PROJECT DESCRIPTION

Drugs don’t work in patients who don’t take them. Proper medication management is crucial to improving health outcomes and quality of life, especially for polypharmacy (taking 9 or more medications at once) in geriatric and chronic care patients. However, patients aren’t missing pills due to forgetfulness alone; most of the time, the true risk of non-adherence, adverse drug effects and self-discontinuation stem from the overcomplication of the healthcare process.

The average elderly patient sees seven physicians across four different practices each year. If either a patient or a single one of those healthcare providers lacks clear understanding of the treatment plan, the delivery of care is compromised. However, direct professional dialog is not occurring between those providers, which forces practitioners to make decisions using poor quality or missing information that could be vital to a patient’s health. Ultimately, the patient is brought in to intermediate between pharmacists and doctors, which is not only confusing but is particularly unreliable due to low health literacy.

In order to truly increase patient adherence, we need a new communication system that gives the pharmacy better quality data, improves medication therapy capabilities, shares visibility to vital medication information, and allows for direct two-way communication between pharmacists and doctors. Meditrina Technologies is proposing a
two-part solution to bring better adherence to patients and better communication to healthcare institutions.

**VALUE PROPOSITION / SOLUTION**

We at Meditrina Technologies are developing multi-dose packaging that increases patient health literacy, paired with medication therapy management and communication services, that help healthcare providers improve medication adherence and overall outcomes for geriatric and chronic care patients. Unlike existing adherence packaging or management solutions, Meditrina is leveraging existing data repositories to push for direct communication between different members of the healthcare team, which decreases discrepancies on treatment plans, more accurately informs providers on a patient's hand-to-mouth adherence rate, and saves healthcare institutions time and costs.

**CONTEXT AND BACKGROUND**

Despite most of the American population relying on prescription medications to stay healthy, ⅔ of them are non-adherent (miss doses or don't take them properly). Non-adherence results in over 125,000 premature deaths and $300 billion in avoidable costs to the US healthcare system every year. This is particularly an issue among geriatric and chronic care patients with barriers such as digital divide, low medical literacy, memory loss, and overly complex medical communication systems standing in the way of them and their health. A countless number of medical professionals can be involved in any one patient's treatment plan, but inadequate communication between them leads to an increased risk in adverse effects. Risks and misunderstandings like these can lead patients to discontinue or intentionally not comply with their prescriptions.
To combat this, market trends are moving pharmacists from a primarily dispensing role into a medication therapy position, however pharmacies are lacking the proper tools needed to fill this need adequately. Pharmacies communicate their recommendations or questions to doctors through antiquated means, and doctors cannot directly inform pharmacies when a medication or treatment has been discontinued. Data is often months-old or lacking, and when there are errors in that communication, there is a substantial chance of morbidity and mortality.

This made us question; how might we help healthcare providers collaborate more intimately towards a common goal of patient adherence? Initially, we considered every possible solution from stationary pill dispensers to portable electronic pill cases, but nothing we could think of brought any more value than existing competitors. That’s when we decided to reframe our problem, and realized that the true root cause for patients choosing non-adherence stemmed from the complexities of communication processes between not only the patient and provider, but between different members within the healthcare system. Therefore, we conceptualized a two-part solution that could help decrease medical non-adherence and misunderstandings once and for all. With Meditrina Tech solutions, we aim to create systems which take the miscommunication out of what should be a human centered industry, so that healthcare professionals can focus on helping their patients. Simply put, we want to simplify the complexity of healthcare, for all members involved.

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**PROTOTYPE / MVP**

We are developing a dose packaging solution known as MediU for patients, and a communications management system known as MediCo for healthcare providers. Both products work together to simplify the complexities of the medical communications process between not only the patient and the physician, but also between the healthcare
and insurance providers. By streamlining collaboration between the various decision makers of the healthcare process, physicians and pharmacists will finally be on the same page and patients will be able to simplify their health regimens in order to stay adherent.

MediU, for patients, begins with packaging all of a patient's medications by dose in discreet pill pouches, made from recyclable/biodegradable materials. Information is simplified so that patients clearly understand when to take their pills, as well as what their pills do. MediU's design takes into consideration users with cognitive impairments, mobility issues, and low technological and/or health literacy. MediU is low tech, low cost, and can be enhanced through additional electronic reminder systems or connections to a patient's favorite smart devices. Patients communicate their adherence to the pharmacist either through electronic means or by returning their packaging (with any doses not taken) to the pharmacist, incentivized by a future discount. Patients are also then prompted to log whenever they have adverse side effects to their medications, so that proper communication can be done to prevent hospital admissions before they become a threat.

MediCo, for healthcare providers, tackles the overarching issue in communications between medical workers. MediCo enables pharmacists to practice medication management therapy using the important insights from knowing a patient's adherence rate through MediU. When necessary, the pharmacy can now communicate their recommendations or questions for the rest of the healthcare team electronically through the MediCo computer program, which will exist as a main platform for medical professionals to communicate treatment information more accurately and efficiently. We aim for MediCo to also allow providers from various specialties of a patient's healthcare team to easily transfer findings, and let doctors directly inform pharmacists of important changes to the treatment plan. Overall, MediCo works with MediU to improve the overall quality and personalization of the patient's care plan, increasing medication adherence as a result. For both MediU and MediCo, we are currently in the prototyping stages and working towards an MVP.
2. WONDER

How we can

Time is an offered

PROBLEMS
Someone taking
9 pills won't be
able to take
them all at once

SMART DESIGN

UNIVERSAL DISABILITY

INSPIRED BY TAI TAI

INSPIRED BY

INSPIRED

INSPIRED BY

INSPIRED BY

TIME INPUT
SOUND LIMIT VOLUME
MARKETS & SCALABILITY

While the end user of our solution is ultimately the patient (with particular emphasis on geriatric and chronic care patients), the target purchaser comes down to the pharmacies and their medical insurers, giving us a B2B marketing model. There are approximately 88,000 pharmacies currently in the United States. One third of these are pharmacy chains, such as CVS and Walgreens, while another third consists of big box grocers such as Walmart and Target. The final third of the market is composed of only independent pharmacies, and each independent pharmacy will have between 1-12 store locations. Most independent pharmacies operate in rural or inner-city areas, use local/small medical insurance companies, and are also among the most in need of new communication solutions. The number of independent pharmacies is also steadily growing: in the past decade, the number of independent pharmacies increased by 13%, whereas chains lost around 0.2% of their stores, on average. We plan to market our solutions to these independent pharmacies and their medical insurers first. Once we gain enough traction, that’s when we’ll progress on to selling to big box grocers, and eventually to pharmacy chains. This solution and market isn’t specific to COVID-19, although the need for adherence, literacy, and telehealth solutions are greater now than they’ve ever been, which is why the best time to implement this solution is now.

CUSTOMER ACQUISITION

In order to reach our target purchasers, we plan to first deploy our solution to independently owned pharmacies and their local insurers. A lot of these targeted pharmacies will probably be local to Virginia or neighboring states, and located in rural or
inner-city areas. Our aim is to steadily building a strong contact base with local pharmacies and pharmacy management companies, and plan to network with more potential purchasers at the NCPA (National Community Pharmacists Association) Conference in October and the IPCRX (Independent Pharmacy Cooperative) Conference/Expo in April, which is specifically for independent pharmacies. We are also registered to attend the IFAH (International Forum of Advancements in Healthcare) conference in June.

Once we identify independent pharmacies of interest, we can target their smaller insurers, which are likely to be locally based as well. Reaching both pharmacies and their insurers is key to the success of multi-dose packaging and synchronizing refills, as well as bridging the gap between healthcare professionals. We hope to encourage insurance companies to offer Meditrina's solutions to their pharmacies in exchange for discounted prices on prescriptions. Pharmacies can then demonstrate the MediU solution to their patients most in need of adherence management solutions.

Eventually, once our solution has gained enough traction from independent healthcare institutions, we will be able to expand to pharmacies owned by big box grocers, and then to chain pharmacy companies. We plan to target that audience in a similar way that we advertised to the independent pharmacies.

The end users (the patients) will learn about the patient-centric solution (MediU) through either pharmacist recommendations, their medical insurance carriers, or their doctors. Pharmacists in particular can demo MediU to their patients, opening new revenue streams and opportunities for medication therapy.

**COMPETITION**

Perhaps the two most notable competitors in the medical adherence market would be PillPack, recently acquired by Amazon, and Hero Health.
PillPack helped prove to the world why individually packaged doses are effective tools in increasing patient adherence, and their sustainable competitive advantage comes from their robotic dispensing technology and packaging. However, PillPack is severely lacking the customer-centric services that patients expect from their pharmacies. Unlike PillPack, which is using packaging to replace the classic pharmacy, Meditrina Technologies is using packaging to enhance existing pharmacies, and using communication channels to provide unity between various healthcare personnel and their patients.

As for Hero Health, who created a stationary pill dispenser for the patient’s home, the high price point and high tech design not only prevents lower income patients from affording the device, but also has many reported hardware and software errors. For this reason, and many more, we at Meditrina Tech have been ideating with the concept of a low tech pill delivery system which will allow for a lower price point and less technical errors.

We are particularly adamant that the patient solution (MediU) be low tech due to the low digital literacy of our initial B2C target market, which would be primarily elderly individuals within the geriatric polypharmacy population. Furthermore, for our B2B market, we aim to create a computer program/system which we refer to as the Medicine Communication system (MediCo) which will allow for new capabilities in communication between physicians, pharmacists and medical insurers. As far as we have seen, there is no such current competitor in this sector, but ample opportunity within the medical communications market.

TEAM REFLECTION

The team was very excited about the opportunity to work together as a group to ideate around a pertinent issue in the medical sector such as patient adherence to prescriptions drugs. However, as we moved further into the two weeks of this sprint, we realized we may have settled too early on our iteration of a solution to this problem rather
than really thinking further about what other underlying problems there could be in the health sector negatively affecting medical adherence and prescription filling efficiency. We were also pretty effective in figuring out the strengths of each member in fields of knowledge and skills, however we were a bit ineffective in using that potential to get a significant amount of work done between sessions. We believe this happened because at times we failed to construct strong enough action steps in order to ideate more effectively and begin prototyping as early as possible.

Furthermore, as our busy schedules often diverged from each other it became hard to meet as the full team to consider all possibilities. We began to realize that if we were to do a sprint again we would need to not only set dates for next meetings as soon as possible but also designate specific action tasks for each team member before the next meeting so we could have something we could continue to work on even if we could not meet.

INTELLECTUAL PROPERTY

Currently, we at Meditrina Tech have begun the process of prototyping aspects of what refer to as the product ecosphere, which includes products that will be directly used with end user patients and programs/systems which will be utilized by stakeholders in the healthcare field. Essentially sooner than later, we will need to protect the intellectual property around the MediU solution as well as our proposed Medical Communication Program, a.k.a the MediCo.

We are preparing to apply for patents as early as possible and recognize the legal benefits of non-disclosure agreements for anyone involved in the ideation processes at Meditrina Tech. Especially until we have patents pending, we plan to share NDAs with anyone whom we allow to see our designs or concepts for MediU and MediCo.