MediCool

PASSIVE MEDICATION COOLING SOLUTIONS

Team L1

Camellia Sharma, Hanna Zhang, Daniela Vesga, John Schafer, Kyle Crain

ABOUT OUR SOLUTION...

A portable cooling capsule that maintains safe storage temperatures using Phase Change Materials (PCMs) for refrigerated medications.

Approximately **80 million** people worldwide have glaucoma. Glaucoma is the **second most common** cause of blindness worldwide.

THE PROBLEM

Many communities lack reliable access to electricity, making it difficult to keep medications within the safe 2 – 8°C temperature range during power outages.

KEY INSIGHTS:

Between 6 to 48 % of hospital visits after a natural disaster are for medication refrigeration or refills.

CURRENT SOLUTIONS

Generators

Too expensive for the average household (~$7k)

Ice Pack

Temperature fluctuates and doesn't last

Cooling Case

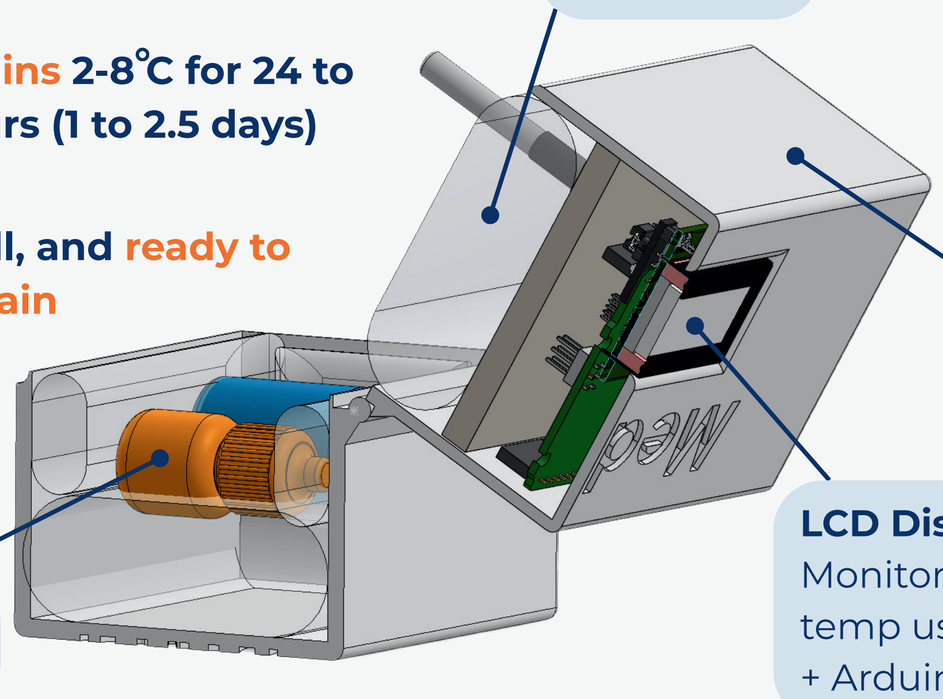
Meant for short flights that last up to 5 hours

OUR SOLUTION

1. **Absorbs excess heat as bonds break in PCM**
2. **Maintains 2-8°C for 24 to 60 hours (1 to 2.5 days)**
3. **Re-chill, and ready to use again**

PCM Core
Absorbs heat to maintain stable temps

ESTIMATED COST
<$50



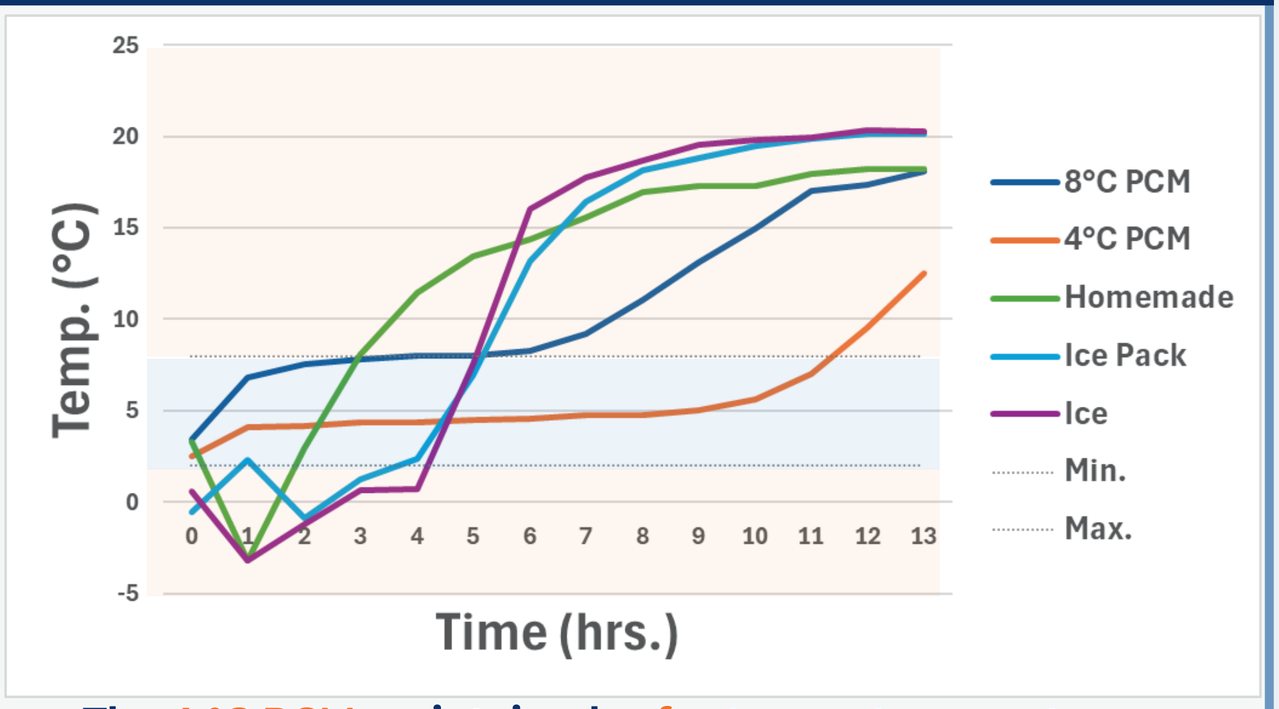
Insulating Housing
Protects medication and reduces heat transfer

LCD Display
Monitors internal temp using probe + Arduino system

Refrigerated Medication

EXPERIMENT

HOW LONG DOES IT KEEP COLD AT AMBIENT TEMPERATURES?



The 4 °C PCM maintained safe storage temperatures for approximately 12 hours.

EARLY ADOPTERS

IDEAL FOR:

Chronic Disease Patients

Low-income Households

People Living Off-grid

- LOW COST
- LONG-LASTING
- LOW MAINTENCE
- ECO-FRIENDLY

NEXT STEPS

1. **Optimize insulating material** → increase in duration by 2X - 5X
2. **Field test with medical partners** → gain insight into scale of impact
3. **Scale production** → reduced manufacturing and consumer costs