

Design X Social Challenge

2021

Team

Mighty Knights



Co-Care

Theme: Are we ready for the next wave?
Are our current healthcare and wellness measures sustainable?

July 2021, Chennai

Mighty Knights

Team members



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What are we solving?

Summary

Today with Covid affecting all over the world, healthcare workers are the most sought after as well as the most overworked. Co-Care is here to help our healthcare workers by introducing a practical kit and systematic solution, that will minimize patient dependency and efficient solution to tackle anything that comes next.



Why is this an Urgent Problem?

We saw an increased burden on the healthcare system and workforce with the first and second wave.

Doctors, nurses and other support volunteers have been at the front line helping support people who have been infected and need medical attention.

We witnessed a relentless drive from this community that resulted in a lot of issues. Supporting them is crucial for us to survive the next wave.

Increased working hours

For healthcare workers.

Safety concerns for self

Precaution/prevention of family members contracting.

No breaks between shifts

Lack of rest can affect decision making.



Our Design approach

Discover

Identified the pain points and root cause of the problems

Define

Brainstormed and prioritised the ideas

Design

Explored and sketched a feasible design

Demo

Built the solution

**Listened &
Empathized**

How have countries been successful?



We continue to see that many countries that have been successful in the fight against Covid 19 have implemented strategies for Rapid testing, quarantine, vaccination, public communication and economic support.



Taiwan

- 1 reported Covid-19 death per 3,366,140 people
- Halted flights from other countries as soon a outbreak was reported
- Rapid testing and mandate for face masks
- Intense support to Covid patients with stipend
- Increased adherence to public health recommendations

New Zealand

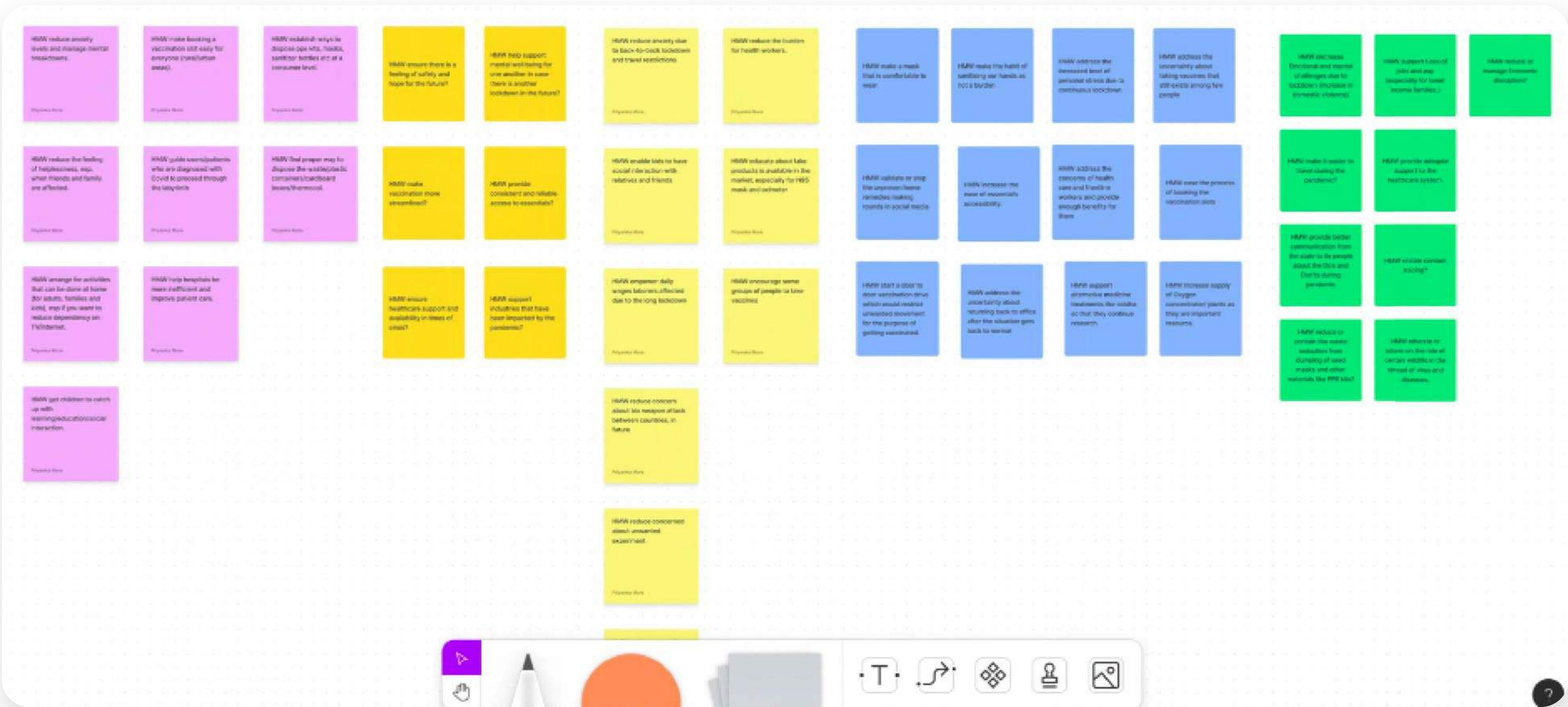
- 1 reported Covid-19 death per 204,360 people
- Lacked sufficient testing and contact tracing capacity, hence implemented a countrywide lockdown.
- Government's empathetic, clear communication, greatly increased willingness to cooperate from general public.

South Korea

- 1 reported Covid-19 death per 63,290 people
- Tested early and aggressively, conducting more than twice as many tests per capita as other countries in the pandemic's first weeks.
- Extensive and highly effective contact tracing and quarantine

How might we

Our approach was to look at the top know challenges we had faced during the first and the second wave of Covid in India. Use of the micro lens of identifying areas under the categories of personal, system and global impacts of the pandemic.



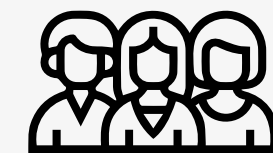
User Enquiry Survey



Sample 5 questions

- Please tell us your background in the healthcare domain.
- Have you been on active covid duty during the first and second wave of the pandemic ?
- How burdened did you feel during the pandemic ?
- What were some of the biggest problems you faced during the pandemic ? (Select all that apply)
- How did you cope with these problems ?

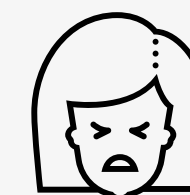
You can our other survey questions here [Link for survey >](#)



11 – Participants



9 – Active covid unit workers



8.6 – Average stress level during their covid duty on a scale of 10

What we learnt

Discover

Define

Design

Demo

From the survey these were the pain points identified..

9.1%

can't see the child.

60.5%

Long working hours

The biggest challenge that was faced during the 1st and the 2nd wave of the pandemic.

18.2%

Safety in working environment.

9.1%

vaccine availability.

45.5%

Understaffed

The second main problem which the healthcare community experienced during their active duty.

27.3%

Personal relationships.

9.1%

Lack of resources.

Persona

Mary Thomas

32/ Chennai/ Married/ Head Nurse

PERSONALITY

Caring

Empathy

Sense of Humor

MOTIVATIONS

Value

Ethics

Communications

GOALS

Empathise with her patients and provide the best possible treatment.

Enhance skills and expertise to further professional growth.

FRUSTRATIONS

- Unable to fully comfort patient
- Documenting patient records
- Informing patient's family in case of death

Discover

Define

Design

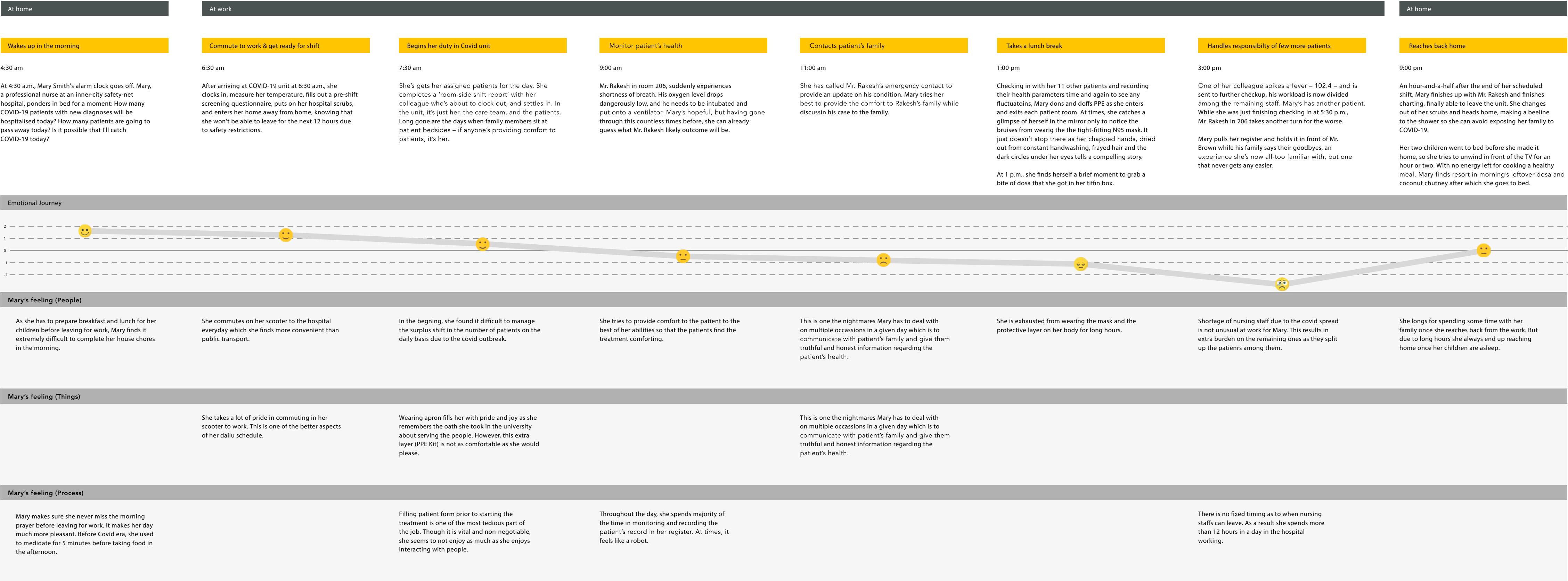
Demo

Target Groups:

Doctor | **Nurse** | Hospital staff | Volunteers



Journey Map



Define

Root cause analysis

Ideation

Root Cause Analysis

We used the 5 why technique to identify root causes of the problem we saw of **'the long working hours'** and narrowed it down to a set that needs to be addressed immediately. This helped us focus on seeing.

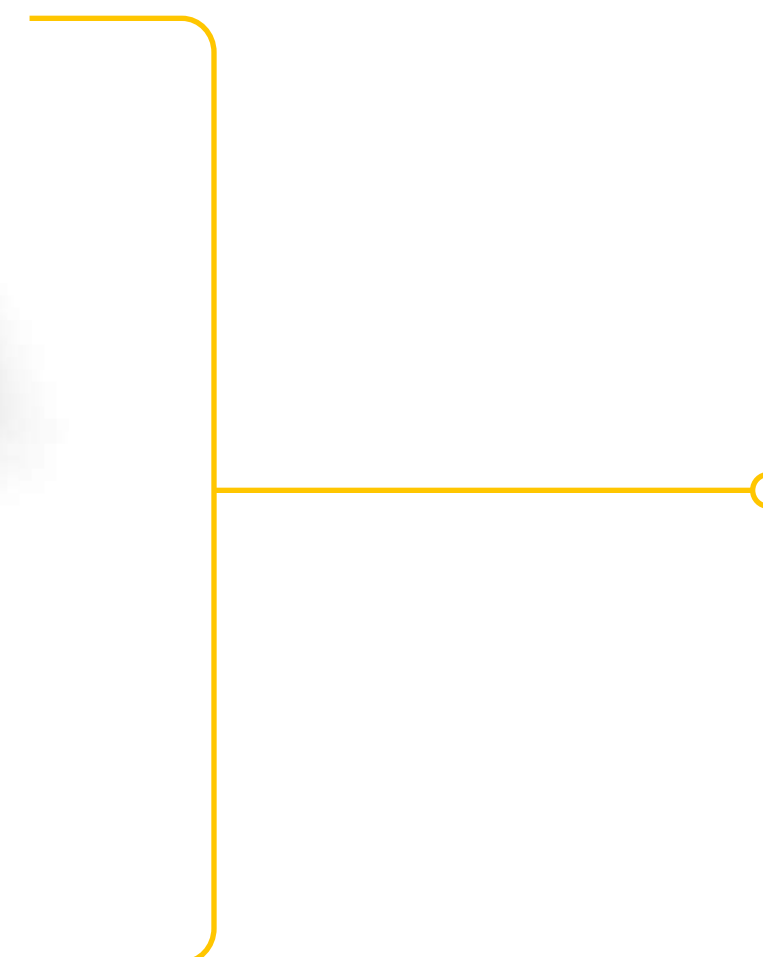
Need for more doctors during the peak of the wave.

Other Non covid related surgeries/ consultations.

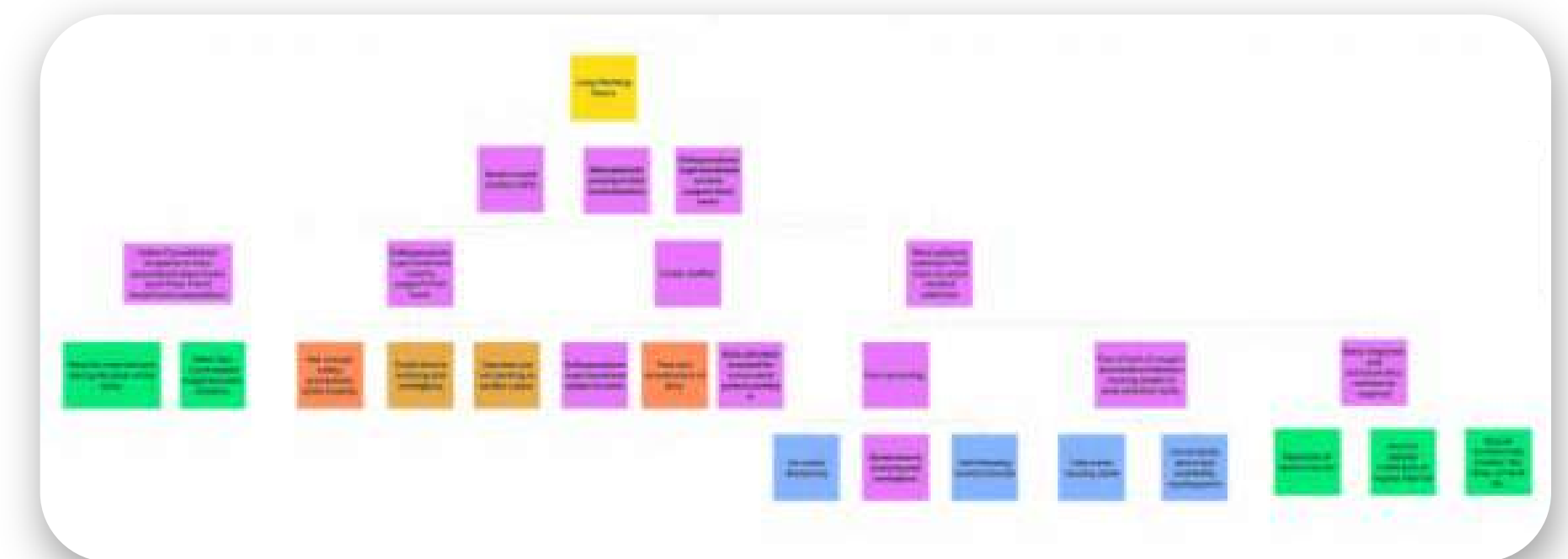
Need lots of tests to be run

Need to provide medicines at regular interval.

Should continuously monitor the temp, o2 level etc.



The 5 Why technique



Frequent examination or monitoring required of the patients during the peak periods have led to long working hours for many doctors and nurses.



Ideation



How may we enable a better work balance through managing or reducing long working hours for Doctors and nurses?

9

Solutions | 2 Shortlisted ideas

Notifications for shift hours Start and completion.	Smart device reminders to take breaks.	Better work policy to maintain balance.
Training new volunteers to fill in lack of the workforce.	Germ proof scrub rooms at every hospital for HC workers to meet their family.	Smart Bed - Includes diagnosis and basic administrative works capability.
Electronic board to monitor real-time resources and alarm on in case if there is a shortage.	Isolation centre post coivd duty should feel like a holiday and not as a burden.	Recreational rooms should be must in each facility.

Solution Strategy



One of our key findings was that frequent examination or monitoring of patients was one of the reasons that was causing the long working hours for many doctors and nurses.

How can we reduce the time needed to monitor patients who are affected

- Real time
- Provide priority based attention

Provide information critical patient vital stats

- To medical staff (doctors and nurses)
- Minimal view for overall health to family and attenders

Assistive Technology

What are some of the basic monitoring needs of a patient when they have tested positive for Covid and are being treated.

Motivational Behaviour

How do we instill a certain level of confidence for doctors and nurses while they are monitoring patients

How do we sharing the patient information across to also family to ensure patient is being cared for.

Solution Requirements

Discover

Define

Design

Demo

Oximeter

*Sensor
thermometer*

*Blood pressure
sensor*

*Smart display
device with
camera*

*Oxygen
cylinder*

*Patient's stat
dashboard in
the hospital.*

Design

*Solution based on
ideate and giving
shape to thoughts.*

Co – Care

*A unique and simple
approach to make
patient care an easy
approach for all.*

Co-Care kit

Co-Care kit is all you need for your first level of medical attention while you are at hospital or at home.

Increased burden on health care community and the non availability of bed in hospitals were the major problems we saw during the previous two waves of covid. Co-Care is our humble attempt to address those two major issues in healthcare sector while we get prepared for the third wave.

Wrist band

O2 cylinder

Co-care Tablet



Discover

Define

Design

Demo



Co-Care kit

Discover

Define

Design

Demo

Wrist band



An intelligent wearable wristband that measures O2 levels, Blood pressure, heart rate, Body temperature.

Device is configurable to send alerts to the Co Care monitor as well as notifications if prescribed levels changes.

O2 cylinder (with stand)



Oxygen supply for patients that need it based on levels indicated on the Co Care wristband.

As oxygen level within the cylinder drops below 75% notifications are triggered for replacement of cylinder and alerts shared with the Co Care monitor.

Co-care Tablet



A tablet device that is configured to receive inputs from the co care wristband over bluetooth and also share the information with other Co care monitors that doctors and nurses would have access to.

Periodic notifications to to contacts on health status of Covid patients.

Co-Care kit

Discover

Define

Design

Demo

Features:

- Small, efficient, portable
- Easy to use.
Can be used by doctors or basically anyone.
(Low learning curve)
- Self setup through a guided wizard
- Notifications and alerts based on patient priority
- AI and machine learning to identify patient symptoms and detect early signs of organ impacts to lungs, heart and other organs



Let's see how Co-Care works

Use cases

Scenario 1 – Hospital admission

Patient getting covid symptoms

Mr. Arun has fever, body pain and throat pain. He wants to wait for a day to see if he finds any relief. Post which he will go test for Covid.



1, Symptoms



2, Covid Test

Covid Test centre

Arun decides to take the covid test as he does his condition is getting worse. The nursing staff completes the swab test and requests Arun to wait for a day for the report.

Covid Report

Arun gets a call from the clinic as the nurse confirms that he got covid.



3, Report



4, Doctor

Doctor Consultation

Arun consults his family doctor for treatment and medication. During the consultation, the doctor admitted him in the general ward of the hospital. The hospital bed equipped with Co-Care kit that automatically monitors, records transmits his covid vitals real time.

Co-Care kit report generation

Smart kit that is attached to the bed of Arun, monitors all covid vital informations like body temperature, blood pressure, oxygen level and pulse. This report is transmitted to the hospital's dashboard real-time that lets the doctor to provide relevant treatment to Arun without even meeting him.



5, Co-Care kit



6,Happy

Final step

After few weeks, when the Co-Care kit reading of his body vital remains constant at normal levels, the doctor enquires about any other symptoms and tells Arun that he has recovered from the covid and discharges him from the hospital.

Scenario 2 – Home quarantine

Patient getting covid symptoms

Mr. Arun has fever, body pain and throat pain. He wants to wait for a day to see if he finds any relief. Post which he will go test for Covid.



1, Symptoms



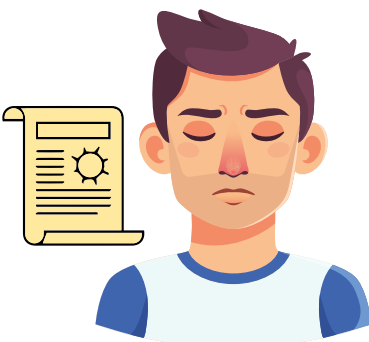
2, Covid Test

Covid Test centre

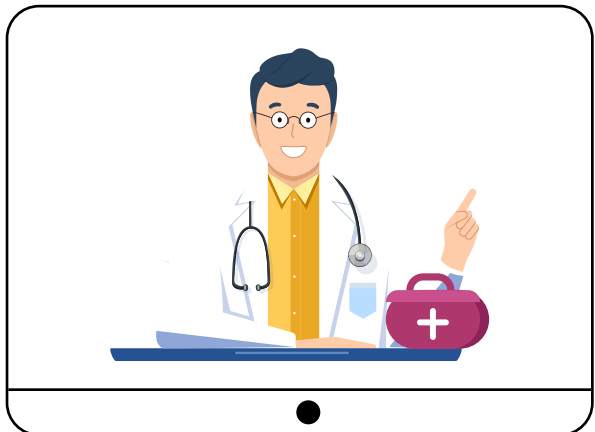
Arun decides to take the covid test as he does his condition is getting worse. The nursing staff completes the swab test and requests Arun to wait for a day for the report.

Covid Report

Arun gets a call from the clinic as the nurse confirms that he got covid.



3, Report



4, Doctor

Doctor Consultation

Arun consults his family doctor for treatment and medication. During the virtual consultation, the doctor rescribed few medicine and asked Arun to follow home quarantine. Besides, Arun was told to use Co-Care Kit that automatically monitors, records transmits his covid vitals real time.

Co-Care kit tele consultation

Smart kit that is attached to the bed of Arun monitors all vital information like body temperature, blood pressure, oxygen level and pulse. This report is shared with the doctor real-time. When the vitals fluctuate, it triggers an alert to the doctor's dashboard and he can connect to the patient at home through Co-care kit's video calling facility.



5, Co-Care kit



6,Happy

Final step

After few weeks, when the Co-Care kit reading of his body vital remains constant at normal levels, the doctor enquires about any other symptoms and tells Arun that he has recovered from the covid and he can stop home quarantine. The Smart kit assisted both doctor and Arun in this difficult time to complete the treatment effortlessly.

Scenario 3 – Waiting for hospital bed

Patient getting covid symptoms

Mr. Arun has fever, body pain and throat pain. He wants to wait for a day to see if he finds any relief. Post which he will go test for Covid.



1, Symptoms



2, Covid Test

Covid Test centre

Arun decides to take the covid test as he does his condition is getting worse. The nursing staff completes the swab test and requests Arun to wait for a day for the report.

Covid Report

Arun gets a call from the clinic as the nurse confirms that he got covid.



3, Report



4, Doctor

Doctor Consultation

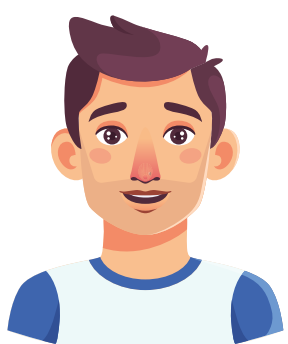
After consulting with doctor, Arun was taken to the nearby hospital to get admitted on his doctor's consultation. As the hospital was already full, Arun had to wait outside for the hospital bed. The hospital authority provides the Smart kit to Arun and other waiting patients to read their covid vitals.

Co-Care kit emergency alert system

Smart kit that is assigned to Arun monitors all vital information like body temperature, blood pressure, oxygen level and pulse. When the body vitals fluctuate, the kit triggers an alert to the hospital dashboard based on which the hospital prioritises patient's admission.



5, Co-Care kit



6,Happy

Final step

After few weeks, when the Co-Care kit reading of his body vital remains constant at normal levels, the doctor enquires about any other symptoms and tells Arun that he has recovered from the covid and discharges him from the hospital.

When Co-Care gets included in the healthcare system



In-person visits by the doctor/ nurse will get reduced because of the automated real time monitoring and diagnosis of patients happening through Co-Care.

Improved healthcare

Co-Care Kit is not only efficient but portable and it will minimize patient occupancy in the hospitals.

Quick Access to Medicare

Unlike earlier, patients don't have to wait for the health care workers, since Co-Care kit facilitates virtual monitoring and provides best care without delay.

AFFORDABLE AND BEST HEALTH CARE

With the advance set up like an ICU monitoring system, and home installation costs around Rs.10000- Rs.12000 per day. On the other hand, Co-Care kit costs half of that, around Rs.5000 only

What our Users had to say about Co-Care



Pooja Punjani
Doctor

A selfcare cum monitoring kit will save us more time to focus on the emergency cases, while still ensuring every patient under control.



Jerin J Vadakkan
Doctor

This looks like a really promising solution. It would immensely reduce the time spent on treating patients with Covid.

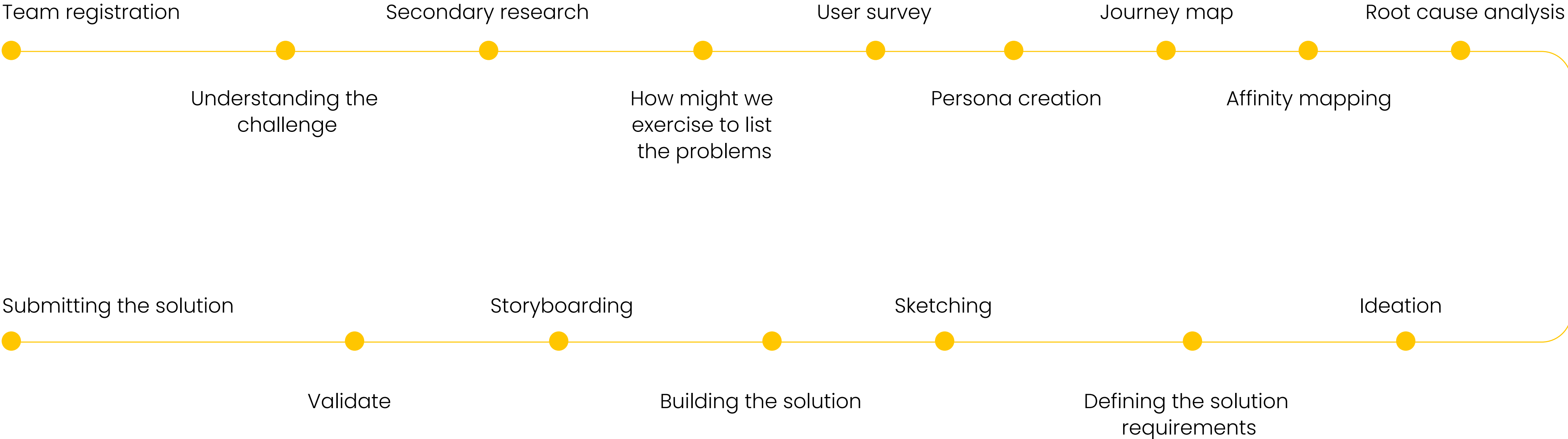
Thank you.

Team

Mighty Knights

**Behind the
scenes**

DXS Journey



We thank you for this opportunity to help contribute and improve the healthcare sector.

Team Mighty Knights.