Facilitating Emergency Response

Problem Statement

When someone experiences anaphylaxis in a **public place** on campus, **what happens?** Is there a procedure? **Who should respond?** This is especially important for dining halls, because these are the most common places on campus for anaphylaxis to occur.

Insights

Food service staff are not empowered to respond to anaphylaxis because their **fear of legal consequences** and lack of medical training overpower any desire to help. **Bystanders** usually **defer** to people in **positions of authority**, which results in little help for the person experiencing anaphylaxis.

Solution

Our solution is a new procedure centered around the Epi Box, an emergency response platform that allows people to react in the case of anaphylaxis. The Epi Box contains epinephrine auto injectors that anyone can use and automatically communicates with first responders. The Epi Box is supported by a training session for campus staff and is most often located in or near dining locations on campus.

Details

I**mplementation:** Dining staff, school administrators, and emergency services must collaborate to install the devices. It is key to have buy-in from all parties.
Advertising in dining halls will be used to alert students to the newly available technology.
Training Process: Dining hall staff will be trained through simulations to administer an epinephrine autoinjector. In addition, they will be trained in their role of authority to ensure the medical safety of students.
Maintenance: Epibox will be replenished every 18 months. This is due to the fact that Epinephrine Autoinjectors expire after 18 months. This will result in an annual cost of $380.

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Validation

Setup: We validated the Epi Box platform through a dining hall simulation. We set up a mock dining hall in a conference room, installed our mock Epi Box along with a mock AED and fire alarm. We gave each of the ten participants a role: idle bystander (do nothing), devil's advocate, or normal bystander (act like you normally would). Additionally, members of our group acted as the anaphylaxis victim and dining hall staff. After cookies were served, the allergy actor displayed symptoms of anaphylaxis.

Results: Students who were far from the victim did not provide any assitance, opting instead to watch and wonder if dining staff would act. The person sitting next to the victim had experience using an epinephrine autoinjector. After diagnosing the situation, she immediately accessed the Epi Box and administered the Epinephrine autoinjector. This simulation confirmed that in addition to installing Epi Box, dining hall staff need to be trained and students must be made aware of the procedure.

Two minutes after the victim showed signs of anaphylaxis, students in our simulation were able to administer epinephrine from an Epi Box.

Do Not Pursue: Epi-Net

In the era of crowdsourcing, it might seem like a good idea to create a network of users who can respond with epinephrine in the case of emergency. We conducted basic testing of this idea by sending text messages to 12 users and offering a $10 reward for the first person who arrived with an epinephrine autoinjector. To our dismay, only 3 people responded within 15 minutes and none of them were able to come. Many users said it was "just another text message" which they did not check until after a meeting. This testing revealed that a phone-based network of Epi-pen users is unlikely to provide treatment faster than an ambulance would. Even at a larger scale (200 Epi-Net users/campus), we do not recommend this solution.

Next Steps

1. Validate effectiveness of Epi Box procedure with simulations in an actual dining hall.
2. Contract with a product design firm to develop the Epi Box hardware.
3. Develop simulation training module to teach proper allergy response to school employees (such as dining staff).
4. Coordinate with authorities and school adminstrators to come up with an implementation plan.

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