Recap PCA Device

Mindful pain management, made simple.

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Hello!
It's time for you to check in.

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Problem

After surgery, patients are often given a generous prescription for powerful yet addictive *opioid-based analgesics* (painkillers). Unlike the experience in a controlled hospital environment, at home, patients are suddenly faced with the need to regulate their own pain medication while they recover.

The combination of over-prescription, ineffective self-regulation, and a lack of awareness of drug return practices has resulted in an opioid crisis that has claimed more than 42,000 deaths and two million cases of opioid abuse in 2016 alone.

Design Question

How can we support and improve mindful and data-informed post-operative pain management to maximize patient comfort while also deterring the abuse of opioid medication?

Concept

Recap is an easy-to-use *self-medication device* prescribed to individuals with an opioid prescription after a surgery. Personalized for the individual, Recap gently steps patients towards lower or less-frequent opioid dosages during recovery. The device also provides caregivers with usage data, and is returned to the pharmacy once it is no longer needed.

Analytics

Features a **wireless connection** to store and communicate data to an online dashboard in real-time. Connectivity can allow for the device to periodically report back to the pharmacy.

Pain Rating

Uses a modified **Wong-Baker Pain Scale** to contextualize, assess, and manage the degree of pain experienced by a patient post-surgery.

Routine

Features a routine **check-in notification**, which prompts a user to evaluate their pain at timed intervals and decide if they'd like medication.

Mindfulness

Instead of recommending exact doses, Recap provides **explicit use history** to inform users of their last dose and satisfaction with their pain management.

Timeline

1 Research

The team conducted extensive research to further understand both user and stakeholder needs for the product. This research included reviewing scientific literature, conducting user interviews, and analyzing potential market competitors.

2 Prototyping

The design phase began by prototyping early concepts for the interface, internal mechanisms, and overall form factor. These initial visions for the device helped to prepare designs for rigorous iteration and user testing.

3 Iteration

The team developed physical proof of concept for the device form factor, dispensing engineering, and digital interface. With these early prototypes, usability tests were performed with **ten participants** of a wide range of ages (20–75) and backgrounds, advising changes for the next phase.

4 Implementation

The final prototype is a **fully-functional device** that dispenses pills as requested and tracks pain level inputs by users via LCD touch screen. This milestone features a system report laying out the functionality and design intent at the core of the device to aid in future work.