DEP302

Systems Design Project

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WEEK 1

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Systems Design Project

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Project Overview

The aim of this Systems Design Project is to research, understand, visualize, synthesize and design for problems from socio, economic, cultural, political, technology, sustainability perspectives that are complex, uncertain, interconnected and form a system within defined boundaries. With that brief in mind we started looking at different areas based on our collective interests, knowledge and possibilities of interventions.

Problem Area Exploration

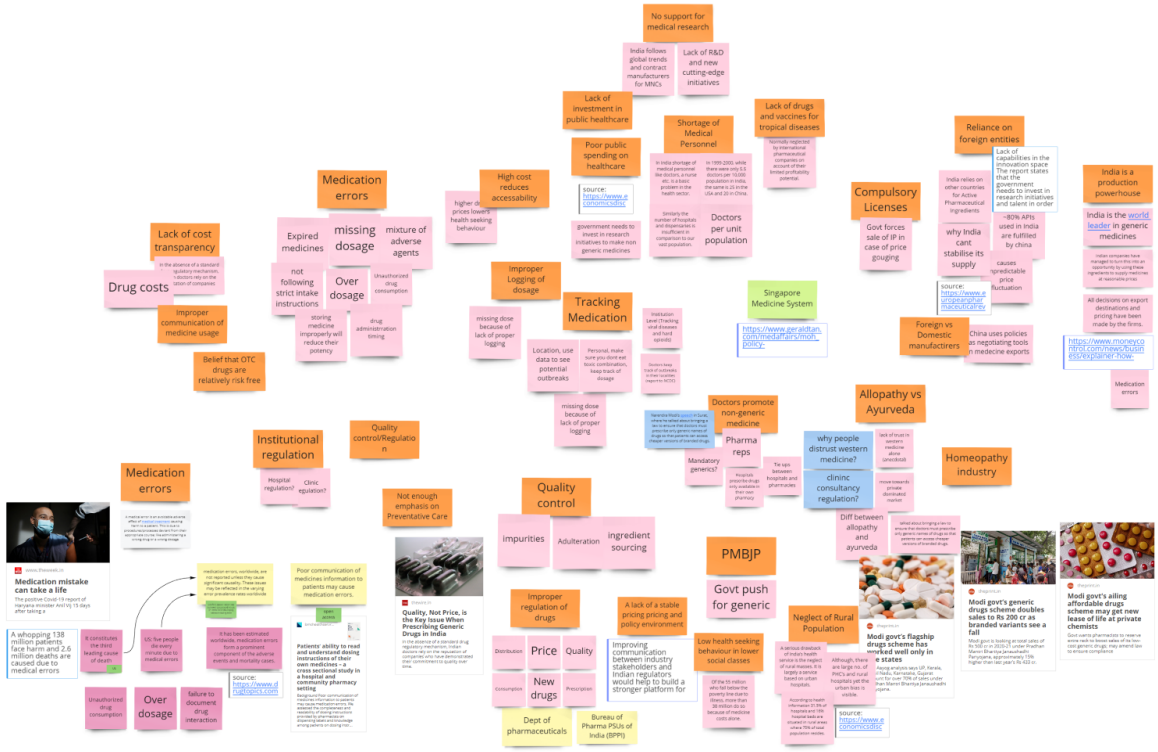
We shortlisted several possible ideas ranging from visual design and communication systems to interactive information dispensation systems. Of these the one that interested us the most was the consumer-side of the Indian Pharmaceutical system or the Indian Medicine system, that is, how patients and healthcare professionals interact with medicines.

We received feedback to look at the system from a broader lens and thus proceeded to detail out its place within much larger Indian Healthcare system, within which we will be looking at:

- Production
- Prescription
- Access
- Usage

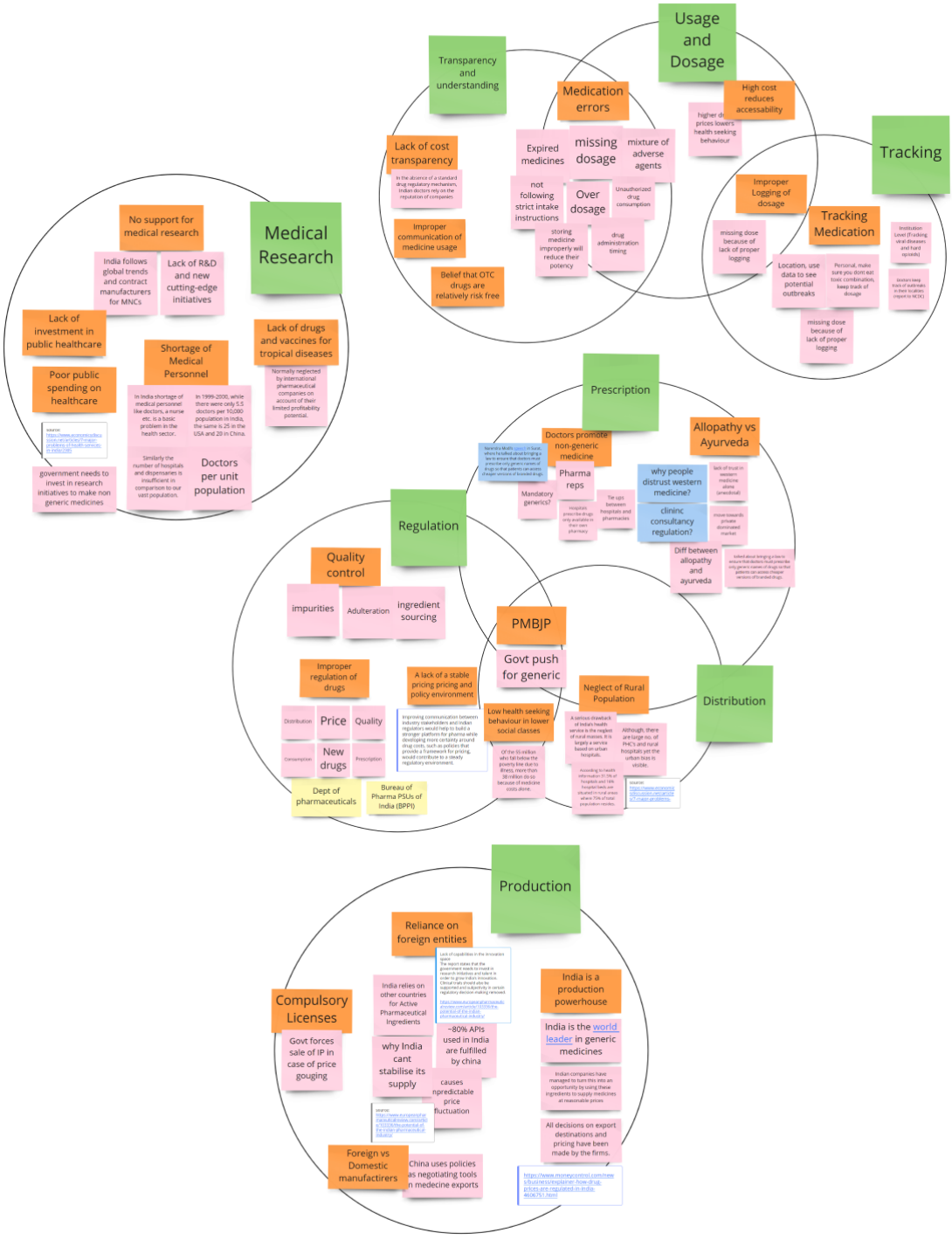
In order to put these 4 aspects of this system into perspective we must look at the broader relationship between the *Indian Healthcare system*, the *Pharmaceutical industry* and the *institutional policies* that drive and regulate them both.

Brainstorming



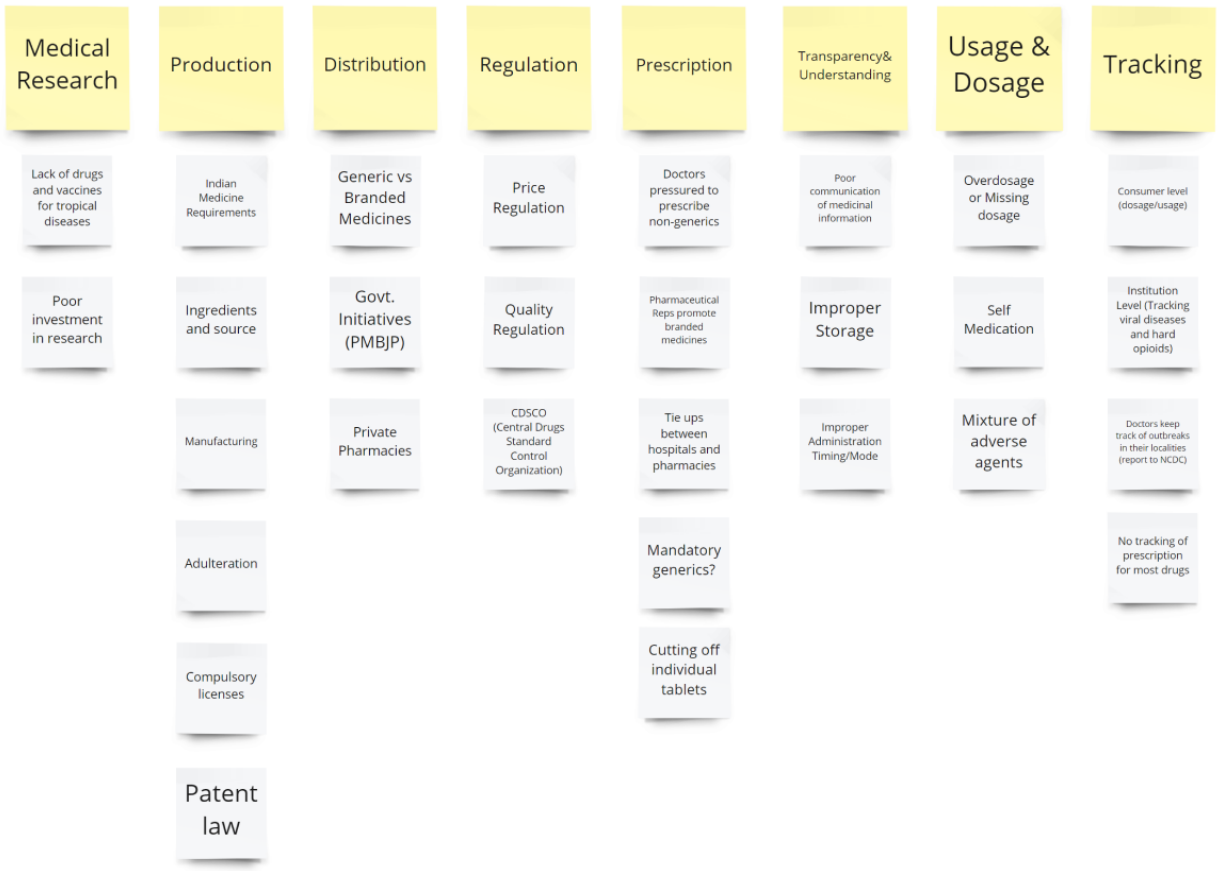
In order to understand the big picture and map all the parts of the system which were influencing medicine usage, we identified some of the major entities and forces in play in the existing systems. During our initial secondary research we covered the following topics:

- Generic Medicines & Branded Medicines
- Our large imports of medicinal ingredients
- India's massive exports of staple medicines and vaccines
- Government regulations regarding medicines
- Medicinal errors caused due to improper information dispensation
- And more...



Those factors/aspects were further clustered together and mapped onto venn diagrams to better understand their relationship with each other. These connections will be explored further in our mappings, with causality-loop and feedback-loop diagrams.

Identifying System Boundaries



We consolidated all our ideas into groups we were able to better identify some of the main aspects of the system:

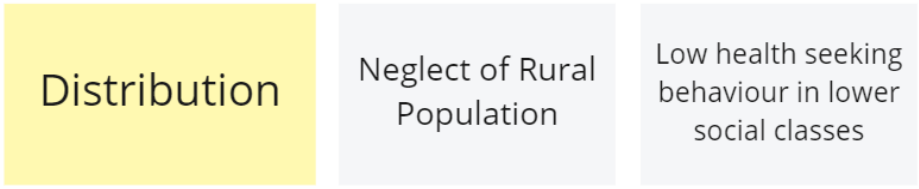
1. **Medical Research**

There is a dearth of Medical Research in India, despite our extensive manufacturing capabilities. This is caused by many factors including a lack of govt funding into the research sector.

2. **Production**

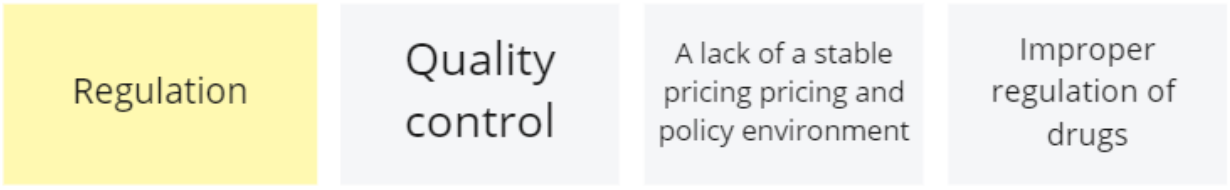
Production refers to the manufacturing and sourcing of medicines along with policies regarding them like licensing, indian medical requirements, patent laws etc

3. **Distribution**



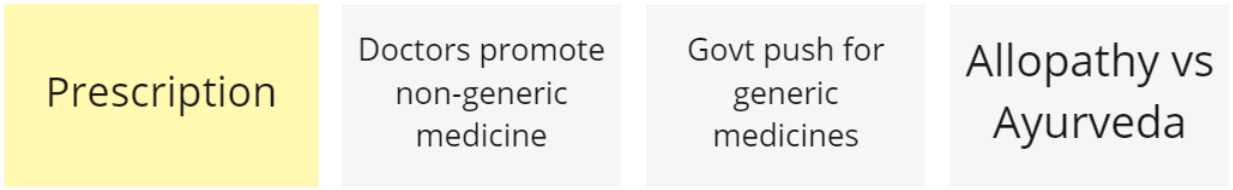
Systems of distribution include entities like major pharmacy chains. This also includes govt dispensaries and generic medicine dispensaries. Today the growth of emedicine means that there are also online players in the space.

4. **Regulation**



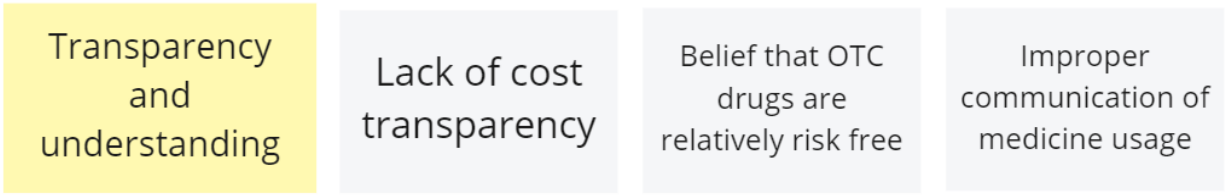
The Govt imposes many regulations which control various aspects of the pharmaceutical industry including quality control, price control, IP law, manufacturing licenses and much more.

5. **Prescription**



The particular brand of a medicine prescribed by doctors depends on a variety of factors. Pharmaceutical sales reps aggressively promote branded medicines to doctors, there could be tie ups between the hospitals and pharmacies which only sell a specific brand of medicines. Doctors tend to prescribe more non-generics due to the brand trustworthiness and quality control as well as a commitment to a particular brand.

6. **Transparency and Understanding**

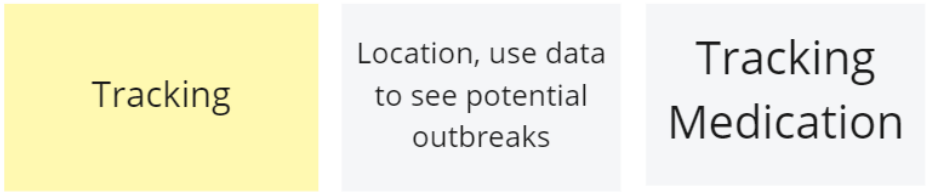


People might not be aware of all relevant medical information due to poor communication between doctors and patients. This problem is only exacerbated by illiteracy and many other factors.

7. **Usage and Dosage**

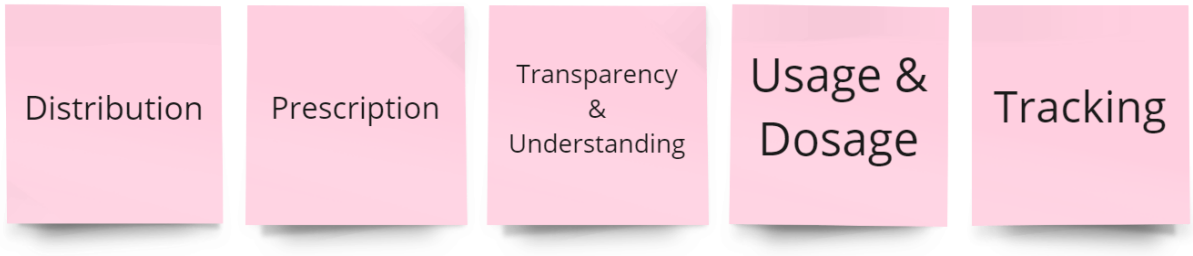
This entails how medicines are consumed and the many risks of medication errors. Self medication by people could lead to over/underdosing. People can forget to take their medicines on time. People might even accidentally take the wrong medicine entirely.

8. **Tracking**



Keeping a record of the flow of medicines to identify potential disease outbreaks in certain regions. This is especially important for decentralised and local healthcare policy makers.

Setting Project Scope



From the 8 aspects identified, we plan to further focus on the consumer side of this system, into things like Prescription, Distribution, Transparency, Usage and Tracking. These can be further generalized into 3 categories:

- **Prescription**
- **Procurement**
- **Usage**

Using these three broad categories we will identify and map all the entities that make up the system and map them to understand all the interconnections between them.

Future Steps

Based on our progress so far, we have charted a plan for the coming two weeks:

- **Week 2:**
    - Identify Various Perspectives
    - Identify System Entities
    - Identify how these entities/parts connect to the whole
    - Identify the Relationships between Entities
- **Week 3:**
    - Map the Holistic System of interconnected Entities
    - Find Leverage Points

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