Jay Ravaliya – Jay is a Master's Candidate studying computer science at NJIT and a former Software Engineering Intern at Apple. Jay has an undergraduate degree in biomedical engineering.

Sakib Jalal – Sakib is a third year undergraduate student at Rutgers University studying computer science. He is a former Software Engineering Intern at Oscar Health.

Jeet Patel – Jeet is a third year student at Rutgers University studying computer science. He is a former Software Engineering Intern at Verizon and has experience participating and leading hackathons.

Application Concept

While we have great resources to address heart attacks, shortness of breath, and strokes on the field, no great protocols exist for addressing time sensitive opioid and heroin overdoses. Our application will address that need by using technology to link first responders with individuals in acute overdoses to allow for timely lifesaving administration of naloxone.

There will be two main roles within the application. First responders can login through the general application and will have the ability to respond to opioid overdoses. First responders will be public servants officially trained to administer naloxone. If there is an opioid/heroin overdose, first responders will get alerts analogous to amber alerts on their phones. The alert will include a map to facilitate rapid travel to the site. Multiple first

responders will be able to access a single alert to ensure that the most timely administrator is given a chance to access, and as backup in case certain first responders are unable to arrive on scene.

The second role will be a user role, this one is designed for opioid/heroin users, and their personal contacts, heron noted as “end users.” The features for end users are as follows:

- 1) Emergency Hold – Triggering this button for more than 5 seconds will send an alert to local first responders making them aware of an acute opioid/heroin overdose. This button can be pressed by either the user themselves that is in the process of overdosing or by an observer who witnesses an overdose.
- 2) Recognizing an overdose – This feature is an educational tool to demonstrate how acute overdoses present for lay persons.
- 3) Resources – For those seeking help in addressing opioid or heroin dependences, our application will be populated with local resources to help in the detoxification process.
- 4) Naloxone – Our application will allow users and their personal contacts the ability to access naloxone through well known sources, such as <http://getnaloxonenow.org>.
- 5) Settings – End users can place emergency contacts into the application who are made aware of acute overdoses when they happen.

One of the concepts we have that we believe will set us apart from our competitors is data collection that will help fight opioid/heroin overdoses using statistical analysis. The data we will be able to collect and analyze include but are not limited to the following

- 1) Volume of alerts – our reports will include the frequency of overdoses in local geographic areas that can educate local health authorities on overdose trends. If there are certain areas of a town that are
- 2) First responder activity – our application will be able to determine whether there are sufficient amounts of first responders in a given location. Should a certain geography not have enough first responders, the local area health experts can focus on encouraging more public servants to take the training needed to administer a simple life saving drug
- 3) Time to Naloxone – Our application will provide local health organizations with the amount of time it takes to administer naloxone from the minute an emergency trigger is enacted, thereby helping to ascertain new strategies in improving responses.

The information above is part of phase 1 development of our application. We are very excited about phase 2, which is highlighted below:

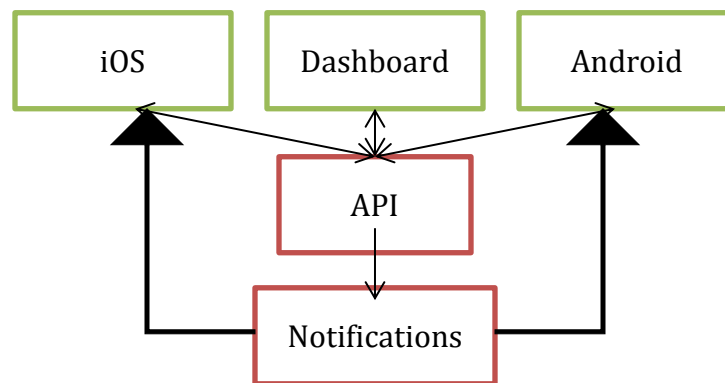
- 1) We have had preliminary discussions regarding the launch of our application within Allentown to measure the success of phase 1 development and to plan for further application modifications

- 2) We hope to explore collaboration with telecommunication providers to identify new ways to make our application as accessible and powerful as possible
- 3) We plan to explore collaboration with third parties who have become vital components of our local communities, including companies such as Uber and Lyft to increase the number of available first responders.

Application Design

OpiAct's mobile apps are our technology stack's primary forward-facing products, allowing users to view information, explore content and navigate to external sites to receive more information on how they can join the fight against opioid/heroin overdoses. However, the app's core feature is a user's ability to notify nearby first-responders for help. To support this, we transformed our apps into an event-driven client-server system designed for seamless connectivity.

Here is a visual depiction of OpiAct's full technology stack:



The architectural design of our application is as follows:

- **API:** The core backend component is a RESTful API, built using PHP's Laravel framework, which serves as a means to authenticate users, store relevant information, interact with external data sources (Google Maps and Directions API) and route notifications to appropriate users.
- **iOS / Android:** Our mobile apps, written in Swift and Java, are our primary clients via which users can generate or receive "Events", which are instances where a user is requesting help for an opioid overdose incident.
- **Notifications:** When a user generates an "Event" as defined earlier, all relevant first-responders will be notified via Apple Push Notification Service and Android Push Notifications.
- **Dashboard:** With all of the data we're collecting given an Event, such as frequency of Events generated, response time, number of responders and outcome of an Event, we've built a web-based dashboard that sits atop our data model and reports data using visual and scalar formats.