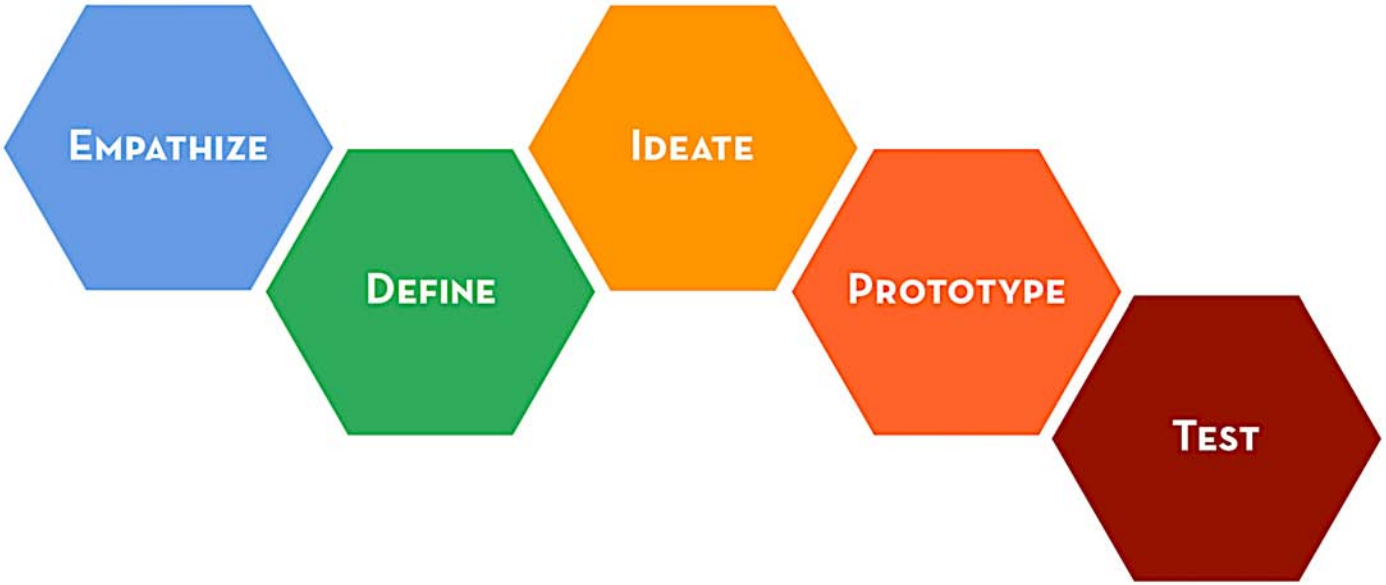
DESIGN THINKING
FOR HEALTH CARE

Design Thinking: An Overview

Jules Sherman, M.F.A.
www.redesignhealthcare.org

Human Centered Design Paradigm

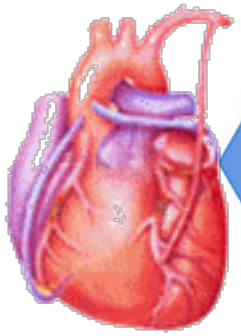


Human Centered Design Paradigm

Observing & Shadowing

Tell new stories through solution ideas.

Make your ideas tangible. Prototypes can be objects, paper prototypes, skits, videos, flow charts, etc.



EMPATHIZE

DEFINE

IDEATE

PROTOTYPE

TEST

Aim to understand

Listening

Synthesis: Define the norm, define the problems, create your POV.

*Test your prototypes with users. *Scrappy elicits more honest feedback.*

A designer 'needfinds' or works to understand a user's experience by learning about their lives. Empathy gaining and needfinding may be broken down into three discrete methods:

Immerse (environment)

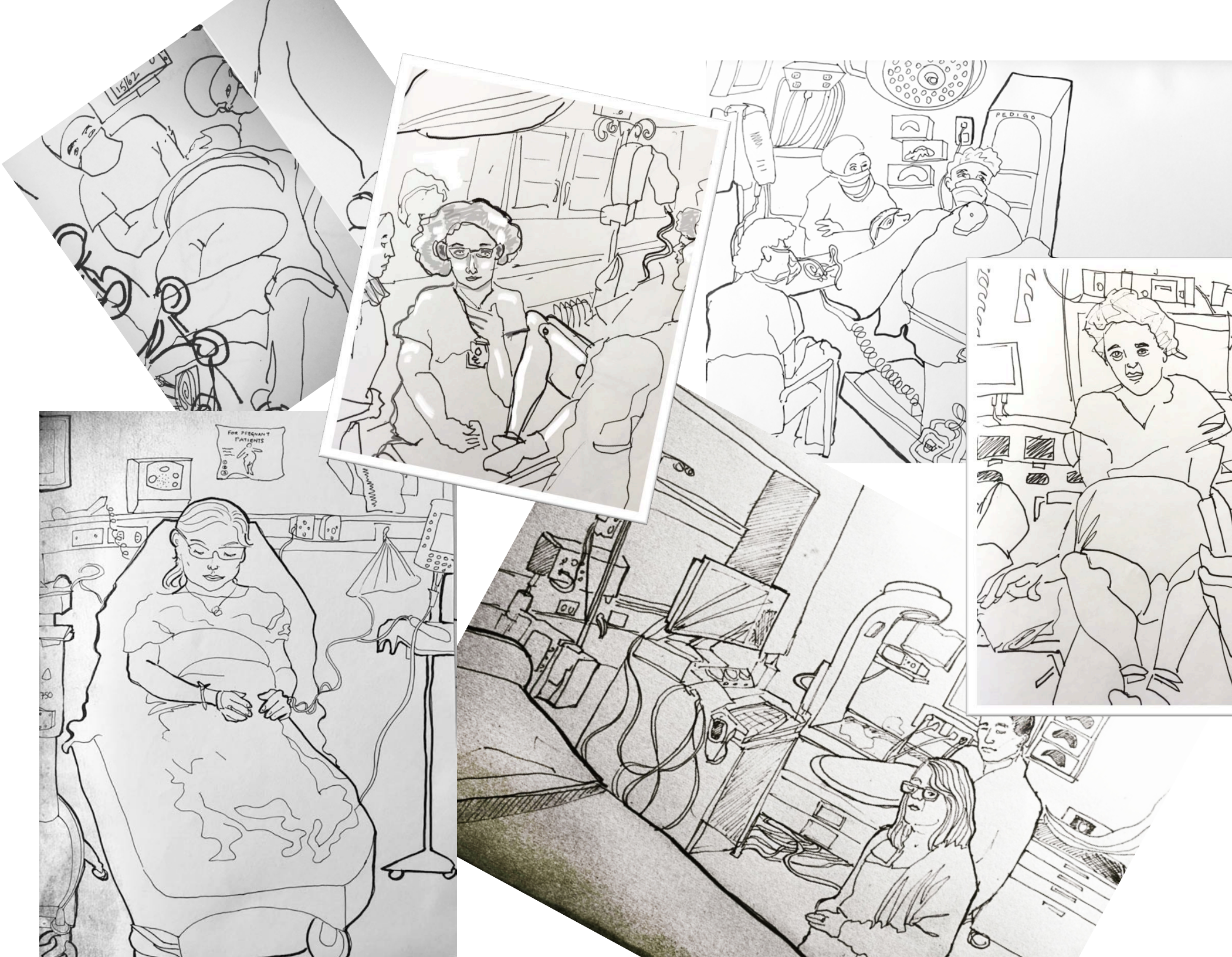
Engage (interview)

Observe (shadow/watch)

Observe

Engage

Interview
Post-it
Post-it
Post-it


FOR PREGNANT PATIENTS
PEDIGO

Need statement:

USER needs X because Y ← emotional components

In their own words: New mothers

Words	Feelings
"I wish I knew that I should have done something before hand to make breast-feeding easier. It really hurt when my nipple tip bled." Johanna M.	• Regret at being unprepared. • Frustration when she had trouble feeding her baby. → worried about malnourishment. • Inconvenience, annoyance of the temporary pain.
= I almost threw up while in labor because I just ate a hamburger right before – which is probably not recommended. But hey, having a baby is like running a marathon. Gotta treat yourself a bit." Olivia's mom	• justified for being indulgent, after all, 9 months of abstinence from junk food is a long time. • Grossed out from the hospital food that she felt compelled to have her husband drive out to buy a burger.

Words	Feelings
= There's a photo of me in my mother-in-law's foyer of showcasing my huge, braless boobs while I'm hanging onto my newborn for dear life... Yes, I know it's about the baby, but when there is a photo involved, it's about me too." Mother on the stir. cafemom blog	• disappointed about her sudden intrusion of privacy. • Self-conscious about her image on camera + preferred that her family members acted with more sensibility. • feels grossed out about how she looks right after birth.
"If your "real" doctor doesn't deliver you, you sort of don't care anymore. You just want the baby out & whoever is going to make that happen, your partner, a nurse, or even a f*cking janitor – seems perfectly fine."	• When she is in pain (b/c she is pushing a human being out of her body), she gets urgent and irrational. Anything goes as long as ends the process. • indifference toward OB credentials in the critical moment. • annoyance with anyone/anything that could make her situation more difficult.

PHILIPS
HealthySteps
EMERGENCY

FOR
RE

ral birth and I really wanted
it felt like they kept pushing
n, obviously, but I was trying
n the hall just shrieking and
ey kept saying, "Hey, the
nen you're in that much pain
op, stop it." And then they
so pushed too early and then
o get him out, my older son,
vith this big thing on his head
st thought no thank you. I
l to squat. I just had the
e on my back, which hurts
more, and then I discovered la
And so she kept looking at th
don't feel like pushing. And
like you can't find something
and they'd say, "No, no, no, d
know. And so when I talked
your body knows." And so I
also think is wrong thinking.
just me than all the people I h
child again, I had pneumonia,
and so that just sort of blew th
my birth experience, which w
birth.

FSPKR3: The opposite?

FSPKR1: I was surrounded by a lot of p
pretty harrowing home birth s
So I feel like if you can be in
best of all worlds. So that's w

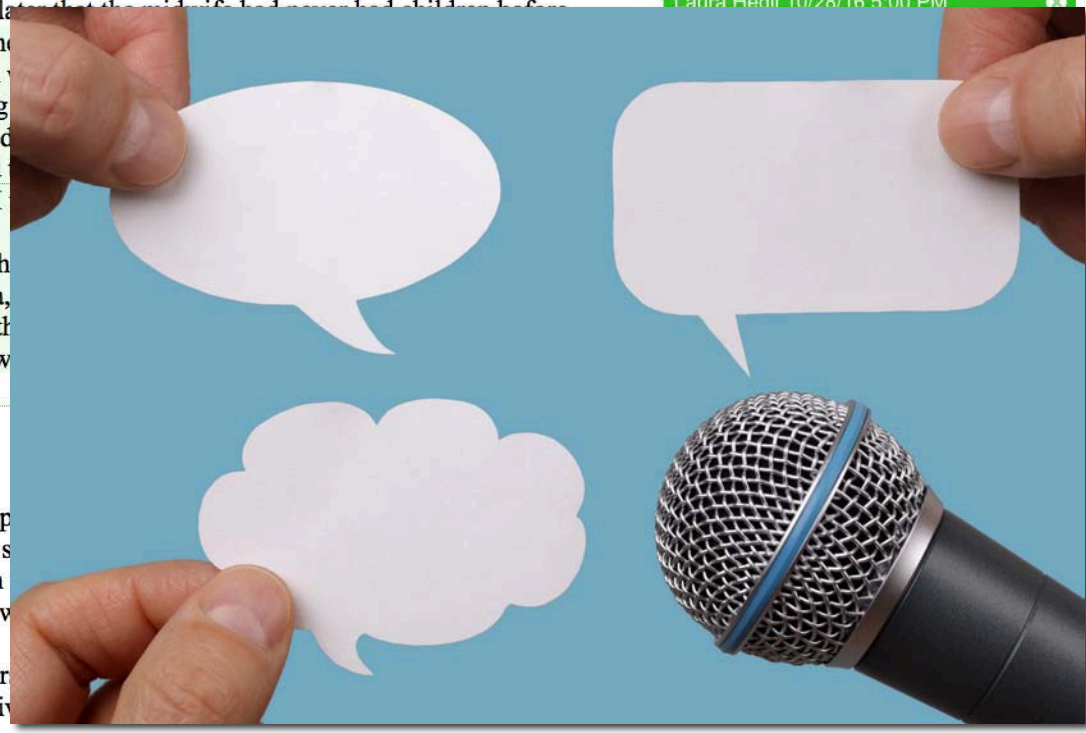
INT: So you mentioned on your fir
happening there. Did they giv

Laura Hedli 10/28/16 4:24 PM
Comment: Expectations: desired birth experience; expression of what her vision was for her birth

Laura Hedli 10/28/16 5:13 PM
Comment: Physical: Pain – no epidural

Laura Hedli 10/28/16 4:27 PM
Comment: Physical: pushing then vacuum

Laura Hedli 10/28/16 5:00 PM



The goal of the empathy mode is to discover gaps in between what people do and what people say they do. These gaps are the design opportunities.

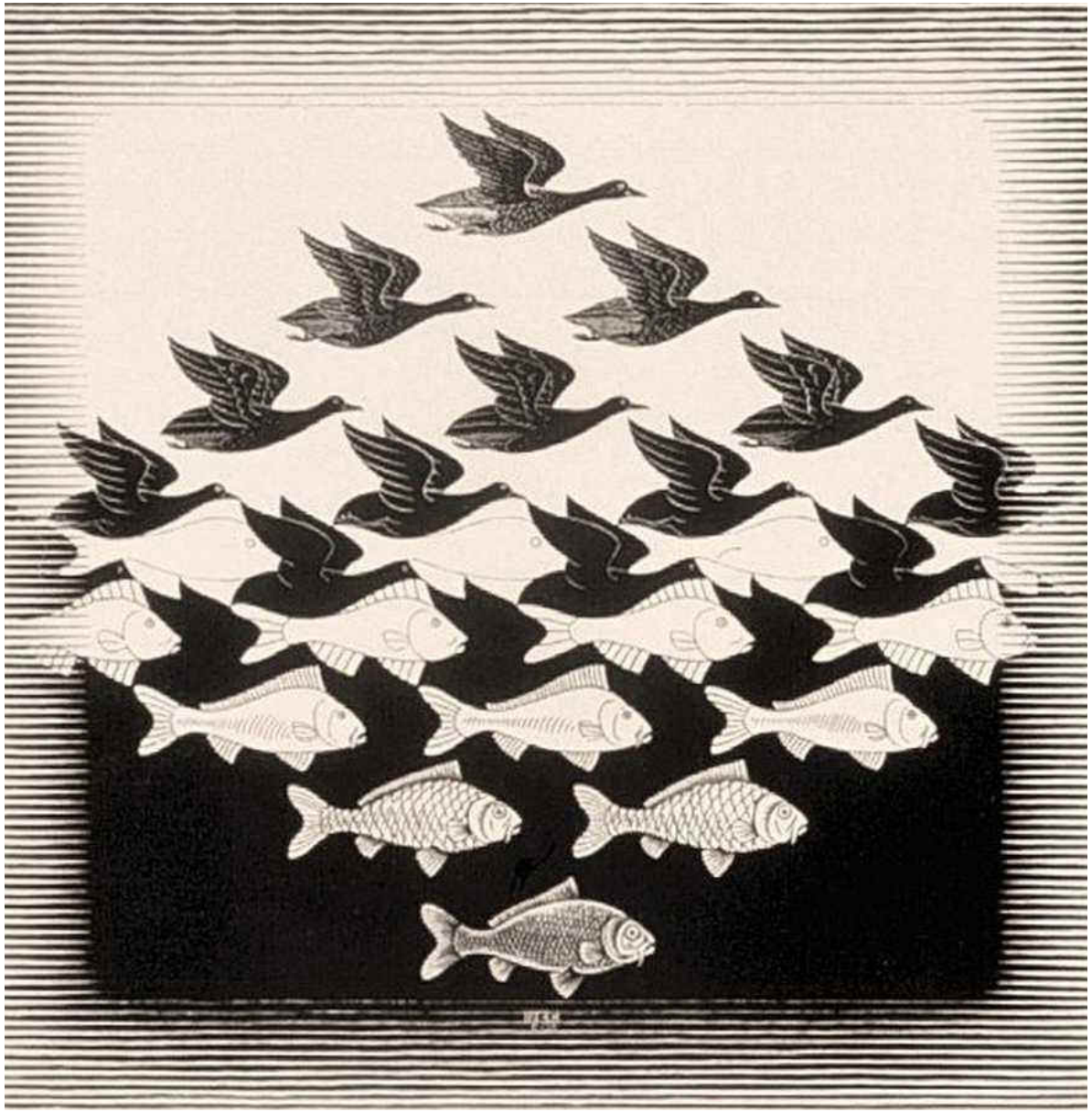
Insight:

The capacity to gain an accurate and deep understanding of a person or thing.

The leap from observation to insight requires inference.

Look for tensions, contradictions and surprises. “I wonder if this means…”

A metamorphosis of your understanding.



What is a need?

• A physical, psychological or cultural requirement of an individual or group that is missing or not met through existing solutions.

•Users typically cannot articulate what's missing.

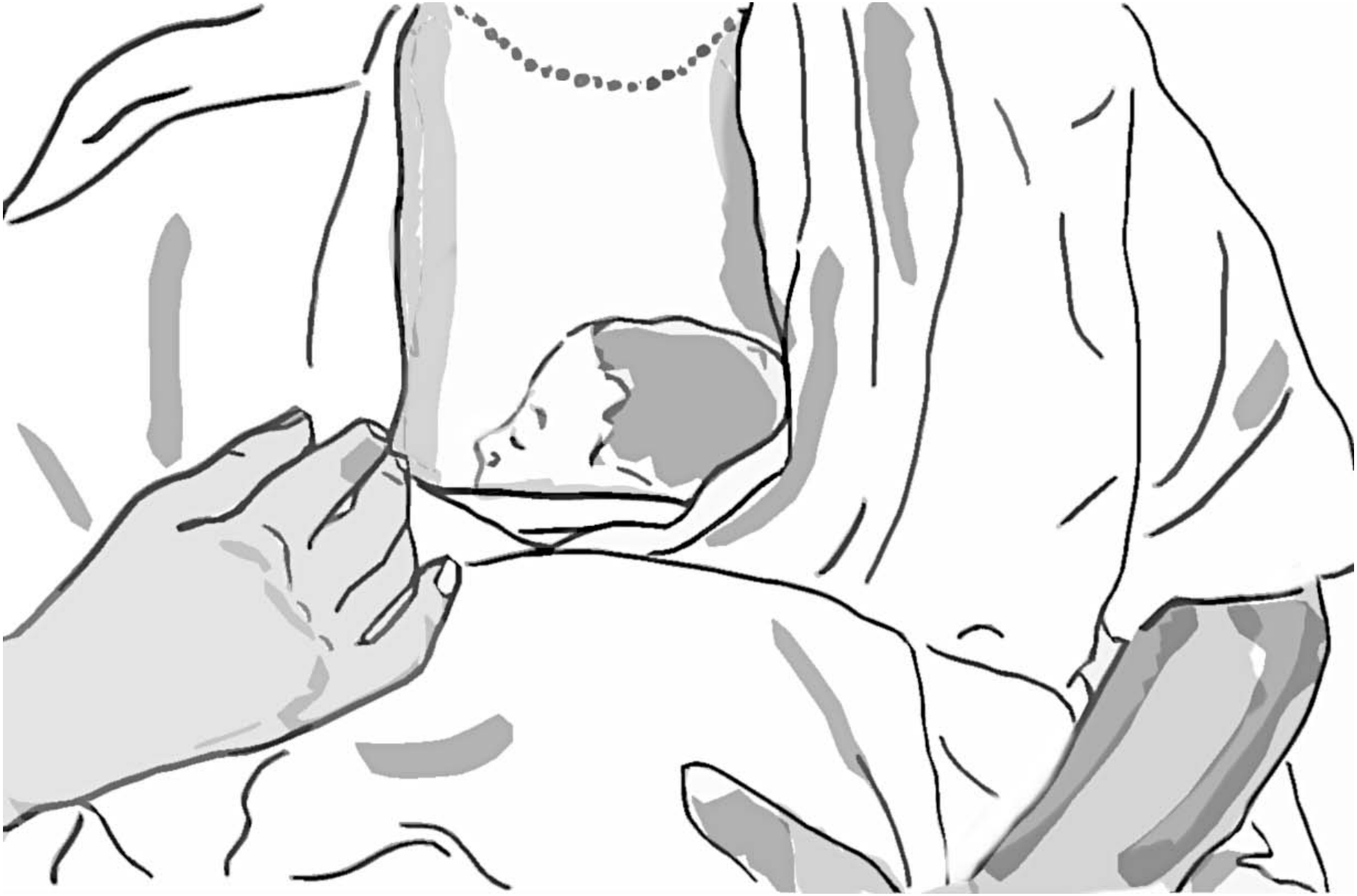
• Our process is as much like detective work as research.

-looks broad and deep
-infers models to explain
-identifies gaps and inconsistencies

Embrace® Case Study

"Each year, 15,000,000 babies are born preterm; 3,000,000 babies die in the first 28 days of their life. This is largely due to poor healthcare available in developing countries. Many of these deaths are preventable. Unfortunately, a prevalent number of hospitals simply cannot afford the high cost of current incubators and are in dire need of a low cost alternative. In addition, many of these births occur in rural areas, where electricity may not even be an option so a sustainable solution is needed."

USE: Keeping baby warm after birth while realistically considering the time a mother has and cultural norms.



USABILITY: Mom has limited time because she has to get right back to work after birth, and she feels uncomfortable being exposed around family and co-workers making it difficult to breastfeed and have skin-to-skin time with her baby.

MEANING:

Problem 1) Mom has limited time because she has to get right back to work after birth.

Meaning: The needs of new mothers and babies may not be understood and/or prioritized due to the culture.

Problem 2) Mom feels uncomfortable being exposed around family and co-workers making it difficult to breastfeed and have skin-to-skin time with her baby.

Meaning: Modesty is prioritized (no matter what) due to social norms.

SOLUTION:

SOLUTION:

SOLUTION:

What is an interview?

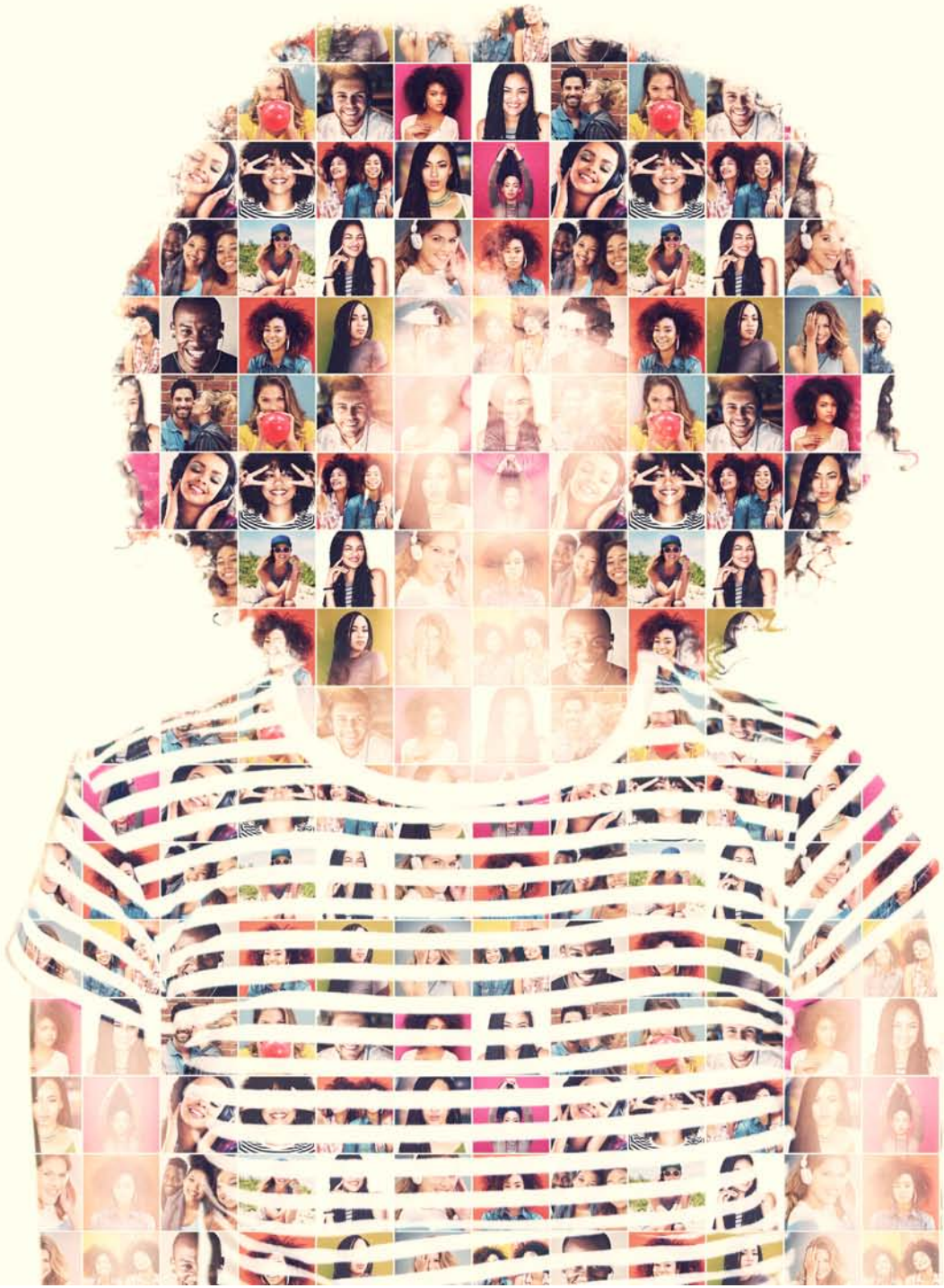
- Semi-structured

- A field guide is developed and used, but interviews are flexible and feel like conversations.

- Respondents should do 80-90% of the talking.

- Encourage storytelling, get failure and success stories.

- Ask simple or naïve questions that often start with “what, how, who, or why?” or “tell us about…”



A persona is a user archtype you can use to help guide decisions about product features, navigation, interactions and visual design.

Personas are Beneficial For

- Defining a specific user's goals and needs
- Giving design teams a focus with a common understanding
- Identifying opportunities and product gaps to drive strategy
- Concentrating on designing for a manageable target who represents a larger group
- Helping designers empathize with users to understand behaviors, motivations and expectations

Typical Day:
Danika wakes at 6am, walks to the train .25 miles from her home, walks to her office across the street and begins work at 8am. She sits most of the day, getting up from her chair only to file papers. Food is ordered into the office. She typically eats tacos or burgers for lunch with soda. She leaves work at 5:30pm, grabs a sub sandwich or "Panda" Chinese food and rushes to get to school by 6:30pm. She stays at school for classes until 9:00pm and takes the train home. At home she has snacks like pretzels, chips or yogurt covered raisins, watches her favorite shows and then goes to bed around at 11:30pm.

Name: Danika

Age: 36

Occupation: Paralegal and law student.

Pregnancy History: Pregnant once before, ended in pre-term birth at 22 weeks, baby did not survive.

Health Insurance: Medicaid (through PPACA or "Obamacare").

Lifestyle: Works full time, law school part time at night and weekends.

Diet: Mostly fast food, and packaged food.

Exercise: Walks from home to train station 5 days a week (.5 mile total distance).

Habits: Alcohol consumption every weekend, drinks soda and coffee daily.

Psychological Profile: Has struggled with anxiety on and off during her life. After the death of her baby, she did not receive any therapy and did not seek therapy. Peer support wasn't offered at the hospital.

Home Relationships: Lives with partner who shares similar lifestyle traits, and his mother.

Social Life: Has a few close friends and her sister who she regularly sees on weekends.

Personal Goals: Trying to get pregnant with a healthy full-term baby again ever since the death of her first child 11 months ago.

Professional Goals: Wants to become a family attorney within 4 years.

Based on the above persona, Danika may need (inferring here):
1) Information about becoming pregnant after the loss of a pre-term infant.

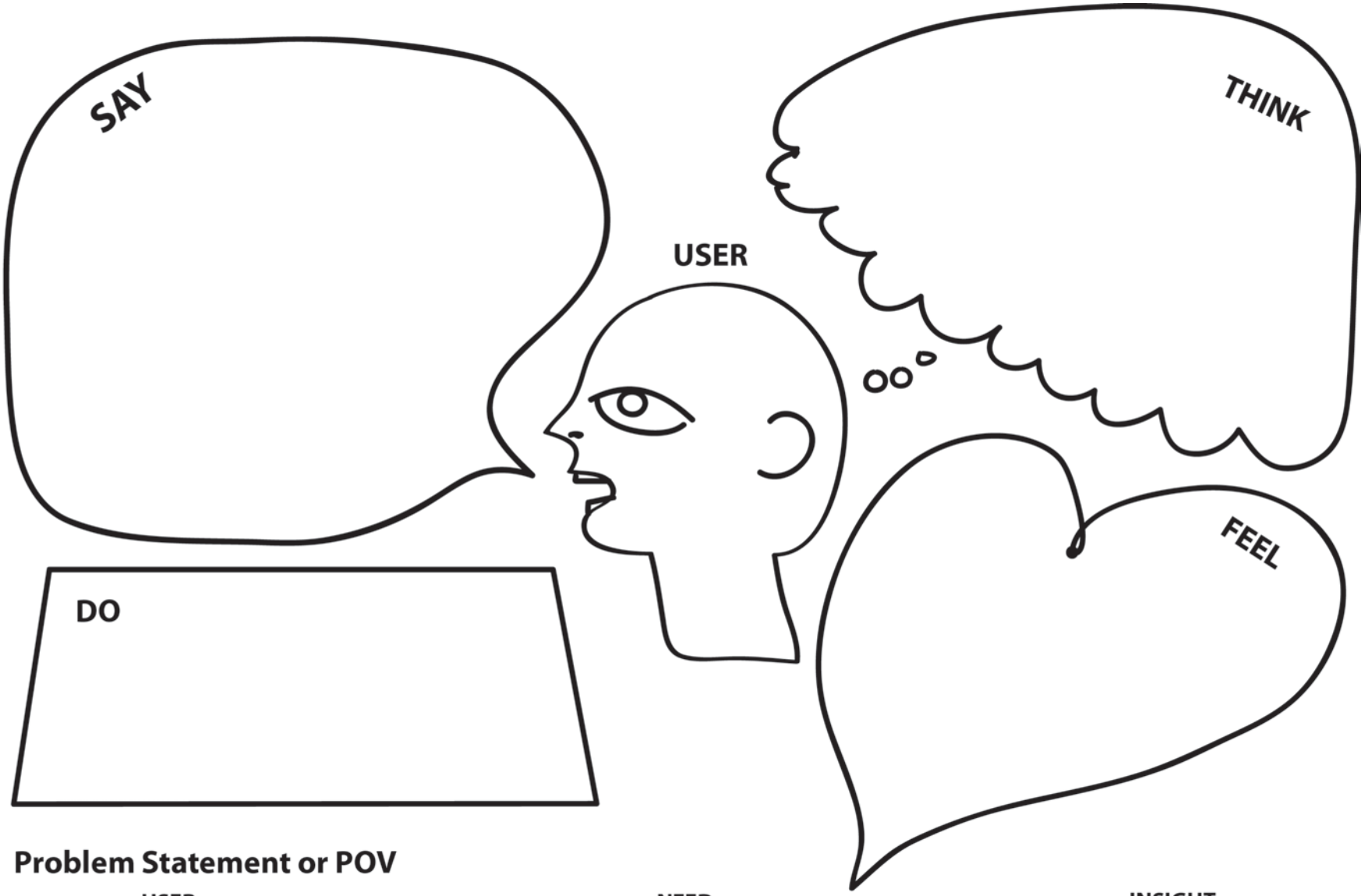
2) Support post discharge from clinicians and peers about what she experienced in the NICU.

What else could you infer Danika might need to reach her healthy pregnancy goal?

Define

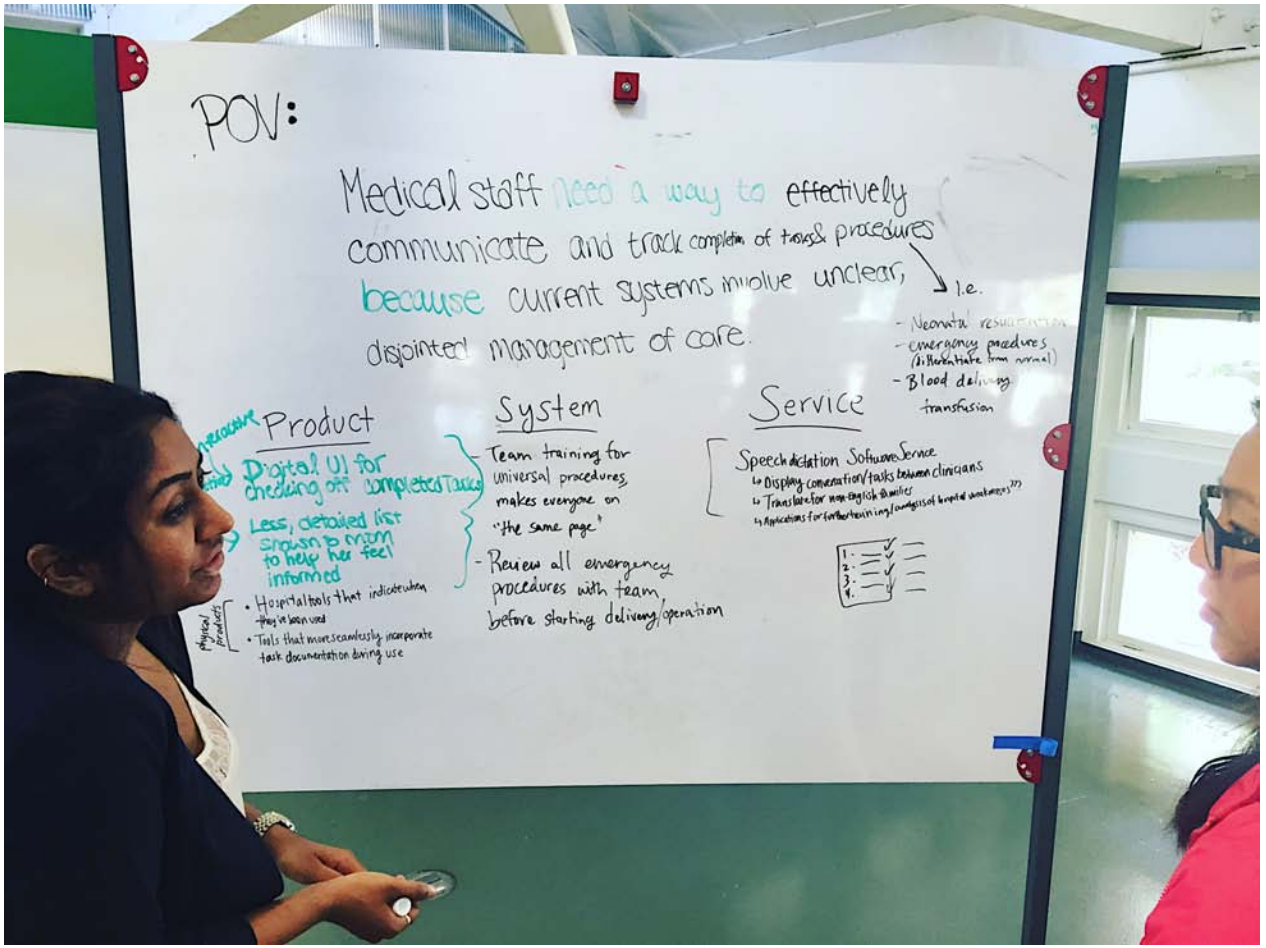
Reframe

I feel so bloated
Chaotic
crowded space
I feel fed / ingly
How is my baby?
I don't want hospital food
Is my baby ok?
Keeping baby warm/ safe
watching
crying
after birth placenta's coming out
being in labor
Bored (nothing to do)
This kind of Hurts
Want to see & hold baby
Worried about baby
Should a used the pot!
Can I drink this night?
Annoyed by alarms,
depressed



Problem Statement or POV

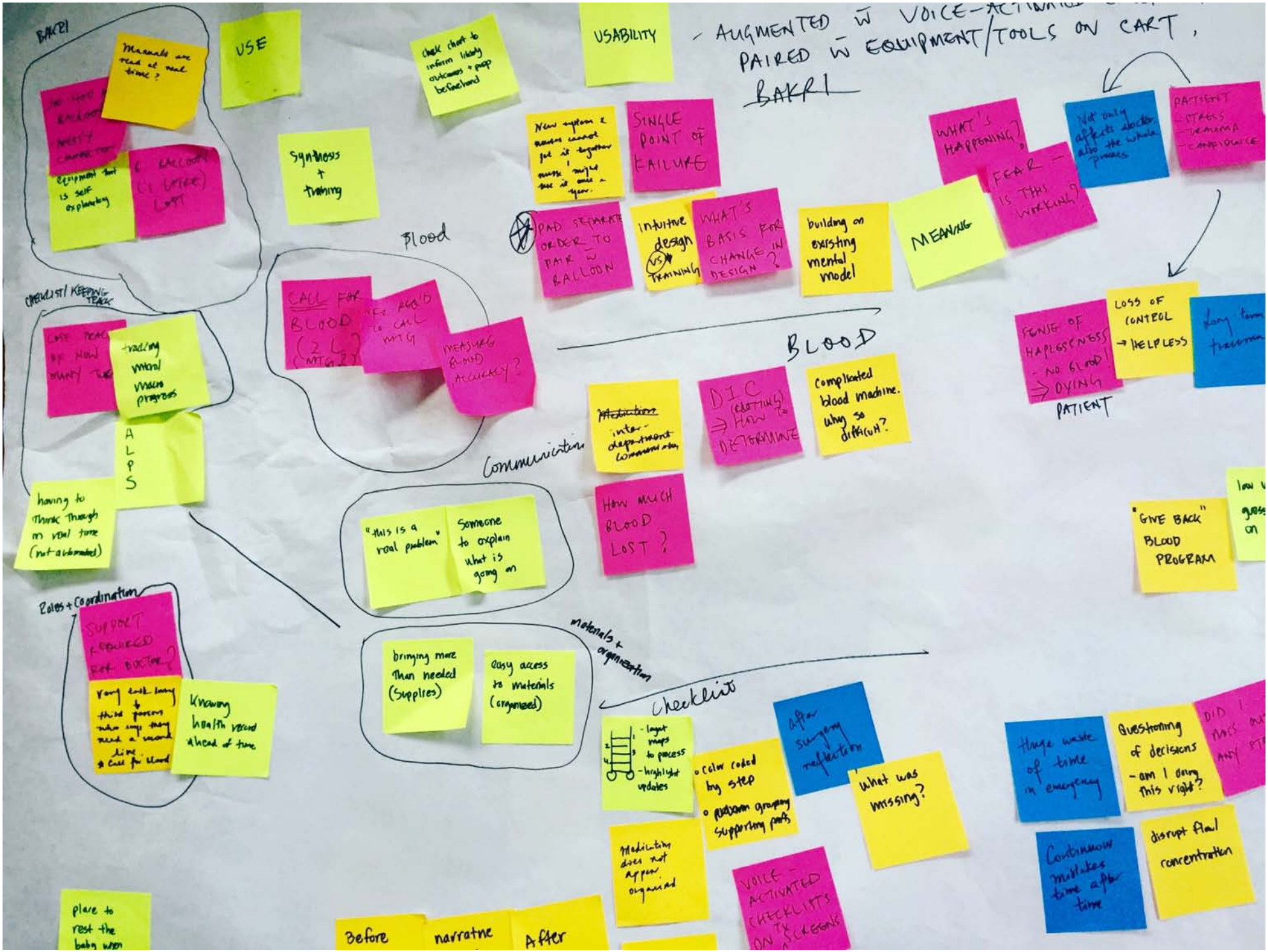
USER		NEED		INSIGHT
	NEEDS A WAY TO		BECAUSE	
DESCRIBE A PERSON USING EMPATHETIC LANGUAGE		NEEDS ARE VERBS		

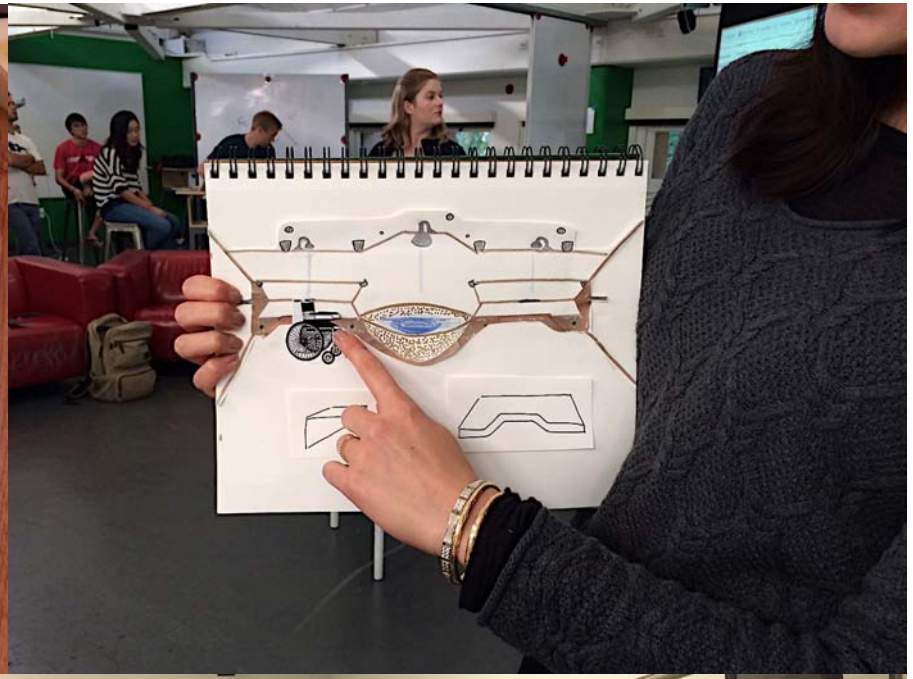

POV:
Medical staff need a way to effectively communicate and track completion of tasks & procedures because current systems involve unclear, disjointed management of care.
i.e.
- Neonatal resuscitation
- emergency procedures (differentiate from normal)
- Blood delivery transfusion
Product
Digital UI for checking off completed Tasks
Less, detailed list shown to mom to help her feel informed
physical products
• Hospital tools that indicate when they've been used
• Tools that more seamlessly incorporate task documentation during use
System
- Team training for universal procedures, makes everyone on "the same page"
- Review all emergency procedures with team, before starting delivery/operation
Service
Speech dictation Software Service
↳ Display conversation/tasks between clinicians
↳ Translate for non-English families
↳ Applications for further training/analysis of hospital workflows???
1.
2.
3.
4.

Create a “How Might We”…statement.

How might we help Danika to do *X* in order for *Y* to happen…

**Your How Might We should generate a number of possible answers and will become a launch-pad for your brainstorms. “How Might We…” should give you both a narrow enough frame to let you know where to start your brainstorm, but also enough breadth to give you room to explore wild ideas.*



BAKRI
Manuals are read at real time?
USE
check chart to inform likely outcomes + prep beforehand
USABILITY
- AUGMENTED W̄ VOICE-ACTIVATED
PAIRED W̄ EQUIPMENT/TOOLS ON CART,
BAKRI
Equipment that is self explanatory
Synthesis + training
New system & nurses cannot get it together
SINGLE POINT OF FAILURE
WHAT'S HAPPENING?
FEAR - IS THIS WORKING?
Not only affects doctor also the whole process
PATIENT - STRESS - TRAUMA - CONFIDENCE
PAD SEPARATE ORDER TO PAIR W̄ BALLOON
intuitive design VS TRAINING
WHAT'S BASIS FOR CHANGE IN DESIGN?
building on existing mental model
MEANING
Blood
CALL FOR BLOOD (2 L) (MTG?)
MEASURE BLOOD ACCURACY?
CHECKLIST/KEEPING TRACK
tracking micro/macro progress
ALPS
having to think through in real time (not automated)
BLOOD
SENSE OF HAPLESSNESS - NO BLOOD! ⇒ DYING
LOSS OF CONTROL → HELPLESS
PATIENT
DIC (CLOTTING) ⇒ HOW TO DETERMINE
complicated blood machine. why so difficult?
inter-department communication
Communication
"this is a real problem"
Someone to explain what is going on
HOW MUCH BLOOD LOST?
"GIVE BACK" BLOOD PROGRAM
Roles + Coordination
SUPPORT REQUIRED FOR DOCTOR?
Knowing health record ahead of time
bringing more than needed (supplies)
easy access to materials (organized)
materials + organization
Checklist
- layout maps to process
- highlight updates
color coded by step
after surgery reflection
what was missing?
huge waste of time in emergency
Questioning of decisions - am I doing this right?
Medication does not appear organized
VOICE-ACTIVATED CHECKLISTS ON TV SCREENS
Continuous mistakes time after time
disrupt flow concentration
place to rest the baby when
Before
narratne
After

keeping babies together for social reasons
research → practice
"connection"
families
twins!
how to cause implementation
cuddlers
babies
information delivery
parents
staff
guilt
language (jargon)
physical space
psychological needs
Dad
community!
staff
infection?
innovative incubators
how to be a family
postpartum depression (↑40%)
Kangaroo care
structural flexibility
no perfect NICU
prototyping space
formalized "recommendation" box
family
for NICU innovations
parent training
"CAPE"
help nurses practice training parents
acclimating to cords etc.
nurses