Unheard and Overlooked

Reimagine the Emergency Room as an environment in which healthcare processes proactively adapt to the needs of patients with hearing loss at St. Joseph's Hospital Hamilton

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1. Reflection

1.1 Methodology

We began by interviewing both end users and PFAs (Patient and Family Advisors) who are volunteers at St. Joseph's Hospital. Our goal was to understand patient experiences, stories, and emotions in the ER. One story deeply moved us, a patient with hearing loss who felt unseen, unheard, and unsupported throughout the ER journey.

This inspired us to explore more about the challenges faced by patients with hearing impairments. We designed targeted interviews, created an empathy map, and identified key insights. Based on these, we defined a clear Point of View (POV) and generated several "How Might We" (HMW) questions that reflect the core needs of this patient group.

In the ideation phase, we brainstormed ways the ER process could proactively identify and support patients' special needs, instead of requiring patients to adapt to the system. We then created a storyboard to reimage the patient journey,from pre-visit, triage, waiting, and consultation to discharge, highlighting how staff can take initiative to support hearing-impaired patients at each step.

Finally, we tested our prototype with potential users and collected feedback to improve our design.

1.2 Choices Justification

We chose to focus on hearing loss in ER settings because our interview participants described recurring moments of exclusion, confusion, and anxiety. Stacy's story was especially impactful: she described being separated from her husband at check-in, struggling to understand triage questions, missing overhead announcements, and receiving unclear discharge instructions. These moments revealed a pattern, not just of communication breakdowns, but of patients being left to navigate a system that wasn't designed with their needs in mind.

This informed our decision to bundle low-cost, scalable solutions that empower patients without overburdening staff. We aimed for ideas that could realistically be integrated into existing hospital workflows. Our final bundle included a digital intake form where patients could indicate communication preferences, color-coded wristbands to discreetly flag accessibility needs, and printed discharge instructions with a QR feedback option. These solutions were selected because they directly responded to the breakdowns Stacy described while supporting clarity, dignity, and autonomy. Her quote, "I don't want to go back unless I have no other choice. It's too much of a struggle" served as a powerful reminder of what was at stake if we didn't design for inclusion.

1.3 Learning Reflections

Working on this project has been an eye-opening journey that deepened our understanding of accessibility challenges faced by patients with hearing loss in emergency room (ER) settings. Initially, we underestimated the extent to which communication barriers could affect patients' sense of safety and autonomy during healthcare interactions. However, hearing personal stories from patients and family advisors, particularly Stacy's experiences, made us realize the profound emotional and practical impacts of being unheard and misunderstood in critical medical situations.

1.One key takeaway was the importance of adopting a patient-centered approach to healthcare design. Instead of expecting patients to adapt to existing processes, we need to proactively consider their needs at every stage of the journey. This shift in perspective fundamentally shaped our ideation process, guiding us to develop solutions that prioritize patients' autonomy and dignity.

2. Through collaboration, I learned the value of integrating empathy-driven insights into practical solutions. Instead of relying on high-tech innovations, we focused on making simple tools, like digital intake forms and color-coded wristbands, as effective as possible. Our goal was to empower patients with more autonomy by allowing them to choose whether to use these identification options, ensuring both practicality and respect for individual preferences.

3. Moreover, the project reinforced the significance of inclusive design in healthcare. Hearing Stacy say, "I don't want to go back unless I have no other choice," struck me deeply. It was a stark reminder that poorly designed systems can make healthcare feel intimidating and inaccessible, leading patients to avoid seeking help. This insight motivated us to strive for solutions that enhance inclusivity and reduce healthcare disparities.

2. Design Challenge

Reimagine the emergency room as an environment in which healthcare processes proactively adapt to the needs of patients with hearing loss, ensuring they are truly seen, heard, and fully supported.

3. Interview Transcripts

3.1 Interview with Murray Walz- 2025/03/11

Transcripts
Interview with Murray20250311.docx

Meeting Recording

https://www.macvideo.ca/media/Interview%20with%20Murray-group4%2020250311-Meeting%20Recording/1_pro1y667

3.2 Interview with Stacy Chambers-2025/03/12

Transcripts

Interview with Stacy20250312.docx

meeting recording

https://www.macvideo.ca/media/Interview%20with%20Stacy-group4-20250312_meeting%20recording/1_ekx8z4qq

3.3 interview with Stacy Chambers-2025/03/19

Transcripts

interview with Stacy20250319.docx

Meeting Recording

https://www.macvideo.ca/media/interview%20with%20Stacy-20250319_group4-Meeting%20Recording/1_q8ltlyf8

3.4 interview with Deborah McInnes-2025/03/19

Transcripts

interview with Deb20250319.docx

Meeting Recording

https://www.macvideo.ca/media/interview%20with%20Deb-20250319_group4-Meeting%20Recording/1_p8ikugf8

3.5 Protype Validation with Stacy Chambers-2025/04/02

Transcripts

interview with Stacy20250402.docx

Meeting Recording

https://www.macvideo.ca/media/interview%20with%20Stacy-20250402_group4-Meeting%20Recording/1_fk8np25b

3.6 Protype Validation with Michigan -2025/04/03

Transcripts

The idea of a consultant room is good, but there are some challenges. Due to efficiency requirements, ER doctors may not be able to spend much time with each patient. Currently, St. Joseph's Hospital's ER already has a consultant room specifically designed for mental health issues, where a psycho nurse communicates with patients before they see the doctor.

The same issue applies to the pre-visit phase. When I went to the ER, I was already in a state where I couldn't move and was unable to fill out any forms. The paramedic in the ambulance provided my information to the nurse, and the paramedic received my medical information from the police, as the police were the first to arrive at the scene and then called the paramedic.

I believe the best approach would be to have relevant personal information stored after a patient's first visit to the hospital. For example, in Stacy's case, if she had previously visited St. Joseph's Hospital, her special needs—such as hearing impairment—should have been recorded. This way, during the ambulance dispatch, the relevant measures could have been prepared in advance.

3.7 Quote

Stacy 2025/03/12

- "Medical staff don't know how to communicate with hearing-impaired patients."
- "I knew they must have called my name, but how was I supposed to know? I just sat there and waited, hoping someone would notice."
- "The doctor kept talking like I could hear perfectly. I had to keep guessing what he was saying."
- "I had to sit for three hours in a clinic because I didn't hear my name being called."
- "ERs are too chaotic for patients with disabilities, there are no proper accommodations."
- "I would rather avoid seeking care than struggle to communicate with healthcare providers."
- "My family doctor knows me, but clinic and ER staff treat me like just another patient."
- "There should be a simple system where patients can indicate they need accommodations before seeing a doctor."
- "The hospital's new translation tool doesn't account for hearing impairments, but it should."

Stacy 2025/03/19
On Arrival and Triage Experience

- "I had a tremendous amount of difficulty communicating when I was being checked in just because I couldn't. I couldn't hear properly. I couldn't understand and my husband was not standing with me when I when I was being checked in."
- "I didn't know what was happening. I knew that the hospital staff wanted me to go directly into emergency past the waiting room very quickly, but I didn't know why I didn't understand, so I just had to put my trust in strangers and let them take me where they did."
- "I felt isolated. I felt alone. I felt scared, obviously, and I didn't feel like I was being treated with any compassion whatsoever. Like it felt to me like I was just a number on a stretcher, not a human being."

On Waiting in the Emergency Room

- "I laid there for hours, hours maybe. Three hours at least three hours."
- "They weren't able to give me anything for the pain because they didn't know what was wrong with me. So I had to lay there in pain for three hours waiting for a doctor to have the time to come and see me."
- "I was gasping for air for five hours."

On Discharge and Follow-Up Issues

- "They literally sent my husband and I away from the hospital, saying there's nothing wrong with you. You're fine. We see nothing on your ultrasound. You might wanna go see your family doctor in the next few days, but you're OK."
- "I ultimately, within three weeks of that happening and end up back in the emergency department. How and I was admitted to the hospital. I spent three weeks in the hospital at that point and I was I had a bleeding ulcer and had I not been admitted to the hospital on that particular day, I would have died."

On Interactions with Medical Staff

- "Not once, not once, when I walk into that office. Has she ever done anything to help me understand what she's saying?"
- "I'm literally saying to her, sue, I can't hear you, Sue. I can't hear you, sue. I can't understand you, sue. Open the window. She she just sits there and talks eventually."
- "It makes me feel like they don't care very much about me, like I'm not good enough. Like I'm not as good as everybody else."
- "I don't wanna jump up and down and wave my arms around and say I demand that you treat me properly. I demand equity. I demand you know, inclusivity. I can't make a scene."
- "It makes me angry that in 2025. This is still part of life now. I mean the world over. This is part of our global community that. That any quality is so rampant."
- "I need to be a voice of change in that regard. It's really hard to do it."

On Preparing for Medical Visits

- "Every single medical appointment that I have comes with fear. Because I'm afraid that I'm not going to hear something. I'm gonna miss some very important communication."

On an Ideal ER Experience

- "If everything was perfect, then paramedics would be. You know, on the more conscientious about speaking on my behalf and making sure that the people at the hospital and the triage area knew exactly what my needs were."
- "I would like to have more control over what was happening with me. It's my health, my life. I wanna know why you're whisking me into the emergency room right now. What is going on with me?"
- "I would want to have a little bit of a private space. It doesn't have to be completely private. Where I'm by myself, but at least something with some dignity. Maybe a curtain?"
- "It could be a PFA like myself walking through the emergency room, checking on people in their little room saying, is there anything I can get for you? Do you need water? Do you need food? Can I direct you to the washroom or anything?"

Murray

- "Patients should be the center of care."
- “We need solutions to keep non-urgent cases out of the ER.”
- "There’s a shortage of family doctors, and that’s why people end up in the ER."
- "Paperwork and bureaucracy drive medical students away from family medicine."
- "Emergency rooms are overworked, and we need solutions to keep non-urgent cases out."
- "We’ve worked on projects like using paramedics for in-home care to reduce ER visits."
- "Technology like AI and remote monitoring could help reduce unnecessary hospital visits."
- "Language barriers and accessibility issues make healthcare confusing for newcomers."

Deb

- "She didn’t know how to get there, so wayfinding is a big issue in the hospital because the footprint was added on after they had the main and then they added on another wing different set of floors, different different elevator."
- "It’s not user friendly. The signage is very poor and unless they ask somebody with a lanyard."
- "I’ve talked to five people and I’ve got five different answers, so that’s frustrating, right?"
- "Her comment to me was I could have never done this on my own. So it always because of language barrier too and then you know, she spoke good English, but it was still."
- "It still always melts down to education and information sharing."
- "It’s for grade 8 to 10 um um language skills, so that it is understood by many people."
- "It’s chaos and in its not a calming environment."
- "The space itself doesn’t lend itself to being calm. It’s not a space where you. It’s cramped. It’s it’s. There’s no fresh air."
- "He waited like 8 hours or something like that. Like and ignored an amount of time, and so he went home. He died at home that night."
- "They don’t think that they’re being watched or looked at or in a timely manner."
- "There’s more Admin staff then clinicians in general."
- "Often, now short staffed. And that’s why you see. Thoughts of lots of people have gone away and gone to, you know they’ve quit the profession."
- "There isn’t anyone particular volunteer in in the ER, and we’ve asked."
- "The wheelchairs are awful. The ones at the usually they’re stacked at the front door, the main door of the hospital, and they are wired ones."

4. Empathy Maps

4.1 Empathy Map: Murray Walz

<table>
<tr><td>Say</td><td>Feel</td></tr>
<tr><td>"Patients should be the center of care."

• “We need solutions to keep non-urgent cases out of the ER.”
• "There’s a shortage of family doctors, and that’s why people end up in the ER."
• "Paperwork and bureaucracy drive medical students away from family medicine."
• "Emergency rooms are overworked, and we need solutions to keep non-urgent cases out."
• "We’ve worked on projects like using paramedics for in-home care to reduce ER visits."
• "Technology like AI and remote monitoring could help reduce unnecessary hospital visits."
• "Language barriers and accessibility issues make healthcare confusing for newcomers."</td><td>Frustrated by the inefficiencies in the healthcare system, especially the backlog in primary care.

• Worried that patients without family doctors will keep overloading the ER.
• Motivated to push for systemic changes in healthcare policy and hospital processes.
• Hopeful about technology’s potential to streamline patient care and reduce ER burden.</td></tr>
<tr><td>Do</td><td>Think</td></tr>
<tr><td>• When he was diagnosed with Idiopathic Pulmonary Fibrosis (IPF) and told he had only 3-5 years to live, he was given an appointment with a specialist but had to wait 16 months. Instead of waiting, he researched online and found one of the world’s leading IPF doctors in Hamilton, who then invited him to participate in a clinical trial.
• He took his daughter home after she was sent home from the ER without a clear reason.
• FPAs (Family Practice Anesthetists) are expanding paramedic training,</td><td>• He believes patient engagement and patient-centered care should be the priority in healthcare.
• He thinks many medical students avoid becoming family doctors due to the heavy paperwork involved.
• He believes PFA (Patient and Family Advisors) can help patients bring about change in the healthcare system.
• He thinks the process of becoming a certified doctor takes too long.
• He believes ensuring that everyone has a family doctor is the best way to reduce non-emergency visits to the</td></tr>
</table>

allowing them to take on more responsibilities, provide in-home care, and help reduce the burden on ERs.	ER. • He thinks pharmacies are the best alternative for non-emergency patients who don't have a family doctor. • He believes no one likes going to the ER and waiting for hours. • He thinks his daughter should not have been sent home from the ER without a clear reason. • He believes the payment system is flawed, as it incentivizes family doctors to refer patients to the ER instead of clinics. • He thinks the triage system does not always work effectively. • He thinks the current triage system is not the best in the world, but it is the only system available. • He believes healthcare information is not effectively communicated, and there should be more public awareness campaigns to inform people about available healthcare options such as 811, pharmacies, walk-in clinics, urgent care centers, etc. • He suggests that ER doctors and family doctors should proactively provide patients with information about alternative healthcare options.

Needs	Insights
• They NEED clearer guidance in the ER to understand where to seek care and avoid unnecessary visits. • They NEED more awareness in the ER of available healthcare resources, including Health 811, clinics, and pharmacists. • They NEED a better triage system in the ER and more transparent wait-time communication. • They NEED stronger support	• Many patients end up in the ER due to a lack of access to family doctors and limited knowledge of alternative care options like pharmacies and urgent care centers. • The triage system is not always effective in prioritizing care and redirecting non-urgent cases, leading to longer wait times in the ER for everyone. • Language barriers and accessibility

systems in the ER to help seniors and non-English speakers navigate healthcare services. • They NEED fewer bureaucratic barriers in the ER so foreign-trained healthcare professionals can help address doctor shortages. • They NEED a more efficient referral system in the ER to prevent patients from being sent home without clear explanations or follow-up options. • They NEED better communication in the ER to educate patients about their diagnosis, treatment plan, and next steps. • They NEED technology-driven solutions in the ER, such as AI and remote monitoring, to reduce unnecessary hospital visits and streamline patient care.	issues make it harder for newcomers and seniors to navigate the healthcare system, resulting in confusion and delays in receiving appropriate care. • Bureaucratic hurdles (writing too many documents) discourage medical students from becoming family doctors, worsening the shortage of primary care providers and increasing ER visits. • ER doctors and family doctors don't always proactively educate patients about alternative care options, leaving them unaware of better solutions. • Patients feel dismissed when sent home from the ER without proper explanations or follow-up plans, leading to frustration and uncertainty. • The current payment system may incentivize family doctors to refer patients to the ER instead of clinics, creating unnecessary strain on emergency departments.

4.2 Empathy Map: Stacy Chambers

Say	Feel
• "Medical staff don't know how to communicate with hearing-impaired patients." • "I had to sit for three hours in a clinic because I didn't hear my name being called." • "ERs are too chaotic for patients with disabilities, there are no proper accommodations." • "I would rather avoid seeking care than struggle to communicate with healthcare providers." • "My family doctor knows me, but clinic and ER staff treat me like just another patient." • "There should be a simple system where patients can indicate they need	• Overwhelmed by how difficult it is to navigate medical settings after hearing loss. • Frustrated that hospitals aren't equipped to handle accessibility needs properly. • Fearful of seeking care alone because of the risk of miscommunication. • Motivated to push for change because she has personally suffered from the gaps in patient care. • Hopeful that solutions like better training, patient intake forms, and technology could make hospitals more accessible.

accommodations before seeing a doctor." • "The hospital's new translation tool doesn't account for hearing impairments, but it should."	
Do	Think
• She joined the PFA community after her mental health counselor suggested it, which made her feel more useful and fulfilled. • She goes to walk-in clinics when her family doctor is unavailable. • She waited for three hours before the doctor called her name in the clinic.	• She thinks it's very scary when she can't hear anything in the ER, especially since it's such a noisy environment. • She believes it's easy for medical staff to overlook her challenges, especially in emergency situations where the stress levels are high. • She thinks it wouldn't be impossible for doctors in the ER to provide simple tools to help patients with hearing loss understand more clearly, such as pen and paper or voice-to-text translation devices. • She believes the healthcare system should be improved to better support patients with hearing loss. • She thinks doctors need better training because they often don't realize how important certain things are—like the fact that hearing aids don't work well in noisy environments. • She feels her experience with her family doctor is better than at the ER or walk-in clinics because her family doctor is prepared for her needs. • She believes that in emergencies, people prefer to go to the closest facility rather than traveling over 30 minutes to a hospital or urgent care center. • She thinks there aren't enough urgent care facilities available. • She feels that if people can wait for hours in the ER, it means they don't need immediate treatment and could be directed to other options.

	• She believes doctors and medical staff don't have the authority to redirect patients elsewhere, even when patients choose to leave because they don't want to wait. • She thinks the biggest challenge in using the urgent care system to reduce ER pressure—especially for non-emergency cases—is location. Urgent care centers are often too far from ER facilities. • She believes that regardless of whether her family doctor is more or less skilled than an ER doctor, she sees her family doctor as more compassionate, patient, understanding, and attentive. • She thinks ER staff focus on moving patients through the system quickly, almost like a conveyor belt, but with some level of kindness and compassion. • She feels that facilities for disabled individuals are lacking compared to other developed countries.

Needs	Insights
• They NEED a more accessible communication system in the ER to ensure hearing-impaired patients can understand and respond when their name is called. • They NEED medical staff in the ER to be trained in basic accommodations for patients with hearing loss, such as using pen and paper or voice-to-text translation devices. • They NEED a way to indicate their accessibility needs before seeing a doctor, ensuring proper accommodations are in place upon arrival. • They NEED quieter or designated	• ER environments are chaotic and overwhelming for patients with hearing impairments, making communication difficult and leading to unnecessary delays. • Medical staff are often unaware of the unique challenges hearing-impaired patients face, such as how hearing aids don't work well in noisy environments. • Family doctors provide a more accommodating and personalized experience, whereas ER staff prioritize efficiency over individualized care. • Hospitals invest in general translation tools, but these tools don't account for hearing impairments, highlighting

areas in the ER where communication can happen more clearly without overwhelming background noise. • They NEED better accessibility features in hospitals, similar to those in other developed countries, to support patients with disabilities. • They NEED more urgent care centers in accessible locations so they don't have to rely on overcrowded ERs. • They NEED family-doctor-style compassionate care in the ER	a gap in accessibility solutions. • If patients can wait hours in the ER, they likely don't need immediate emergency care—suggesting that a better triage and redirection system could improve efficiency.

5. POVs

Patients with hearing loss need an ER experience that is both accessible and dignified because the fast-paced, verbally driven environment lacks the necessary accessibility tools and trained staff, making them feel invisible and excluded from their own care.

Patients with hearing loss need a standardized way to indicate their accessibility needs upon arrival and receive attentive communication from doctors because hearing aids do not always work in noisy ER settings, leaving them feeling helpless, unable to understand medical information, and struggling to make informed decisions.

Patients with hearing loss need an ER experience where their communication needs are recognized and addressed because traditional verbal and auditory cues are ineffective in noisy, fast-paced environments, leaving them feeling disoriented, excluded from critical conversations, and unable to advocate for their own care.

6. HMWs with Morph Chart

6.1 HMWs

- **How might we** create a more inclusive communication system in the ER to ensure patients with hearing loss can fully understand and participate in their care?
- **How might we** equip ER staff with the necessary training and tools to effectively communicate with patients who have hearing loss?
- **How might we** redesign the ER experience to prioritize accessibility and dignity for patients with hearing loss in a fast-paced environment?
- **How might we** better understand and address the moments in the ER where patients with hearing loss feel the most disempowered or excluded?

- **How might we** create a proactive system in emergency rooms that identifies and responds to the needs of hearing-impaired patients without placing the burden on them to ask for help?

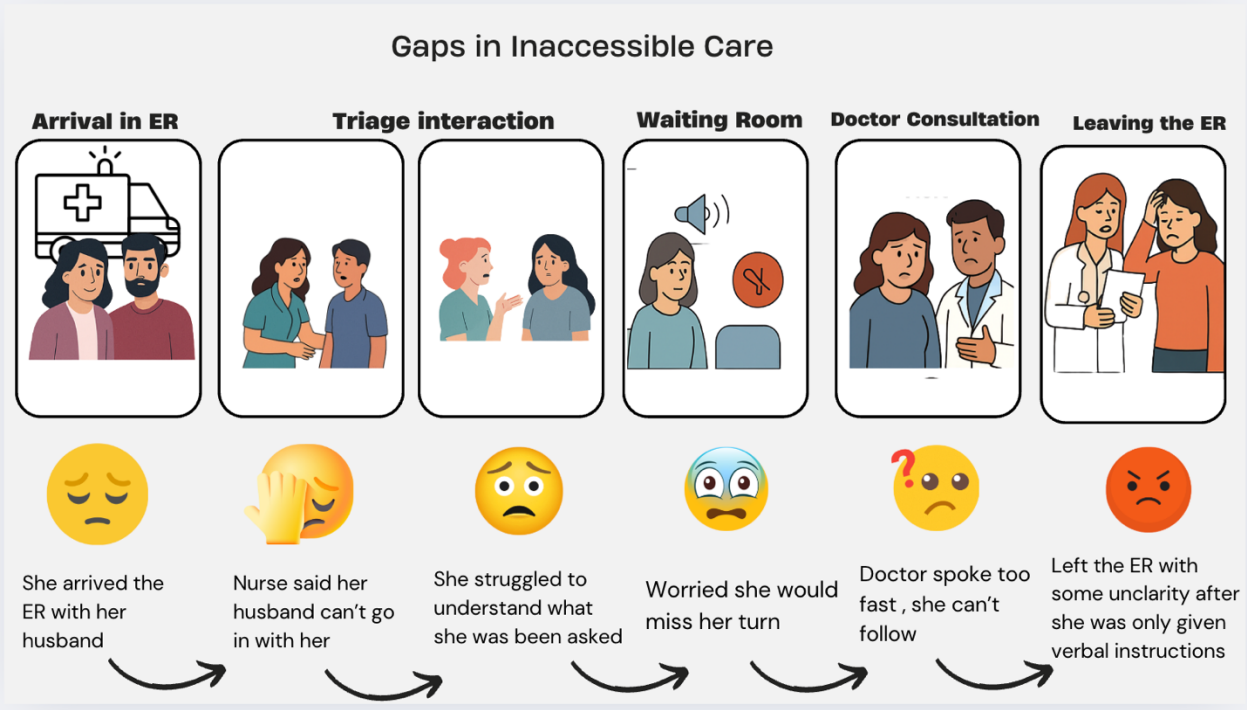
6.2 Ideas

	Idea1	**idea2**	**idea3**	idea4
HMW1	**Written Communication Tools** – Offer notepads or electronic writing boards to facilitate written exchanges between patients and staff.	**Live Captioning Tablets** – Equip ERs with tablets that use AI speech recognition to generate real-time captions for conversations.	**Wearable Vibration Alert Devices** – Provide smart wristbands that vibrate and display important notifications about patient status or emergencies.	**Pre-Visit Digital Intake Forms** – Allow patients to fill out key medical information, concerns, and communication preferences online or via tablet upon arrival, ensuring staff are prepared.
HMW2	**Role-Playing Simulations** – Implement training sessions where staff interact with actors simulating patients with hearing loss to improve real-life communication.	**Dedicated Hearing Accessibility Advisors** – Employ staff trained in deaf and hard-of-hearing communication to assist patients and guide ER teams in best practices.	**Communication Accessibility Kits** – Equip ER stations with kits containing visual aids, writing pads, and text-to-speech devices to support non-verbal communication.	**Simplified Written Communication Cards** – Provide ER staff with pre-printed, easy-to-use cards w›ith common medical questions and responses, reducing the need for long conversations while ensuring clarity.
HMW3	**Quiet Consultation Spaces** – Designate soundproof, distraction-free areas in the ER where patients with hearing loss can communicate	**Priority Triage Tagging** – Mark hearing-impaired patients at check-in so ER staff can proactively provide accessibility support.	**Digital Signage for Patient Updates** – Install large digital boards displaying queue numbers, doctor assignments, and appointment progress.	**Patient Navigators** – Assign trained staff or volunteers to guide and support hearing-impaired patients throughout their ER visit.

	more effectively.			
HMW4 How might we better understand and address the moments in the ER where patients with hearing loss feel the most disempowered or excluded?	**Visual Communication Flow Cards** – Place step-by-step visual guides (icons + short text) in ER areas to show patients what to expect next.	**"Moments That Matter" Wall** – Display real patient quotes or video snippets to highlight emotional breakdown moments for staff learning.	**Experience Reflection Station** – Allow patients to document communication breakdowns anonymously post-visit for review & training.	**Patient Story Mapping in Staff Huddles** – Share short patient stories regularly during staff meetings to highlight emotional touchpoints.
HMW5 How might we create a proactive system in emergency rooms that identifies and responds to the needs of hearing-impaired patients without placing the burden on them to ask for help?	**Accessibility Flag Wristbands** – Discreet colored wristbands given at check-in to flag communication needs to all staff.	**Digital Intake + Staff Alert System** – Patient preferences entered at check-in trigger real-time notifications to all ER staff.	**Auto-Prompt Communication Mode** – EMR prompts triage and clinical staff to select preferred communication method during each handoff.	**Check-In Kiosk Accessibility Question** – Tablet-based check-in includes a built-in accessibility section asking about hearing or communication needs.

7. Prototypes

7.1 Stacy's Journey Map



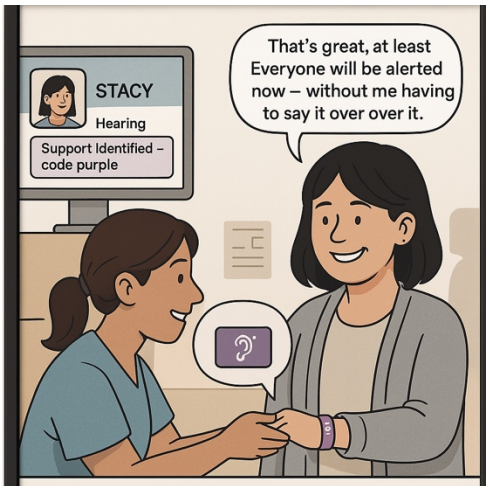
7.2 Stacy ER Experience Before

7.3 Stacy ER Experience After

7.4 Stacy Reimagined Experience (Storyboard)

Stacy arrives at the ER with her husband and instantly feels supported in a calm, inclusive

A staff member asks about her communication preferences and gives her a purple wristband to reflect her hearing needs.



Her profile is updated, now every staff member can silently recognize her needs without her having to repeat herself.

Stacy waits comfortably, watching the screen for her number, no anxiety about hearing her name called.

The doctor uses visual tools and captioning to explain everything clearly, Stacy feels seen and heard.

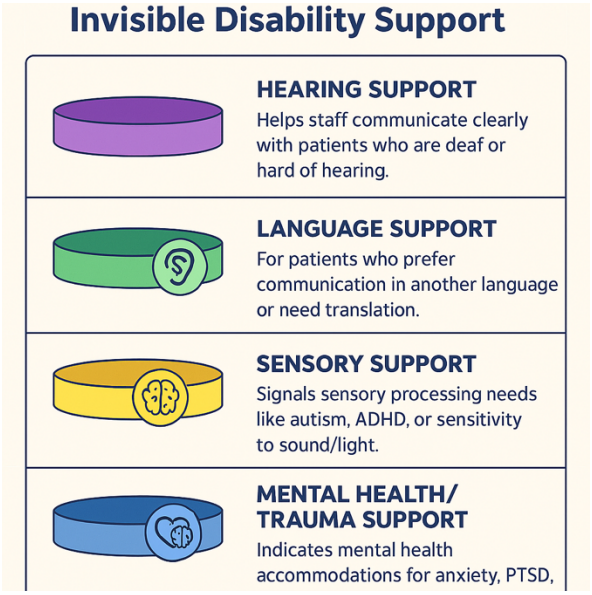
Stacy receives an easy-to-read summary with a QR code for follow up. She leaves with confidence and clarity, not confusion.

7.5 Highlights

The **visual number queue system** in the waiting room transforms what used to be a stressful, chaotic space into a **calm and equitable environment**, not just for Stacy, but for every patient.

How This Benefits Everyone:

- **Removes anxiety and confusion** for people with hearing loss, autism, or language barriers.
- **Supports autonomy** — patients don't have to ask or explain repeatedly.
- **Provides dignity** by allowing people to engage in their care environment confidently and independently.
- **Encourages universal design**, the system benefits everyone, not just those with visible needs.



The invisible Disability Support", is designed to help emergency room or healthcare staff recognize and assist patients with **non-visible needs** using **color-coded wristbands.** This system creates **silent, instant communication** that empowers staff to provide **equitable, inclusive care** without patients needing to **repeatedly explain their needs**. It will be especially useful in busy, stressful settings like emergency departments.

8. Feedback from testing and design Iteration

8.1 Explain How You Made Decisions

We designed Stacy's reimagined ER journey with the goal of improving communication, autonomy, and accessibility for patients with invisible disabilities. Our key decisions included:

- **Color-coded accessibility wristbands** to discreetly inform staff of communication preferences (e.g., hearing support, sensory needs).
- **A calm waiting room with a digital queue system**, so patients don't rely on auditory announcements.
- **Visual and written communication tools**, including symptom charts and simplified discharge summaries, to reduce cognitive overload.
- **A personalized, visual-first consultation experience** using captioned tablets and visual aids, so patients like Stacy feel heard and empowered.

These decisions were inspired by real accessibility gaps observed in the traditional ER system and guided by Stacy's lived experience of feeling confused, rushed, and unheard.

8.2 Where Things Went Wrong

However, through feedback from the Michigan student and Stacy, we realized a few major gaps in our original design:

- **Unrealistic expectations of doctor availability:** The idea of a "consultation room" for all patients was based on empathy, but not on real-world feasibility. In busy ERs like St. Joseph's, doctors must prioritize efficiency. There's typically already a consultant space for mental health, and time constraints may prevent prolonged interactions.
- **Overestimating the effectiveness of pre-arrival intake forms:** We assumed patients would arrive well enough to fill these out, but during real emergencies, paramedics or police often relay this info. If a patient like Stacy is unconscious or overwhelmed, asking her to complete a form is impractical.

8.3 What We Learned from Interviewing and Testing

- **From Stacy:** We learned how even seemingly small changes, like being asked about her communication needs or having a clear discharge summary, can completely transform her experience. She emphasized the need for **clarity, autonomy, and emotional safety**.
- **From Michigan:** We recognized that systems must account for variability, such as situations where individuals arrive via ambulance and are physically unable to move. The idea of **storing special needs/preferences in patient records** from their first visit emerged as a crucial next step. This way, emergency teams can be pre-alerted and act accordingly without needing to ask the patient again in the moment.