

Injectron Safety Syringe

PD 370
Group 14

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Unterburger

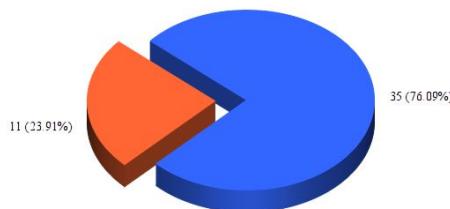
We are InjecTron

Our goal was to design a syringe that would limit the discomfort experienced by those who have a phobia of receiving their vaccinations. This is achieved by sheathing the needle portion of the syringe, as well as giving the administrator better control using precise finger loops as opposed to open controls.

Survey Result Data

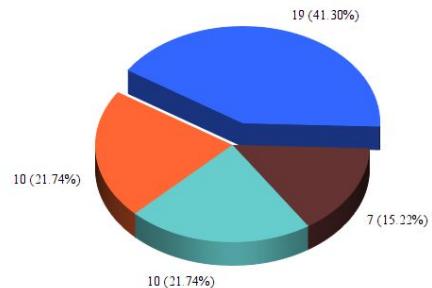
Male or Female?

■ Male ■ Female



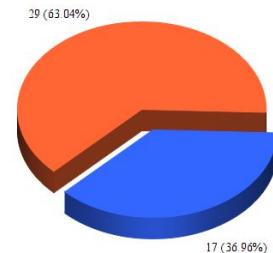
What is the worst part about getting a shot?

■ Pain ■ Seeing the Needle ■ Side Effects ■ No Fear



Do you get your annual vaccinations?

■ Yes ■ No



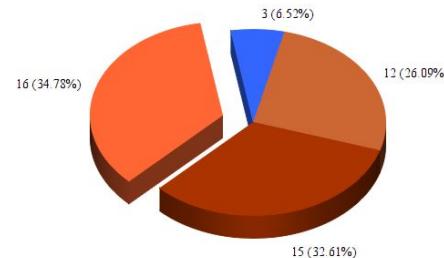
Do you have any fears that prevent you from getting shots?

■ Yes ■ No



Do any of these scare you when you get a shot?

■ The Needle ■ The Vaccination ■ The Pain ■ None



Do you have a fear of needles?

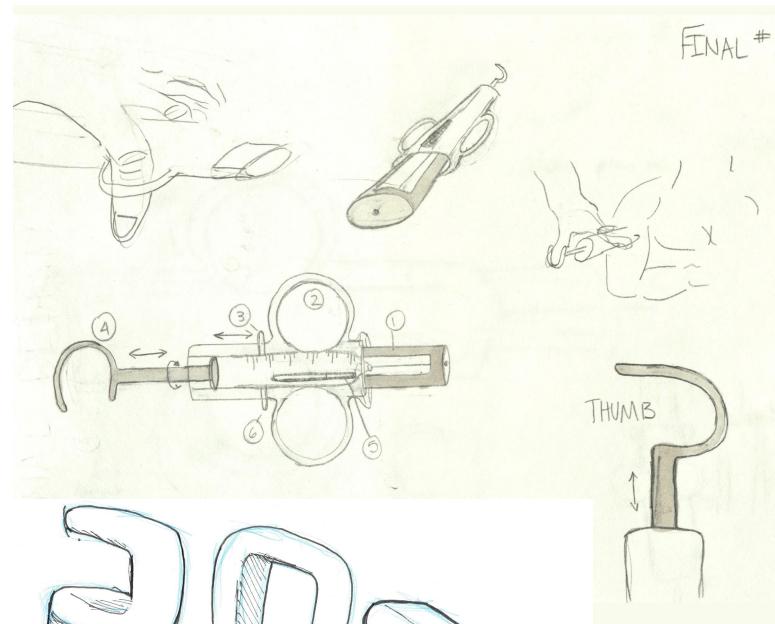
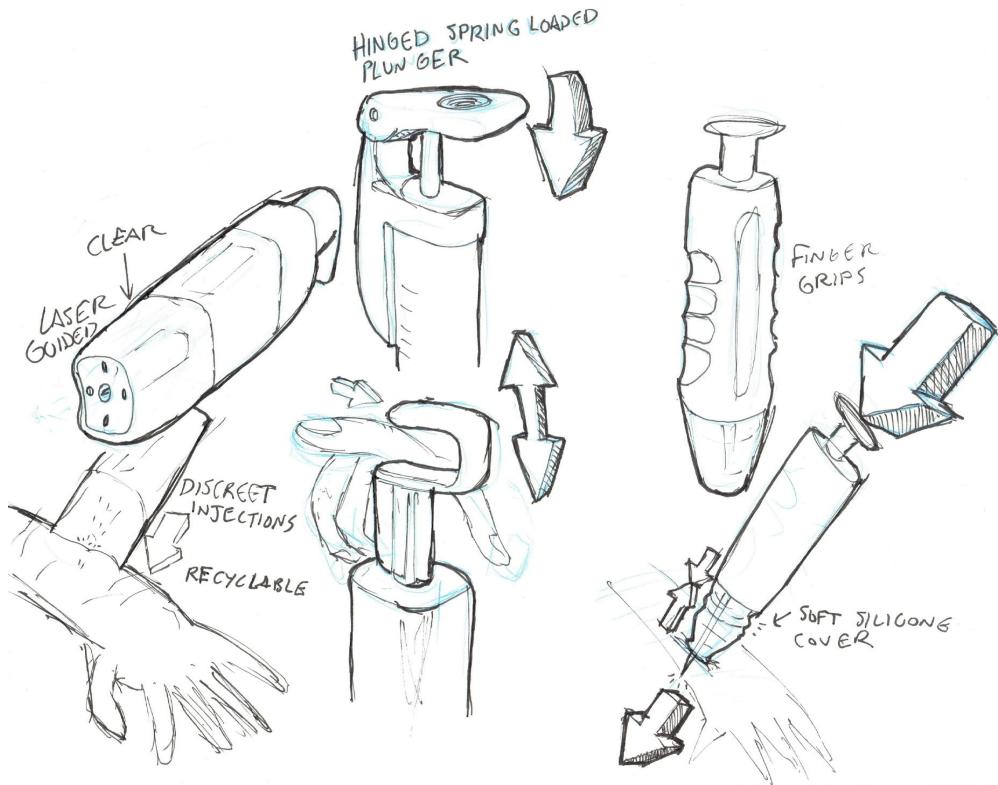
■ Yes ■ No



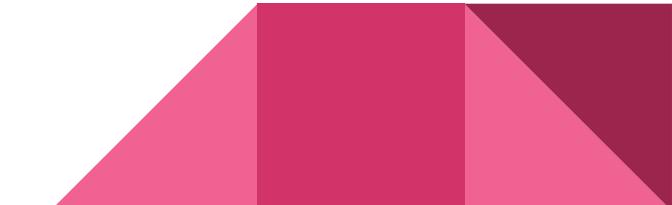
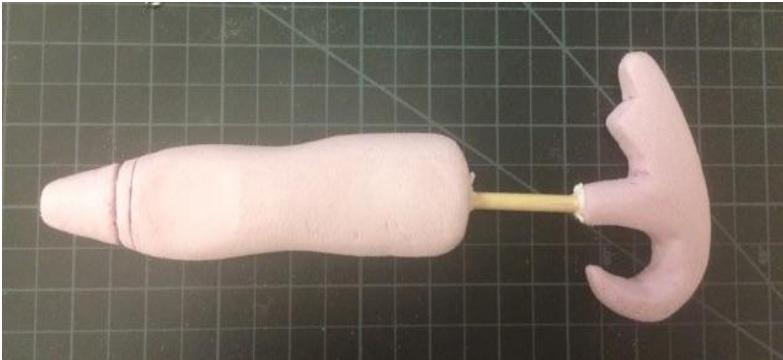
Mood Boards



Technical Drawings



Prototypes

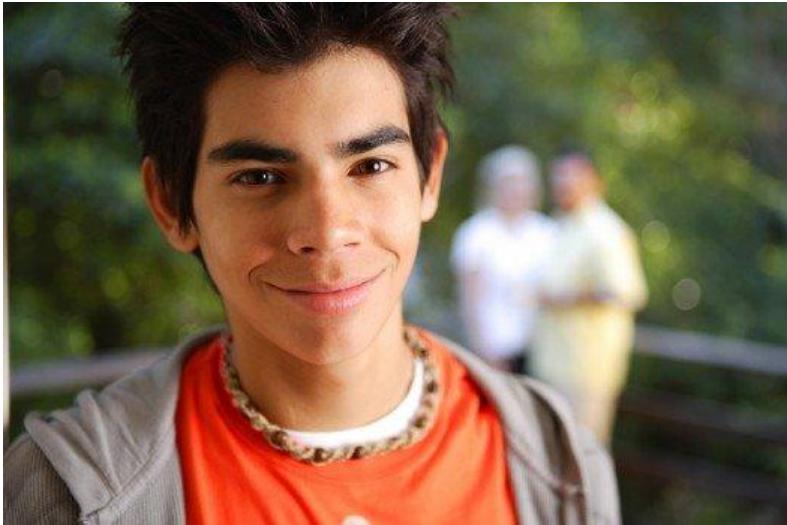


Redesigning the Syringe

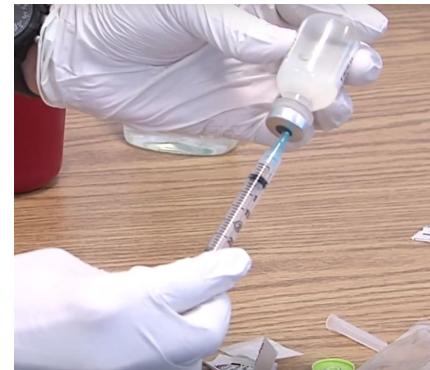
Though there are other “safety syringes” out on the market, these often have a fully or partially exposed needle, as well as simple flat tabs making one handed or precise control of the injection difficult. Many people stated during their interviews that the worst part about visiting their General Practitioner for their annual check-up was the possibility of getting a shot, even if they didn’t have a particular phobia of needles.

Most people are able to cope with this routine procedure, however some are severely affected by their phobia. We feel that this is an adequate solution to what can make the difference between getting a well needed vaccination, or facing the risk of contracting and spreading illness.

Research



Due to issues associated with confidentiality, our only first-hand experience was interviewing those who showed extreme discomfort with shots, we gained visual insight into the process of getting a vaccination by watching YouTube videos and reading blog posts.



Quotes

“Often Nurses would like to be able to use a needle with one hand, standard needles require two hands in order to retract the needle to be sure that you’re NOT in a vein, unless it’s an IV, In which case you do want to make sure you’re in the vein.”

“For younger kids, numbing cream is popular but it takes about 20 minutes before it’s fully effective. I’ve never heard of buzzy but it sounds like an excellent solution, besides the fact that we don’t keep freezers everywhere in the hospital to keep those packs cold.”

-Amy Galloway, Registered Nurse

Design Objectives

At first our primary goal was to ensure the patient's comfort, however, as the project progressed it became more apparent that the Nurse's actions were just as important as the syringe design in order to deliver the vaccination in the safest and most effective way possible.

-----Design Objectives -----

#1 Patient Aesthetics :

Our Goal for this project was to solve the problem of patient's fear of needles. To do this, the number one priority for the design must be how a patient views the needle. Not only how they physically see the it, but also how they feel around the needle, and how it interacts with them while an injection is being made.

#2 User Experience :

We want doctors, nurses and any other possible user, to be as comfortable as they can be while using this design. If the user can comfortably use the syringe with one hand, they would have another hand free in order to comfort or calm the patient. The experience of the user directly correlates with the experience of the patient.

#3 Accuracy :

Accuracy should be in the top three objectives for every product in the medical industry. Being accurate is essential for getting people in the world to trust the products and procedures that seem foreign to our basic instincts

#4 Safety :

The point of giving injections and receiving vaccines in the first place, is safety. Whenever a sharp or pointy object is out in the open we want to cover every aspect of safety as best as we can.

#5 Affordable :

It is procedure in every hospital today to dispose of every syringe after one use. The fact that something is disposable means customers (mainly hospitals) need these things to be affordable so they can order mass quantities.

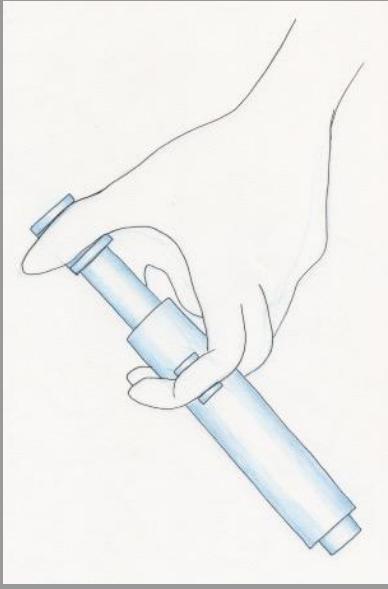
#6 Simple :

If we want the user experience to go as smoothly as possible we want to make a product that is simple and self-explanatory. We don't want doctors and nurses to have to read a user manual in order to adapt our new product.

Design Process and Inspiration

- We were inspired by people we know who hate getting shots to design a syringe for people who have the fear of needles. They described their experiences to us so we enacted a solution accordingly.
- We designed a syringe with a casing around the needle to hide it from the patient. Preventing the patient from seeing the needle would decrease their anxiety.
- To make it more comfortable and easier to control for doctors/nurses we added handles to the side of the body casing. By adding the handles it allows the user to only use one hand to control the syringe.
- Materials consist of injection molded high impact ABS plastic or polycarbonate, with the spring and needle being made from stainless surgical steel.

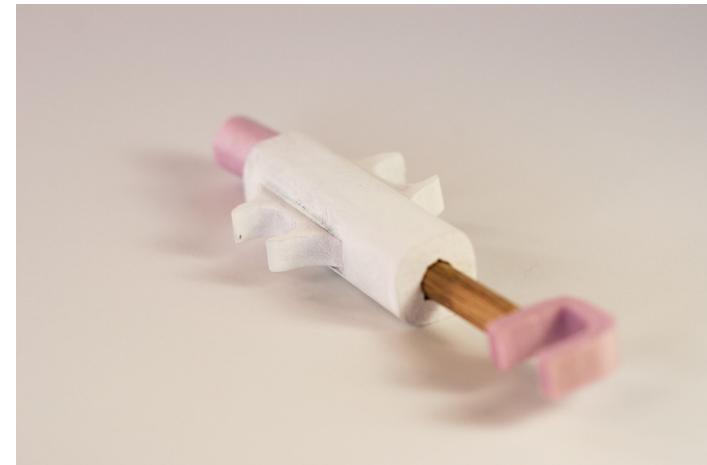
User-Product Relation



The interactions that users have with a syringe stems both from the person who administers the vaccinations, and those who receive them. Therefore, ultimately the end recipient's satisfaction and comfort are dependent on both the skill of the doctor, and the ability for the patient to withstand pain or distract themselves from it.

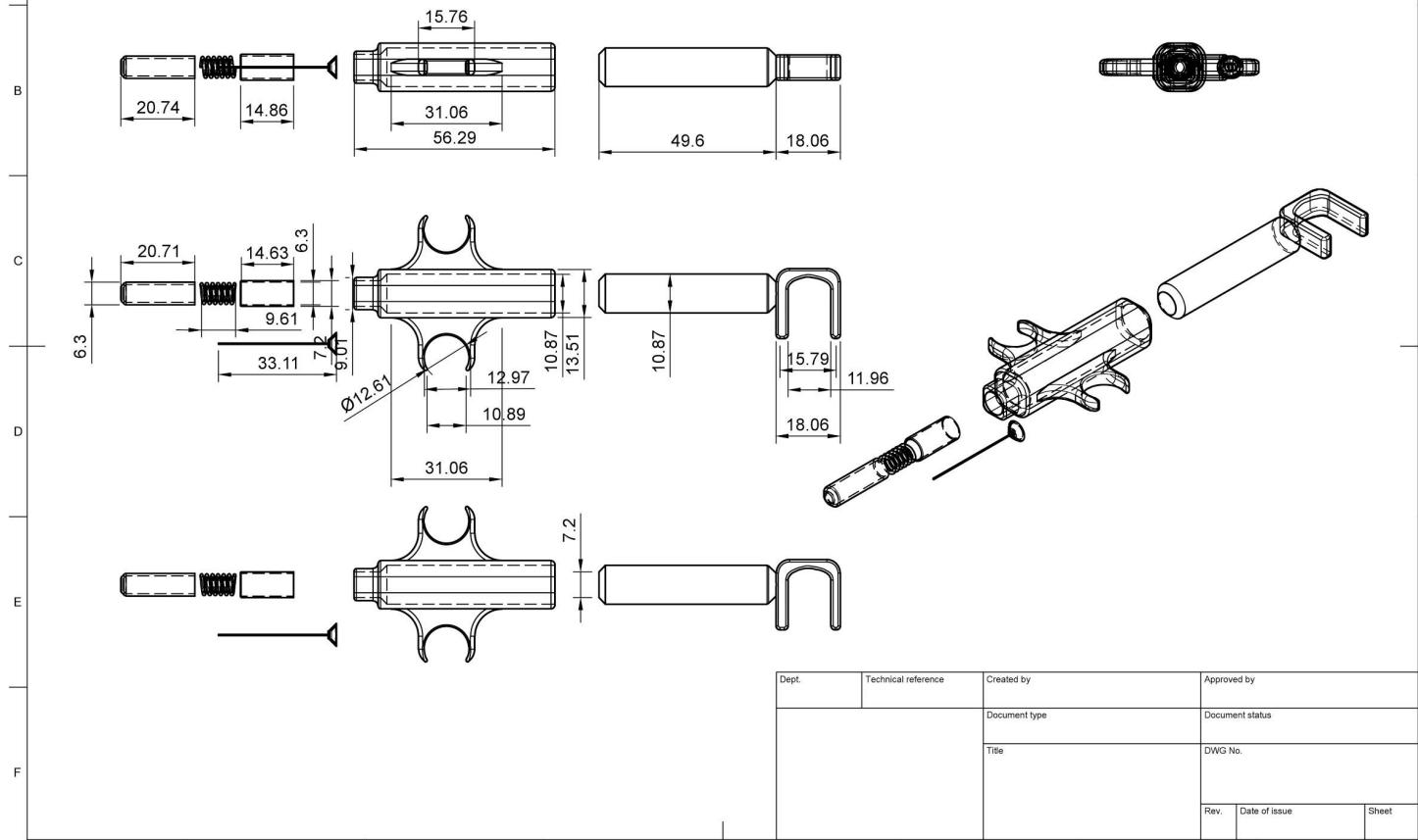
We hope to narrow down the chances for abnormal discomfort through our discreet design with upgraded control surfaces. The delivery method remains the same, as it is the most effective way to administer these types of drugs.

User Evaluation



After handing our prototype off to a user, it was immediately noted that the size was a bit cumbersome length of the plunger and body when fully extended. To remedy this, the body was shortened , as there are few vaccinations that require a volume as large as the previous body. This made the plunger more accessible to hands both small and large.

Technical Drawing



Our unique selling point are the added finger inserts and needle sheath. These two design components set our design apart from other syringes on the market.

