

Final Decision

Our topic area is: **Needle Phobia**

Injections and vaccinations have changed the course of the human race and advanced us to overcome many diseases that threaten our lives. But this advancement in medical science is only useful to those who don't mind the occasional prick in the arm. There is a large amount of people with a REAL fear of needles and often avoid medical practices for this reason.

Our design Problem is: **Pain and The sight of the needle**

There are a few variations of needle phobia, These include a real fear of the pointed objects themselves, others have a heightened sense the pain sensation when getting pricked.

lead research question: **How can we ease the fear of getting shots**

From anesthesia patches to covered needles we want to find the best possible way to make the user experience as pleasant as possible to those with a serious fear of needles.

Team Motivation: **Spread awareness of this overlooked problem**

Most medical practices overlook these fears and tell people to 'just get over it'. This is similar to telling a person with depression to 'just cheer up'.

Our Aim/Vision: **To make the shot experience bearable**

To completely solve the phobia of needles is varied for every type of person, some people need therapy while others just need to look away from the needle when injecting, Whatever the problem we would like to make the experience bearable until the person can solve their own phobia.

5. + What is the current status and situation in this field of interest/ market/ product range?

Medical syringes tend to be archaic and intimidating in terms of presentation and actual use. There has been little in improvements to their design since the 1950's. The needle is left exposed not only to the elements (say if a contaminant were to get on it after the protective cap has been removed) and in sight of the patient, to whom it may cause a great discomfort. With medical advancements reaching its peak for this era, the next step could possibly be pain prevention and comfort within this context of the Medical Industry.

+ What is the market size or value, market development over the years?

The market size for syringe manufacturers is massive. Currently, it is forecasted to reach a global income of around 6.6 billion USD by the year 2020. Small developments in needle alloys and reservoir tank materials have been made, but there are still many ways the current standard can be improved to provide a more comfortable inoculation for a patient. Currently, syringes have reached a peak in terms of delivery of vital medicines and preventative anti-pathogen serums. The next logical step would be to improve the way that people interact with these products, rather than how they function to deliver on their primary objective.

In the market right now there are a lot of syringes with discrete needles for insulin, anesthesia, and diabetes but none for vaccinations. There are ideas for some to be created but they haven't been released into the market. For the graph below demonstrates that there are no products specifically targeting people who have the fear of needles and need vaccinations, There are products for people who have the fear of needles but they are meant for non vaccination use.

<p>For Vaccination use</p>	<p>Discrete needle</p> <div> </div> <p>NovoPen Mate</p> <div> </div> <p>Inject Ease</p> <div> </div> <p>Aguettant Syringe 5ml</p> <p>non-vaccination use</p>
<div> </div> <p>Exel 20g x 1.5"</p> <div> </div> <p>BD Safety Lok Syringe 22G x 1"</p> <div> <p>Terumo 20g x 1.5"</p> </div> <div> </div> <div> <p>Exel syringe 20g x 1"</p> </div> <div> </div>	<div> </div> <p>NovoPen Junior</p> <div> </div> <p>Dental Anesthesia</p> <div> <p>1ml BD clear syringe</p> </div> <div> </div> <p>needle visible</p>

6.

Syringes were first developed as far back as the mid-1600's in an attempt to deliver opium to animals to study its effects with access being granted by cutting an incision to pave way for the quill like needle to be directly forced into the now exposed vein. From there, different materials were experimented with until the mid-1800's when a viable syringe, which punctured the skin directly, was developed. However, due to it being an

undesirable method of delivery, (though the most effective method) topical medications were gaining popularity. As technology progressed, more refined versions of the syringe were developed until we came to our final iteration which is used today. As late as 2007, there have been small improvements made to prevent accidental sharing of syringes.





By having an exterior sheathing, it is possible to alleviate anxiety or physical pain associated with hypodermic needles, as it is mostly a psychological association with pain when the needle is viewed. Essentially, making the syringe look inconspicuous is our goal. If the design is too bulky to achieve accurate penetration, a guidance system (much like a laser pointer) can aid in injection.

With a potential deal of pain being dealt away with (again, the actual puncturing of the skin is far less painful than the thought of getting a shot), people will be more convinced on getting their immunizations. This in turn will lead to increased sales and production volumes. With different polymers and alloys, the syringes will be highly recyclable, with the possibility of a disposable cartridge based system possible.

Card Sorting:

User Experience: It's flu season, and once again it's time to get your shots. For most people this may be a slight inconvenience, but to Wilson, this is a nightmare. He has been thinking about that dreadful stab all day. At the end of his workday he decides against it for the third time this week. And once again, he goes another year without the vaccine, only to get sick a month later, and go on to infect others spreading this worthless virus.

Market: The current market standard is a needle point about an inch and a half long. This needle includes nothing but the essentials for the safety and accuracy of the nurses. But what about the fear struck patients such as Wilson. However there are multiple different types of casing for these needles for the general safety of the nurses. As well as any Personnel that may deal with the biohazardous waste.

Technical requirements: The production of syringes is regulated strictly, Multiple types of needles have different requirements for size and volume. Typically the production of needles must be watched closely and randomly chosen parts are check through the entire production process.

Current Market Solutions:

Needle casings: Multiple designs have been made to hide the needle **PRO:** they are well designed and are beneficial to those with more of an anxiety of looking at the needle **CON:** These have been found to sometimes be inaccurate for the use of nurses.



Numbing Patches: There two numbing patches that I have found, *Synera* (bottom left) uses Lidocaine to numb the surface of the skin. *Buzzy* (bottom right) appears to use Gate control, **PRO** a feeling of chill and vibrations will distract the brain from the pain of the needle **CON**, *Synera* takes 30 minutes to be in effect.



7.

Whom are you designing for?

Our target audience is people who have the fear of needles relating to getting shots at the doctor's office.

Who should use it? Who should buy it?

Our product should be used by people who are terrified of getting shots at the doctor's office, anyone who wants a better way to cope with the pain, or people that have the fear of needles. This should be an option at the doctor's office so giving mandatory shots will be easier and a way for everyone to get them. Doctor offices or any medical facility should buy our product because it is used for a popular and required segment of the medical world. Vaccinations are required for everyone so syringes are needed at every medical facility.

Where would you find this product or system?

You would find this product at the doctor's office, It could be an alternative form to giving shots specifically for people who fear needles or it could replace all syringes and be used universally for everyone.

What are the environments/ contexts of use?

You go into the doctor's office to get your usual vaccinations, you hate getting them because just the sight of the needle makes you want to faint. You're sitting on the table waiting for the doctor to grab the syringe; you start to get restless as your anxiety starts to build up. Once you see the needle reality kicks in and your biggest fears of it penetrating your arm is the only thing you think of. You start to cry and move around to get away from it but the doctor is telling you to hold still and just look away. Not being able to see the needle helps a little bit but you can still feel the needle going inside your arm.

What distribution channels would be used?

We would want to create a whole new line of syringes that would be affordable to majority of health facilities so it can help a wide range of people from different economic classes and backgrounds. It could be mass produced and supplied nation-wide.

What could be a desirable user experience?

A desirable experience would be coming into the doctor's office to get your usual vaccinations and not be scared to get the shot. You would be able to cope with the shot even with your fears of needles. It wouldn't hurt, it wouldn't stress out the patient, it would be a quick, easy visit that wouldn't terrify the patient that would make them avoid getting their vaccinations.









