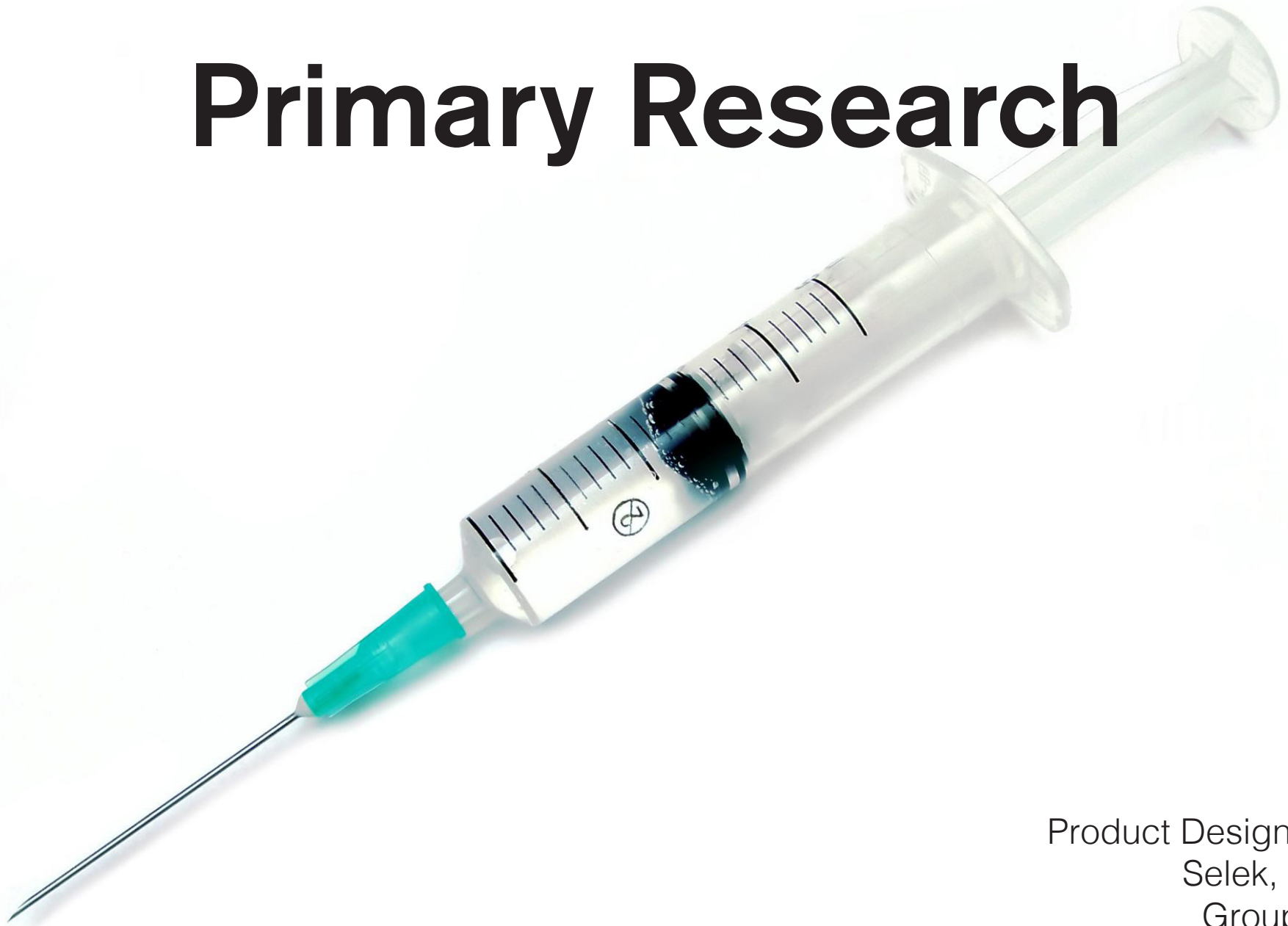


Primary Research



Product Design 370
Selek, Hale
Group 14:

Jared Galloway, Tracie Jackson, Taro Unterburger

Observation

Observing a vaccination was hindered due to privacy issues that were apparent when we went into the Health Clinic on Campus. As an alternative, we chose to watch videos on the internet on the subject as an adequate alternative, and even recall our own experiences. One interesting point that was seen online was the vast majority of search results were of children in visible discomfort either before, after, or during the process of getting an inoculation, and even some videos of “tips on how to avoid discomfort.”



It can be observed in these stills from a youtube video that this man's reaction just before the needle pierces the skin is where the most discomfort is. (1)

Source: <https://www.youtube.com/watch?v=cniQx7Cp9Ak>

Throughout the years, I've had multiple experiences with needles. My earliest recollection was before I entered grade school. I don't remember much besides kicking my legs up and down in fear of the doctor and the needle while my mom held my legs down for the three mandatory, elementary shots. As I got older, I became more ok with shots. I get my annual shots every year as well as giving blood. Thinking about that bee sting from the injection can be a little intimidating but sitting in your bed for a week puking and not eating sounds a lot less appealing. I've been through a ton of IV's and shots and the most helpful thing that during the process is when the doctor or nurse distracts you through conversations so that before you know it the needle is in your arm. This goes to show that distraction can help. Because usually, for the average person, the worst part about getting shots is the over-thinking that comes before. -A personal perspective from Jared Galloway (6)



Again, the peak of discomfort can be seen right as the needle is about to puncture the skin. This teenage girl was immediately relieved when the procedure was over. (2)

Source: <https://www.youtube.com/watch?v=qCb-pvfk80P4>

What is the worst part of getting a shot?

Answered by: Wyatt Domanski, who has a phobia of needles.

'Having a foreign object in my body! You know it's helpful but at my core I don't REALLY know what is happening inside my body. I try to calm myself down but when I think about it I start sweating and get extremely nervous when I see the needle.' (7)

Interviews

Amy Galloway (4)

General nurse with experience on all floors

Experience: Over 30 years.

(Random suggestion before the interview)

“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.”

How often do you have to give shots to those with a phobia of needles?

“Not too often. I’d say 5/100. I would assume those with an extreme case of needle Phobia neglect to get regular shots. Most of the patients I deal with are older and get shots on a pretty regular basis. There’s a big difference between kids and adults. Most of the time if an adult patient has a problem they just hold their breath and look away. If Somebody is really squeamish, I’ll call in a an ER nurse to do it quickly.”

What sorts of behaviors do these patients exhibit before, during, and after the procedure?

“Some patients get nervous. They tend to tense up their muscle, which can make the whole thing a lot worse. They’re the most talkative before I give the Injection in an attempt to distract themselves in some way or another.”

What’s your favorite part of the body inject?

“Back of the arm usually. The more fat the better, Injecting into a muscle is going to cause more pain.”

Do these patients ever have any specific requests to make the injection better?

“Inject in nondominant hand, and they usually don’t want to see the needle.”

What sort of tricks have you learned to make giving an injection more bearable to patients?

“The quicker you can go, the better. Having one hand free could be a huge help because you can distract the patient by putting pressure on another part of the body. When sterilizing I rub with enough pressure so that the patient still has a slightly numbed sensation before I give the injection. Gate control. In horses it is procedure to pinch the horse in a different spot to distract them from the pain, It’s the same idea”

What, if any, are the technical requirements when giving an injection?

“Always sterilize the patient first and you must always dispose of all materials related to the injection, Besides that it is up to the nurses to gage the body fat of a person and how far they should stick the needle.”

Do you ever use topical numbing patches/creams? Buzzy?

“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”

What sorts of technologies could you suggest that might help make the experience better for patients?

“It would be really, really nice to have one hand free”

Do you dispose of the entire syringe after every use?

“Yes, Everything involved with the needle must be disposed of”

Do you have a preference on any specific design / brand of needle?

“No. All the needles around our hospital have pretty much the same functionality”

Barbara Kirby (5)

Assistant Nurse Manager for Labor and Delivery

Experience: About 30 years.

How often do you have to give shots to those with a phobia of needles?

To be honest, not that often. It's a rare occurrence

What sorts of behaviors do these patients exhibit before, during, and after the procedure?

Mostly crying before, a sense of nervousness during, while discussing the procedure after it has been completed.

What's your favorite part of the body to inject?

The upper arm or buttocks.

Do these patients ever have any specific requests to make the injection better?

No, but they do look away though. People avoid getting the flu vaccine due to the needle, but now there's a nasal spray that I can offer them.



What sort of tricks have you learned to make giving an injection more bearable to patients?

I often suggest they look away and focus on something while wiggling their left big toe.

What, if any, are the technical requirements when giving an injection?

Wipe and clean off the area with rubbing alcohol. Then poke away!

Do you ever use topical numbing patches/creams? Buzzy?

Never.

What sorts of technologies could you suggest that might help make the experience better for patients?

I can't think of one, as the current solution is pretty reliable.

Do you dispose of the entire syringe after every use?

Yes, you are required to.

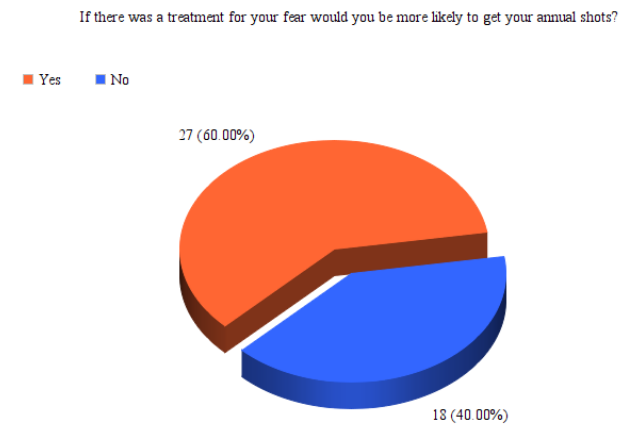
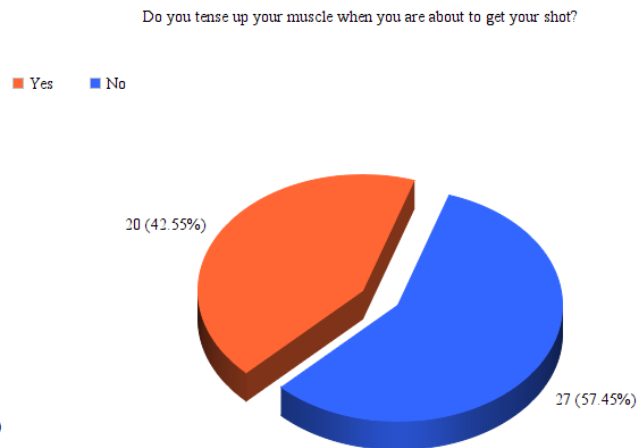
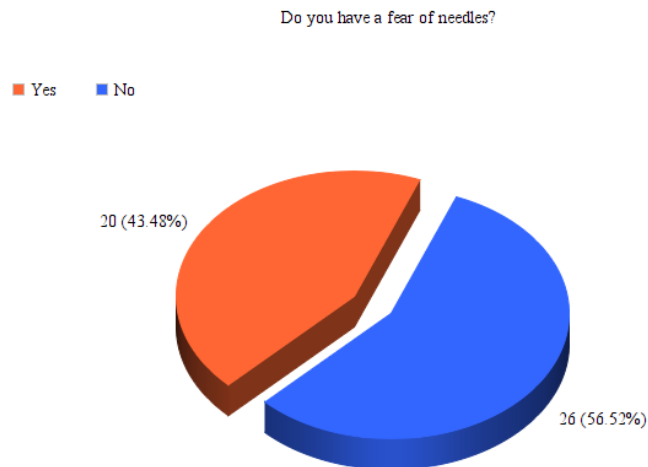
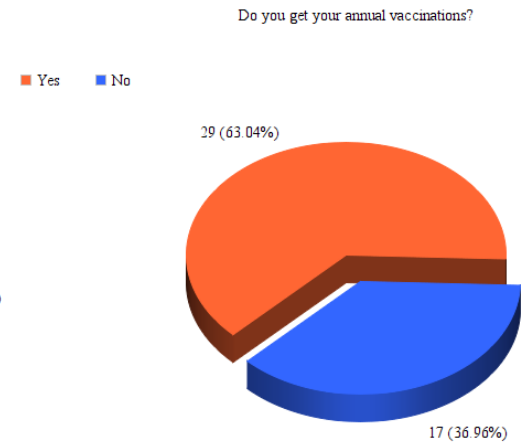
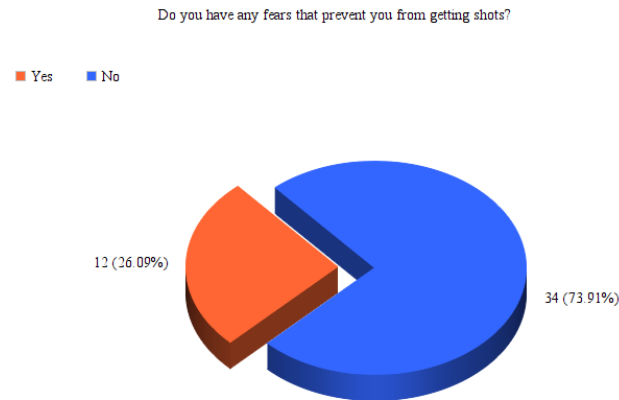
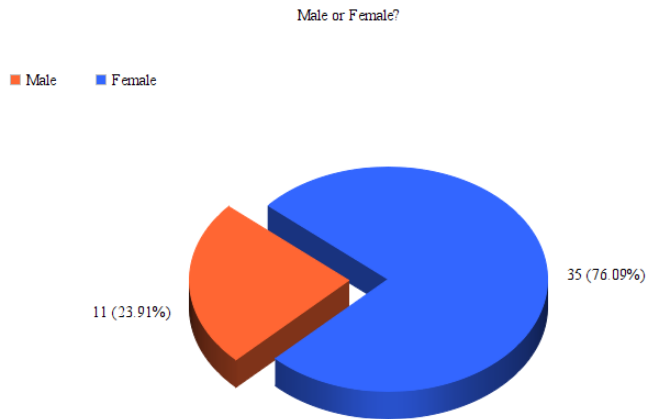
Do you have a preference on any specific design / brand of needle?

Baxter Pharmaceuticals is the main supplier of our syringes.

Survey

In our survey we analyzed data that was related to people's fear of needles. Choosing to ask questions about all aspects pertaining to the inoculation process ensures data to help guide us in our design strategy. A surprising amount of people responded to the survey, which gave us a great amount of data to go off of.

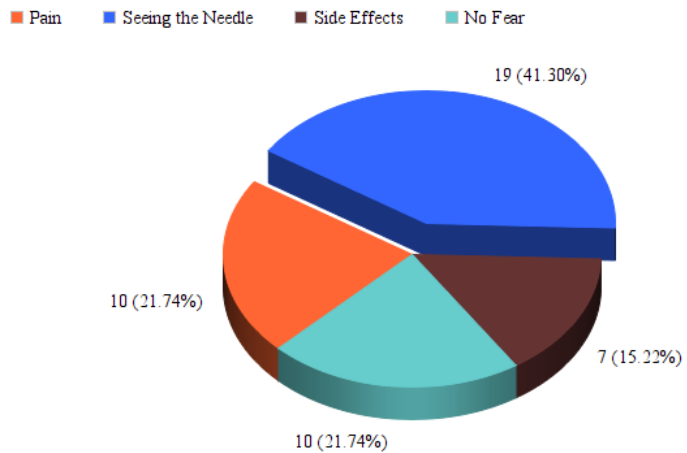
Through these simple pie charts, we were able to gain a better understanding of how people generally feel about syringes and their effects on the user (both doctor and patient). (8)



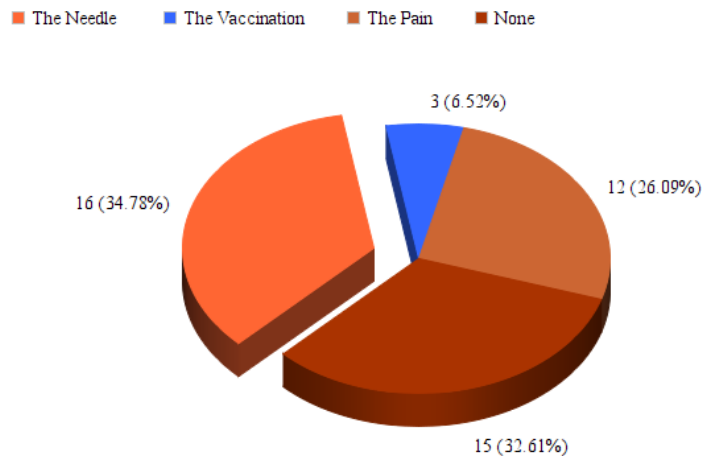
In our findings, it seems that the vast majority of people fear the needle itself, rather than the actual physical discomfort of receiving a vaccination. A very select few even fear vaccinations enough to prevent them from getting them altogether, though it is not clear whether this covers vital inoculations which are mandatory to participate in most public programs, as opposed to annual flu vaccines.

Another finding in our data was that most of our responders were female, though this does not necessarily mean that they are the ones who fear needles most, as certain societal stigmas may prevent male participants from admitting they feel pain, or even respond to the survey at all. Generally, for the limited amount of time and people we had respond, we feel that the data is accurate, and a decent example for our case.

What is the worst part about getting a shot?



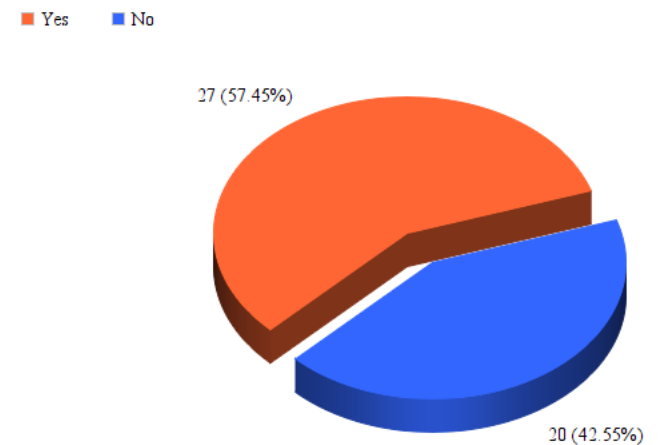
Do any of these scare you when you get a shot?



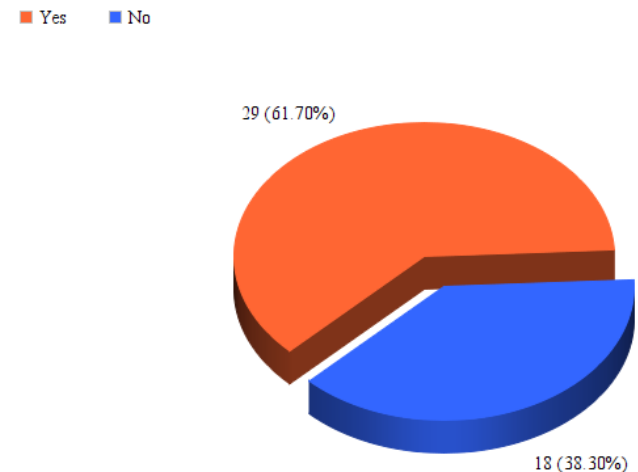
In our data we find that a good majority of the people who do fear the vaccination procedure fear the needle itself. After all, a foreign object that has entered the body is more than likely perceived as uncomfortable and not a very pleasant experience for many people. Even though these are intentional preventative measures which are meant to benefit patients, there is still a negative light being cast on the invasive procedure.

With the discomfort experienced with getting a vaccination come coping methods as well. Many people (61.7%) absolutely need to focus on a distraction point in order to cope with an injection, as the actual pain from the shot isn't generally that great at all. All in all, not being able to see the needle actively, even if it's known that an injection will happen can greatly reduce discomfort in a patient, according to our data. (8)

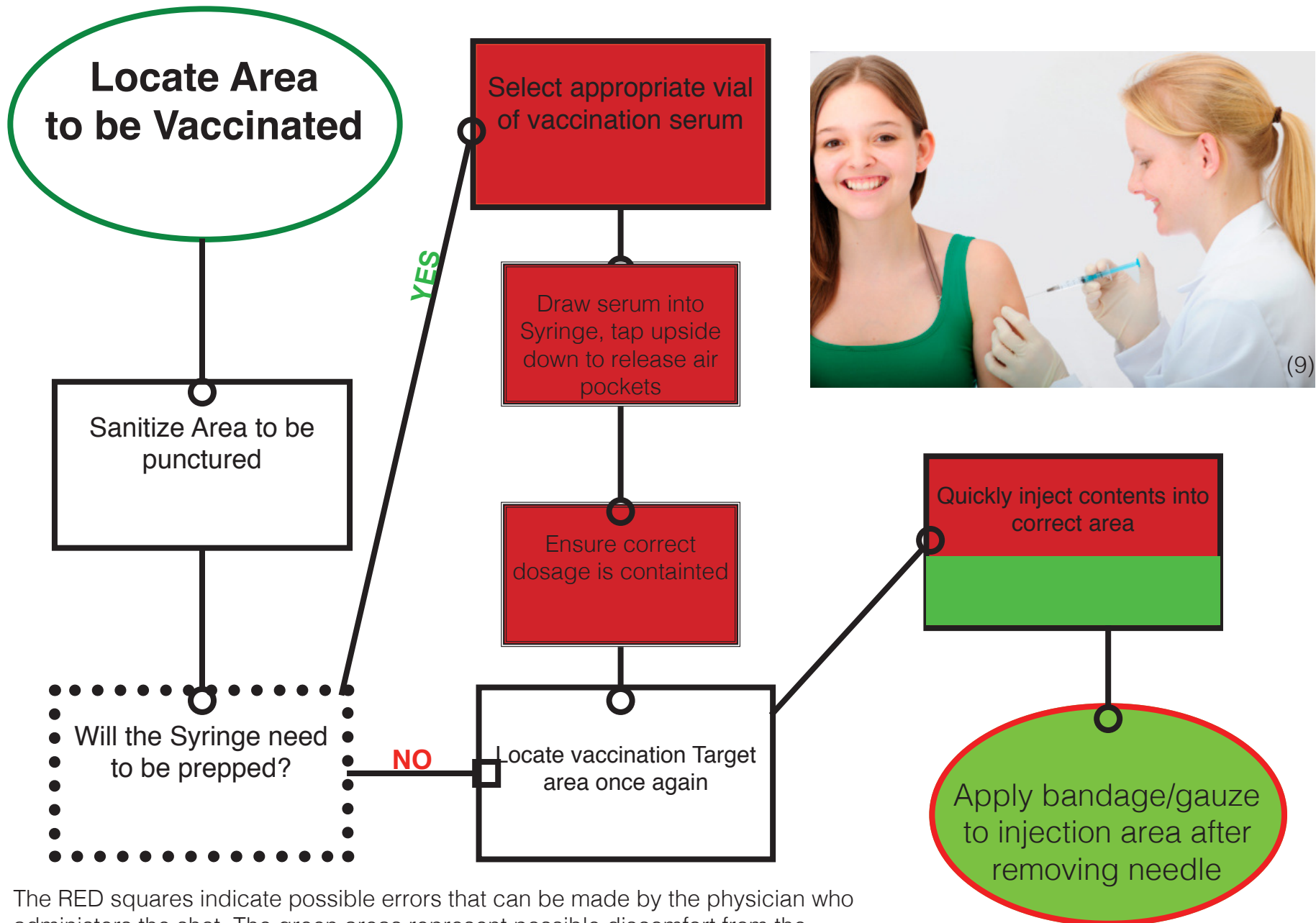
If you couldn't see the needle would you be able to tolerate shots more?



Do you have to have your attention away from the shot to cope with it?

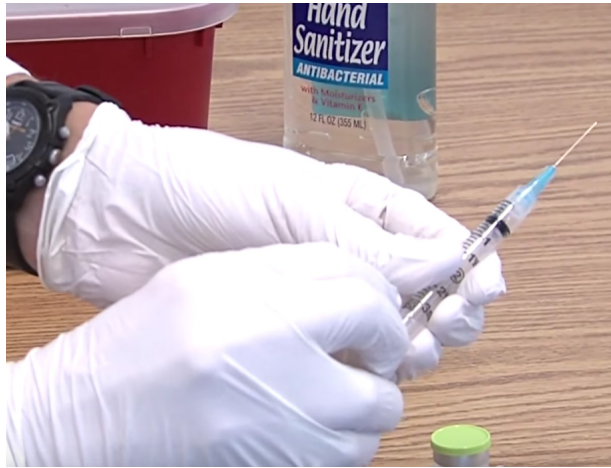


Task Analysis: Vaccination Procedure



The stills from this youtube video demonstrate the operation of a syringe which needs to be manually filled with the vaccine. As noted by the flow chart on the previous page, there are multiple possibilities for errors to occur, causing more discomfort for the patient. (3)

Source:
<https://www.youtube.com/watch?v=rKOyN-SR4ByA>

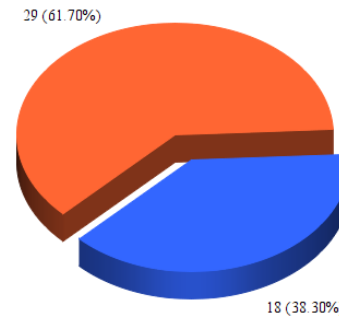


Summary

Based on all the data we collected we came to the conclusion that not a lot of people who have the fear of needles get their regular shots and of the few that do they tend to hold their breathe and just look away. The people who do get their annual shots tend to “get nervous. They tend to tense up their muscle, which can make the whole thing a lot worse” (Galloway). The best way to avoid the patient from tensing up would be to get the shot over with fast. “The quicker you can go, the better. Having one hand free could be a huge help because you can distract the patient by putting pressure on another part of the body” (Galloway).

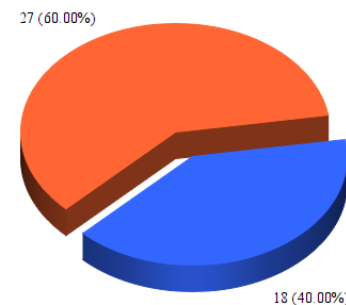
In the survey we conducted we found that people are more scared of seeing the needle rather than the vaccination and pain. Most participants didn't like seeing the needle before they are about to get their shots but they also don't have a fear of needles. They prefer to not be able to see the needle because they thought it looks very intimidating and makes them draw their attention to the syringe, which can cause anxiety to the patient. 61.70% of our survey participants did say that if they had their attention away from the shot they would be able to cope with getting shots. Surprisingly only 60% said if we treated their fears associated with shots they would be more likely to get their annual vaccination in their respective question within the survey. After getting all the data from our surveyors our group was surprised that 44.68% of our surveyors had a fear of needles. We expected the difference between having a fear and not would be a huge gap but instead it was close to almost half (21 of 47 people had a fear of needles).

With the data we have collected from our survey, interview, and observations we have come to the conclusion that if we want to make shots/vaccinations more tolerable and less intimidating to patients than hiding the needle would be a simple yet adequate solution. Having the patient's input is very important to us but we also need to take into consideration the other perspective from the nurses/doctors needs too.



The pie graph above indicates the number of answers for the participants needing to draw their attention away from the needle during the procedure.

Below: The number of people who were more likely to get their annual shots if an improvement was made was far more than those who wouldn't.



When we interviewed Amy Galloway, (a nurse with 30 years experience) she suggested that “It would be really, really nice to have one hand free. Having one hand free could be a huge help because you can distract the patient by putting pressure on another part of the body”. With this suggestion we could design a syringe that would be operated with one hand to make it easier for nurses/doctors. Galloway also pointed out some important factors that we need to take into consideration such as, “you must always dispose of all materials related to the injection, everything involved with the needle must be disposed of, and it's up to the nurses to [decide] how far they should stick the needle”. Galloway gave us a lot to think about and pointed out important factors we need to take into consideration if we are going to redesign a syringe that will accommodate to nurses and doctors but also will help patients cope with the intimidation and anxiety that syringes with the needle showing causes.

Assistant Manager, Nurse Barbara Kirby was much more concise about her answers. She believes that the current system is as good as it will get and doesn't necessarily believe that there are improvements that could be made to the current system. However, she does acknowledge the discomfort that most people face when receiving a vaccination, and does offer any alternatives if they are available, and upon the patient's request. As for the user-side improvements, she had little to add to the syringe's current, and time tested design.

From this, it appears that most of the discomfort is experienced in anticipation of the vaccination. Right before the procedure is made it seems is when people tend to be scared.

Work Cited

YouTube Videos:

- (1) “Me getting a tetanus shot” <<https://www.youtube.com/watch?v=cniQx7Cp9Ak>>
- (2) “Getting A Shot At The Doctors Crying ! ?” <<https://www.youtube.com/watch?v=qCbpvfk80P4>>
- (3) “How to Perform an Intramuscular Injection” <<https://www.youtube.com/watch?v=rKOyNSR4ByA>>

Interviews:

- (4) Amy Galloway, General Nurse
- (5) Barbara Kirby, Assistant Nurse Manager for Labor & Delivery
- (6) Jared Galloway, Student, University of Oregon
- (7) Wyatt Domanski, Student, University of Oregon

Surveys:

- (8) Survey Monkey <<https://www.surveymonkey.com/r/36QNYHD>>

Images:

- (9) < <http://sexetc.org/wp-content/uploads/2012/11/Girl-getting-the-shot.jpg>>
- (10) < http://blog.timesunion.com/opinion/files/2011/01/0131_WVvaccine.jpg>
- (11) < <http://www.go-dove.com/shared/auction/images/photos/72435/72434674.jpg>>