

SOLVING THE PROBLEM OF MISCOMMUNICATION IN HEALTHCARE AS IT PERTAINS TO DIGITAL HEALTH

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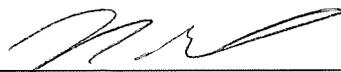
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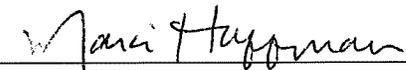
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## Chapter 1-Topic

If we took the current healthcare model and implemented it into the restaurant industry, customers would be paying multiple ways. At the end of the meal, the customer would receive a bill from the chef, the waitress, and greeter, and the owner of the restaurant. This as you could imagine, invites a lot of miscommunication. Now, this is the reality in healthcare just on a payment side of the spectrum. In February 2016, it was estimated that miscommunication in healthcare is worth \$1.7 billion. Also, this miscommunication is responsible for nearly two-thousand deaths (Budryk, 2016). Healthcare is undergoing constant iterations of change, a new wave of delivery of care for patients emerged across many health institutions nationwide, which is digital health.

Digital health being a relatively new implementation in healthcare entails major gaps of communication between clinical staff. As we look at any new technology solution, it usually has a great use and could solve problems that have existed in some cases for decades. Despite the potential problem solving ability that digital health solutions pose, there are still issues within the previous statement alone. The issue is that there is a false sense of reality in digital health solutions. We have this belief that the technology will solve the intended issue health systems are facing. The issue lies in the details, because the focus is typically on what the digital health solution will solve, opposed to looking at the how will this solution impact medical staff. Technology has

captivated much of what we do on a daily basis. So, this topic is pertinent to explore, considering healthcare has been and is a hot topic today.

This field project will allow further articulation of the co-existence between healthcare and technology. The ways we define how these two worlds co-exist is by exploring the opportunities digital health possesses. To ensure we are too mitigating issues, we will examine the opportunities for growth within digital health. Healthcare has been and is a vital part of saving lives. Technology has been allowed the world to become smaller and more advanced. The secret lies in the ability to solve the issues that present themselves. Within the problem solving phase, problems solved will turn into another problem to solve. Since its inception in the 18<sup>th</sup> century, healthcare has implemented iterations with plans to “solve” healthcare issue. These iterations will and has continued to change. As we explore merging healthcare and technology, we must also acknowledge pain points of communication and how it impacts the digital health arena.

## Objectives

This field project will capture a first-hand experience through the course of my employment at Froedtert & Medical College of Wisconsin. Furthermore, this experience will capture the previous two years of work done with F&MCW's digital accelerator, Inception Health. In this field project, we will explore a digital health initiative that possesses great opportunity for patients. At the same time, we will identify the areas where miscommunication took place. Once we identify the miscommunication, we will examine the impact that the communication breakdown had on the digital health initiative. For the purpose of this field project, we will explore a digital health initiative that was implemented by Inception Health. In addition, we will explore methods and sources that were tried and tested by universities and other health institutions around the nation. The sources used in this field project will be diverse in perspective and bandwidth of knowledge as it pertains to digital health. Ultimately, this will ensure validity of the first-hand experiences witnessed in the last two years. Moreover, these references will ensure the consistency for the strategy for improving communication in healthcare settings.

In this field project, there will also be clinical work that differs in philosophy. These clinicians come from various backgrounds within healthcare. In this field project, work will be done by clinical pharmacist registered nurses, nurse practitioners, physician assistants, and project managers. These persons are also employed through Froedtert and

the Medical College of Wisconsin. This will help capture their experiences, which will also ensure the validity of miscommunication that impacted digital health initiative. Their comments are pertinent to digital health, as we continue to utilize it moving forward.

Lastly, this field project will be articulated from a first-hand perspective, so there will not be names of individuals who also took part in the projects. However, those who have not agreed to be part of this field project will remain anonymous all together. Also, there are parts of the digital health initiatives referenced that will remain anonymous to protect the integrity of business between Froedtert and The Medical College of Wisconsin and the digital health company.

## Scope

To be effective in a broad manner, research boundaries must be defined clearly. This field project will deal with many articles and studies done at other university and medical institutions. However, the heartbeat around the field project will deal with the first-hand experiences of evaluating, implementing, and scaling a massive digital health initiative. Through these first hand experiences, we will compare a study and find the commonality of these communication barriers. These studies come from various healthcare focused institutions, so their information and studies are recognized as nationally credible. Considering this field project being a first-hand experience, we will encrypt the names of the teammates who also worked on the given digital health initiative. We will alter the names of these persons, while still utilizing the real-life experience that occurred.

## Significance

Wisconsin is a difficult market for healthcare. Also, Wisconsin is behind in technology advancement, compared to other metropolitan cities. So, when merging healthcare and technology to form digital health, there is a burst of opportunities as it pertains to growth. As we consider solving digital health issues, we also set ourselves up for failure. Healthcare becomes acquainted with almost anyone at some point in their lifetime. Digital health and its added value are relatively new to many. However, we are in an age where technology has become the bridge that connects many people. With connecting people, we consider ways to connect patients or customers with their medical caregivers. By exploring the challenges of examples, given we will also be able to identify the complexity of connecting a patient with their care team. This field project will highlight the day-in and day-out constant efforts that go into re-designing an ever changing structure. Digital health has the ability to give health institutions innovative solutions, while cutting cost and increasing quality of care.

## **Background**

This field project simply began with an email I received at work. Previously, my employment status was that of a project manager for Inception Health. There were multiple initiatives that I had been attending to at the time. The email I received was from the Director of Rehabilitation Services. In the email, he expressed his frustration with a project we were exploring to potentially implement. The bases of the email expressed his distaste with the progress and process of the initiative. The one thing that stuck with me in this email was the sentence that stated, “Lawrence promised to get us workflows weeks ago. Neither I or my team have yet to receive any documents from Lawrence.” This statement from this individual was in fact true. However, I also had been instructed to “parking lot” (postpone) the communication for this initiative, because senior level leadership still had some things to untangle in this project. Regardless of which party was right, this was a clear sign there was not consistent communication being fed to the Director of Rehabilitation Services and myself. From here, I began to identify the barriers that miscommunication pose to project. Considering the work and problems Inception Health is solving, the focus became targeted on digital health communication breakdowns. There are a few projects that I thought would be a great added value to the field project.

For two years, I had the privilege of operating as a project manager. This role allowed me to develop the insight of all that goes into getting a project off of the ground

and aligning all the resources that will ensure the project is successful. For example, if Inception Health wanted to launch a digital health initiative, we would have to consult with not only the digital health company, but also compliance, legal, IT, clinical staff, and senior level administration for their approval. Something learned is that having so many perspectives often bottlenecks the initiative entirely. With having multiple parties at the table, this increases the chance of miscommunication to occur. The email from the Director of Rehabilitation Services was simply a valid reminder that no matter how innovative or easy-of-a-lift a project may be, communication barriers still exist. To now dive a bit deeper, into the context of miscommunication as it pertains to digital health, we will take a closer look at the lens of implementing a project at Inception Health.

In the project management role, I had the privilege of working on some pretty impactful projects that are radically new in healthcare. The project that I had the privilege of working on is described as Medication Adherence Program. All four of these initiatives have digital health communication breakdown that possess opportunity for improvement. After two years, of doing the role of project management, I began to work closely with clinical staff at Inception Health. This work then lead into me becoming manager of the virtual clinical core. So, that project management of few projects then cascaded into having the opportunity to manage the all clinical operations at Inception Health. Once I took on the day-to-day operations of the Virtual Core, I was brought up to speed on more detail of the projects. This is where I was exposed to all of the areas of miscommunication as it pertains to digital health.

## **Methodology**

This field project utilizes multiple approaches to explore the issues of miscommunication in healthcare, as it pertains to digital health. First we will explore the digital health initiative, so that we ensure clarity on the intention of the project. From there, we will incorporate credible sources that aid in further driving home the validity of points made during the course of the field project. These materials are diverse in perspective and experience. The referenced material will come from universities, health institutions, expert testimonies, and news statements from the healthcare industry. Based upon the information gathered and the conclusions that are made, recommendations will be made.

Digital health is a relatively new area in healthcare. Also, because digital health is a new concept or way to deliver care to patients, it is in pilot (test) mode at many institutions. So, the information is kept confidential in many cases. Hence why for the purpose of this field project, specific information will be left out to ensure too much is not disclosed. However, the overall story and the necessary pieces will be in place to connect all pieces to give the field project its coherence. While exploring the intricacies of digital health processes, the influence from other health institutions or universities perspective on what they suggest or have trialed would be optimal for this field project as we attempt to mitigate miscommunication. Ultimately, this all will draw the connection

to what is the norm or at least as it is said in healthcare, the expectation of quality care we provide patients.

Discovering studies or articles that identifies with digital health can be a bit difficult, because of the newness that it possesses. However, there are lessons that can be explored within a study that correlates back to the digital health initiative that was done at Inception Health. In order to capture the optimal lessons, we will compare unique cases that learning opportunities made situations better. Or we will simply take recommendations from sources that would be effective in Froedtert and the Medical College of Wisconsin digital health solution. The sources that were used to reference and compliment this field project are various in philosophy and place of origin. This is done, so that we capture multiple perspectives, but also set ourselves up for the best solutions possible.

## **Chapter 2-Articulation of Digital Health Initiative**

In late 2015, Froedtert and The Medical College of Wisconsin launched Wisconsin's first digital health hub. This is when Inception Health was born. Inception Health's purpose and focus is to drive innovation and reduce cost of care for the patient. Below are the core beliefs of Inception Health,

- Outside-In Strategy Wins
- Innovation is a Discipline
- Failure is OK
- The Smartest People are Outside the Organization
- Technology Will Democratize Medicine
- The Mobile Mind- Shift Has Occurred

These values and beliefs are what drive Inception Health. However, Inception Health's initiatives all go back to Froedtert and The Medical College of Wisconsin. The best way to articulate the relationship between Inception Health and Froedtert and The Medical College of Wisconsin, is by comparing it to Coca Cola and Sprite. Coca Cola owns Sprite, however Sprite has its own labeling and flavor. All of the return on investment that sprite receives automatically goes back to Coca Cola. The concept of Froedtert and The Medical College of Wisconsin and Inception Health is similar. Froedtert and The Medical College of Wisconsin as the wholly owner would be Coca Cola in this situation and Inception Health being Sprite. The value add that Inception Health brings to the

table is its ability to implement projects rapidly. In a traditional Froedtert and The Medical College of Wisconsin facility, it would take at least six months to implement projects. However, at Inception Health, a project can be implemented as quickly as ninety days. Considering the bottlenecks of healthcare, implementing a project in ninety days is quite impressive.

In healthcare, medication adherence has room for improvement. During this time, physicians are not able to track the compliance of a patient, once they leave clinical visits. Today, patients are too selling their medication for profit. This is low hanging fruit for healthcare, because many ailments can be cured, if patients complied with their medication schedules. Clinical staff that try to get patients to adhere to medication is not as easy task. The issue lies in the sense of compliance, communication, and consistency of the patient, from the perspective of the clinician. However, healthcare is not as accessible as one would hope, so this too makes the relationship of the patient and clinician a bit blurry. This blur is cascaded into inconsistency.

After actively searching, Inception Health discovered a digital health solution that would help solve the medication adherence issue. For the purpose of this field project, we will call the Company, Company P. Company P introduced an innovative way to manage and track patient medication adherence. Imagine a pill with a sensor inside. The pill has metal particles that react, once coming in contact with stomach acid. Once the reaction occurs, the sensor sends a signal through a body patch that is worn in the stomach area of the body. The signal is sent to a cloud based portal that the clinical team can monitor

patient adherence. Though the process seemed to be fitting and efficient, many teams would need to help tackle this operation.

In order for patients to participate in the digital health program, patients would need to have an active email account or a smartphone capable of downloading applications. Any patients who are contacted and do not have either email or smart phone will be excluded from the program. If patients do not have either, they will be documented as disqualified from program and no longer will be included in the outreach efforts to get patient enrolled into the pilot for the initiative. In addition, if the patient does not have a schedule medication refill within a months' time, the patient would not be necessarily disqualified from the program. However, the patient would be placed on a holding list where the team would revisit the idea of integrating the patient into the program, once medication refill date nears closer. The way that the patient is identified for the program all the way to how the patient is sent medication is done by the efforts of multiple teams.

Imagine taking such grand idea and gathering a group of clinical and non-clinical staff together to build such an idea. This could be tough, due to opposing ideas and timeliness of the implementation date. We should explore the teams involved to fully understand the operations and who the key players are.

- Company P- Company P is essentially the business partner with Froedtert and The Medical College of Wisconsin. This is a team of clinical and business personnel whose role in the process is to provide modifications to insure Froedtert and The

Medical College of Wisconsin is successful in their pilot. When their technical adjustments or clinical efficiency issues, Company P's team would administer the resources to see that changes are made.

- Pharmacy Team- This is a team of six clinical pharmacist. The role of this team is to provide patient population amongst the team. This team was also responsible for updating medication orders in EPIC. EPIC is a popular electronic medical record. The team would also be a point of contact for the patient as it pertains to clinical questions.
- Virtual Clinical Core Team- This team carries out the day to day operations of outreach to patients and monitoring patient adherence. Utilizing physician assistants, nurse practitioners and critical care nurses, this operation will share across the team.
- Medication Management Team- This team was responsible for the delivery and packaging of the medication that was sent the patient. Furthermore, this team was made up of clinical pharmacist and pharmacy technicians.

With the cohort effort from all four teams, this as one would imagine is a huge initiative for any organization. Now that all four groups have been identified and defined, let's tackle the inter-workings of how this project experiences areas for opportunity and communication.

With the Pharmacy Team being the primary form of contact for the patient, the group felt that the project should be influenced primarily by the clinical pharmacist. The

best course of action appeared to be for the pharmacy team to create a scope of patients to target. The pharmacy team decided that they would target cardiometabolic patients with risk associated. Cardiometabolic patients are patients who are at risk for diabetes, heart disease, or stroke if they are not properly monitored. Patients, who are cardiometabolic risk adverse, will make a great subject for this pilot because with medication compliance we would be able to explore the impact of clinical data generated from the patients. The way these patients would be generated was a big question. How will we generate a list of patients who would be great for the program? There had to be some medical authority to give the program its clinical validity. The plan became to send a mass spreadsheet to physicians with their patients listed. From there, physicians were expected to review the list and send comments back for patients who they felt were poor candidates for the pilot. If physicians did not comment at all, this was interpreted as the patient being eligible to participate in the program. Once the patients were identified, there had to be an initial to outreach to the patient to make them family with the program. The Virtual Core team would prove to be a vital heart beat in the initiative as the project to continue to unfold.

The Virtual Core Team agreed to take on the initial outreach to patients. The Virtual Core team would be utilizing telephonic outreach as the method of communication. In detail, there would be a clinical staff member reaching out the patient, proposing the new digital health solution that helps track medication adherence. The program is also explained to the patient that this program grants the patient an assigned clinical pharmacist, who is readily available to answer patients questions related to medication. It was soon realized, if we had a patient population that exceeded four

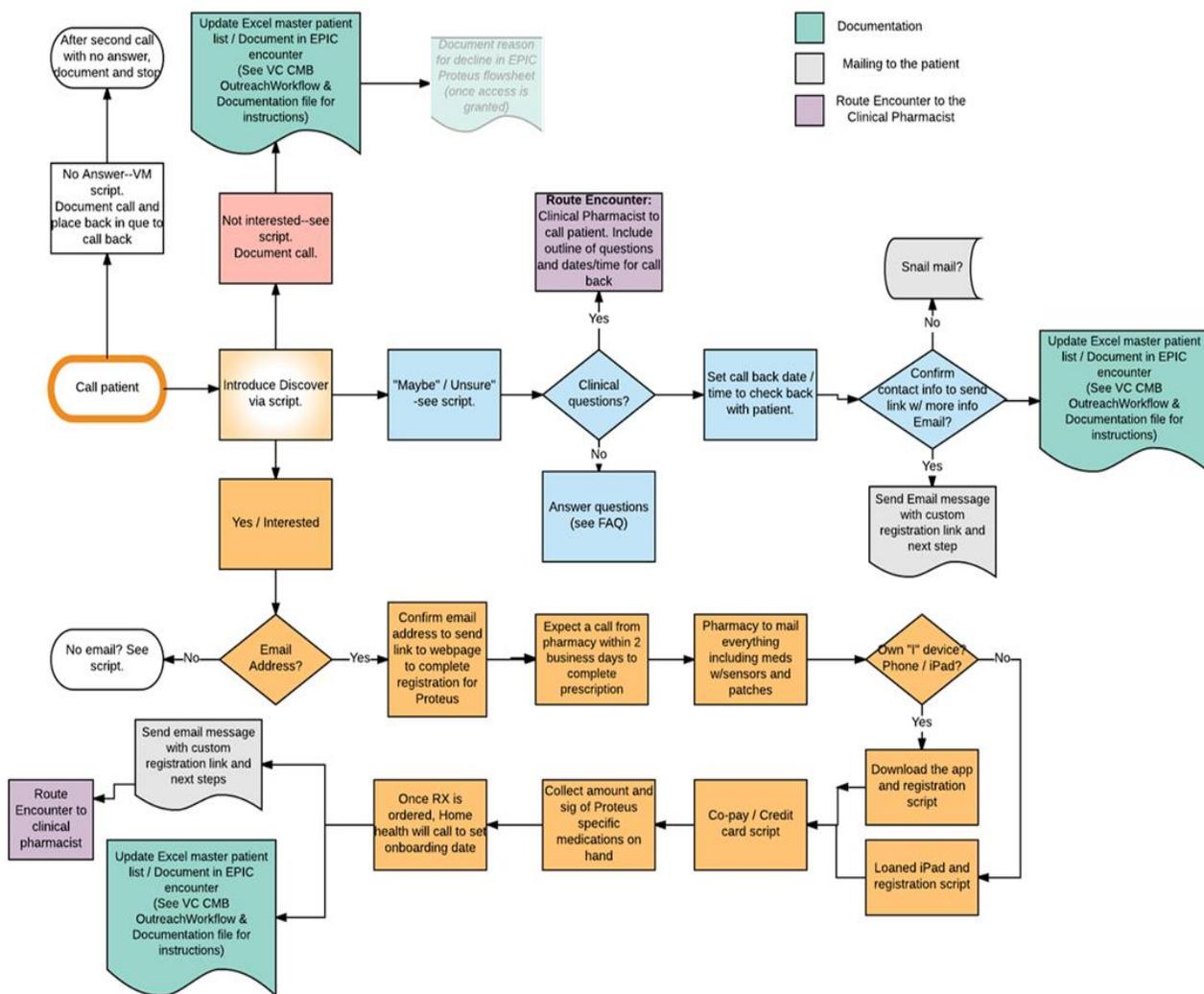
hundred, it would be tough to have timely conversations with patients trying to explain the digital health solution. The thought was to begin the initial outreach with a lettering campaign. Following the lettering campaign, the Virtual Core team would follow up with a phone call to the patient. The Virtual Core Team also agreed to own the lettering campaign, to make it one process. The process to getting an outreach letter approved took about two weeks. This is because the letter had to be cleared by both Company P's legal team and Froedtert & The Medical College of Wisconsin's risk and compliance team. Please see Appendix A for a copy of the letter template that was mailed to patients prior to the Virtual Core Team's phone outreach.

A week after the letters were mailed out, the Virtual Core team would begin their telephone outreach. To ensure consistent communication the Virtual Core team was given scripts and workflows that would help navigate through patient encounters. There would need to be a plan established on how to connect the pharmacy team with the patient, once the Virtual Core Team completed their outreach to the patient. If the Virtual Core Team did not report an acceptance or denial from the patient then the patient would be scheduled for a second outreach attempt. In the event there was no patient contact made after the scheduled outreach attempts the patient would be automatically disqualified from the program. If the patient expressed interested or accepted the invitation to join the program the patient would then be routed to the clinical pharmacist. Once the Virtual Core Team made connection with the patient and the pharmacy team set the patient up

with the program, the patient encounter would then be routed to the Medication Management Team.

The Medication Management Team would be the last point of contact for the patient. At this point in the process, the Medication Management Team would gather personal information from the patient, shipment patterns, insurance copayments, and other pertinent patient information. Also, the Medication Management Team is responsible for verifying the patient medication count in real time. This is done so there is not any mix ups in medication. Now understanding what each team was responsible for, it is much easier to understand utilizing a diagram workflow. Please find below the workflow for all teams involved in the initiative.

Figure 1: Workflow Diagram



## **Key Communication Opportunities**

### **Failure to Educate/ Communication Digital Health Solution Across Entire F&MCW**

It was the middle of the month, the committee was squared away with their personal roles and which teams were responsible for specific parts of the process. The next topic of conversation was the go-live date. The plan was to be very aggressive with the outreach, in an effort to generate a strong patient support. Therefore, we aimed for the middle of the following month to initiate outreach. The issue with this was there was no communication throughout the organization to inform the physician and pharmacy staff on Company P's digital health solution. More importantly, clinical staff was not informed on the potential impact that Company P's solution would have on patient medication adherence. There was no way to get all physicians at Froedtert & The Medical College of Wisconsin education on the digital health solution within four short weeks. The group proposed ideas of sending out a mass email from the office of the Chief Medical Officer. The problem with this solution was that physicians would have to be brought up to speed on the clinical operations on the program. Sending such information through an email would cause information overload, ultimately resulting in communication breakdown. Therefore, the alternative plan was for the information to be sent to the medical directors and the medical directors would decentralize the information to physician staff whose patients could be potential candidates for the program.

The medical directors rounded with their physician staff and the pilot was set to be launched. When the patient list was generated, the mass list was sent out to the physicians stating that there is a digital health solution that their patients would benefit from. Once the list was approved, there was a misunderstanding on when patient data expires. The list had been kept for two weeks therefore it was then stated by the clinical pharmacy team that the list was no longer valid. Such change in patient data resulted from hospital visits and clinical checkups that occurred daily. It would be insulting to a patient to be identified as a candidate for digital health solutions when their health is fine. In an effort to obtain the most up to date patient list, the pharmacy team would have to coordinate patient outreach with the mailing campaign. Once the list was generated, the lettering campaign was immediately scheduled.

After months of patient outreach efforts, there was a news article that came from the Community Physicians group. The Virtual Core team is part of the Community Physicians group, which is why it captured their attention. Please see below figure 2, the snap shot of the news article posted on Froedtert & Medical College of Wisconsin's internal news page.

## Community Physicians Newsroom

**Tuesday, December 19, 2017 - Area Residents Being Targeted By Scammers Posing as Froedtert & MCW**

Many Froedtert & the Medical College of Wisconsin telephone numbers are being "spoofed" by telemarketers in hopes that the scammers will make a sale or gain personal information. A Froedtert & MCW telephone number appears on the caller ID, and when the call is answered, the "spoofed" attempts to sell products or services.

Staff receiving complaints about these calls should assure the caller that the calls are not originating from Froedtert & MCW and that we have reported this to our service providers, but that there is nothing else we can do to stop this deceptive practice.



**Figure 2: News Article**

The consequence of having everyone minimally briefed on the digital health solution pilot came back to haunt the initiative. The snapshot above came from the complaints of patients stating that marketers were contacting them posing as clinical staff from Froedtert & The Medical College of Wisconsin. Due to the expectation that medical directors reported the communication about Company P's digital health solution to their staff and no comments from physicians, when patient lists were sent out, it was assumed that everyone was on the same accord. This news article explains that Company P's digital health solution had not even surfaced in some areas of the organization. As a result, leadership was involved and this was a reflection of the aggressive plan to launch the initiative without adequate education across the entire organization.

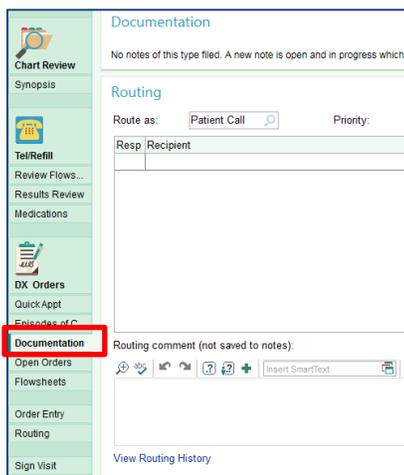
### **Virtual Core Team and Pharmacy Team Miscommunication**

Another breakdown in communication existed between the Virtual Core Team and the Pharmacy team. Shown in the diagram on page 17, there are many handoffs that occur between the Virtual Core Team and the Pharmacy Team. By exploring the workflow, you will see that the Virtual Core Team was responsible for some clinical documentation. Most of the shared documentation between both teams exists within Epic. Epic is the electronic medical record that is utilized at Froedtert and The Medical College of Wisconsin. In Epic, you can find all patient clinical notes, operations, hospital visits, medication specifics, and much more. When teams were identified, it was noted that Epic documentation was not always accurate, so mindfulness would need to be taken into

account by the Virtual Core Team. Along the process, as stated, the Clinical information in Epic was not always correct. Incorrect clinical information transferred into additional incorrect information inside of Epic. The Virtual Core Team was not as mindful as they should have been when completing documentation for patients who were outreached (phone call) to. There were patients who were connected to the pharmacy team with acceptances; however some patients did not have email addresses so this would automatically disqualify the patient from the program. As stated earlier in the chapter, patients had to have an email in order to participate. However, it was noted that the Virtual Core Team was not capturing if the patient had in fact had an email to begin with. This was another negative reflection of communication breakdown. Due to conflicting patient information, the Pharmacy Team postponed the outreach to patients, to ensure the remaining patient content was correct. In response, the pharmacy team scheduled a detailed education meeting with the Virtual Core Team. The pharmacy team prepared a listed workflow including picture diagrams to the Virtual Core Team. This detailed education document allowed the Virtual Core Team the ability to problem solving skills through patient encounters by seeing correct clinical documentation with illustrations in advance. Below, please see figure 3, a template that was shared with the Virtual Core Team that shows how to navigate through clinical documentation.

**Figure 3: Pharmacy Epic Documentation**

**Documentation:**

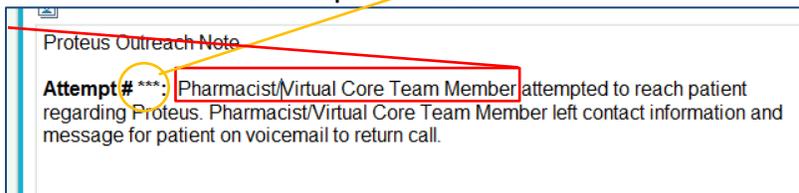


Choose Pharmacist **or** Virtual Core Team Member

1. **Leave Message - .PMESS**

Fill in Attempt #1 or #2

a. **Complete documentation**



**\*VC team call patient back in 1 week** (call alternate time of day – AM->PM, PM-> AM)

**\*If unable to reach patient on subsequent calls – addend previous note, use .PMESSAGE**

**\*If patient picks-up on 2<sup>nd</sup> phone attempt start new encounter**

**\*Attempt to reach patient 2 separate times over 2 weeks before stopping outreach Sign encounter after each attempt**

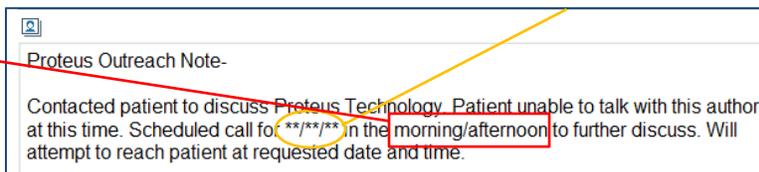
**Update Excel P document**

2. **Patient Unable to Talk – .PCALL**

Fill in date

a. **Complete documentation:**

Choose morning **or** afternoon



**\*Set recall date and time – VC team call patient back as requested**

- **Sign encounter**
- **Update Excel P document**

c. **Patient Accepts - .PACCEPT**

- **Complete documentation**

The figure above displays the view of what Epic would look like for clinical staff updating patient information. This document was created to take the Virtual Core Team step-by-step through the process of opening and closing an encounter in Epic. By opening and closing encounters, this allows other clinical staff responsible for the patient to receive notifications or sign off on any action items needed. Epic is not the only avenue for documentation in healthcare. The same is true for this initiative. It was later discovered, Epic was not the only place that documentation errors occurred.

Despite the Pharmacy team giving detailed instructions to the Virtual Core Team, documentation errors still surfaced. After weeks of outreaching (calling patients via phone) to the patients, the Pharmacy Team realized there was a new avenue of inaccurate documentation. Referencing the workflow on page 17, it shows the Virtual Core Team does documentation within a spreadsheet. This was an Excel Spreadsheet populated with clinical information that linked the patient to their appropriate clinical personnel. When the Pharmacy Team went to go look at updated patient information in the spreadsheet, they noticed that there were multiple spreadsheets that were saved. Upon investigating how the multiple spreadsheets were created, it was realized that the Virtual Core Team was responsible for this error. When the patient list was created, there were four hundred patients that were scheduled for the Virtual Care Team to contact. In order to mitigate documentation inaccuracy, the team was documenting real-time. In addition, to meet team expectations, the Virtual Core Team worked on outreaching patients simultaneously. The issue this caused was multiple spreadsheets being worked off of. Eventually, each member of the team had their own copy to the patient spreadsheet, which was being

utilized to document in. The ultimate result of this was there was no centralized spreadsheet. The spreadsheets were divided, which made following up with patients hard. So, the Virtual Core Team then had to huddle to consolidate all patient information into one spreadsheet. This error caused the team to again postpone outreach initiatives.

### Chapter 3-Comparative Analysis

To view what others have done in this arena, we should look at a study done at the University of Bath, located in the United Kingdom. This study captures the argument on behalf of a public education approach to developing a critical understanding of digital health technologies. It begins by appraising the previously polarised articulations of digital innovation as either techno-utopian or techno-dystopian, examining these expectations of technology and considering the tensions between them. It subsequently outlines how a public training approach can help mediate between these views, offering a more contextualized, socio-political perspective of mHealth (mobile health). This approach teases out the nuances of digital health by engaging with the complexities of embodied learning. Furthermore, it urges caution against viewing these educational forces as one of transference, or simple governance. To this end, it therefore contextualize their critique of digital health, within an attempt to reconstitute an understanding of public educations of technology.

The Internet was considered to be a place that had the potential to change society in fundamental ways. In the case of the utopian expectations, early studies about the Internet wrote of how it would revolutionise society, breaking down social barriers and making the world a better place. Research focused on structure and inter-personal dimensions, which would free people from burdens associated with the physical world, such as the constraints of image and identity (Bell & Kennedy, 2000). In the context of health care, these expectations were reinforced by views that foresaw the capacity of

digital technology to create a more cost-effective way of delivering health care.

Moreover, the proliferation of digital technologies across all sectors of society would lead to an increased utilization of and reliance upon digital solutions within the healthcare sector. Integral to this utopian discourse on cybermedicine's capacity to revolutionize healthcare, a further discourse has developed that focuses on how digital technology could radically alter the quality of provision and better reinforce some of the ethical aspirations of medicine. For instance, researchers wrote about how health care could promote patient autonomy and professional accountability (Collste, 2002).

In contrast, among the public discourse on this brave new virtual world were anxieties about how it would lead to more disenfranchised, lonely individuals, with diminished social skills and, potentially, dispositions that would be bordering on clinically alarming, addiction to cyberspace being a commonly expressed concern. Such dystopian views were articulated in relation to video game culture, framed by a similar kind of moral panic that has surrounded other new media forms, such as certain genres of popular music, or film. Thus, the Internet was seen as a place where bad things happen to otherwise good people. These views have been re-articulated with each new innovation online, from social media to wearable technology (Baym, 2010). As a result, the research community of digital studies scholars fragmented very early on in the development of this new thematic area and this fracturing makes it difficult to assert that there was a single techno-utopian vision of cyberspace that was envisioned for health care. Indeed, a lot has changed since these early years of theorising the web and this deserves some

critical reflection, so as to understand what interpretations are appropriate today, lets take a more critical view.

### **The Mobile Web and App Culture**

Mobile devices are playing an increasing role in the digital economy, experiencing more growth than computer sales worldwide. Furthermore, the number of mobile devices that exist in the world already exceeds the world's population. Moreover, it has become apparent recently that mobile web usage is in decline and, instead, a growth in mobile app usage has been registered (Arthur, 2014). This means that people are using mobile browsers and websites less, choosing instead to access content directly through mobile application stores, such as the Google Play store and Apple App Store. This is a compelling reason to study how people engage with their health via mobile devices. Unlike web browsers, which are relatively transparent in how they capture and monitor a user's data, users of mobile apps may have little understanding of how the data that is captured about their health is utilized. However, such data can have dramatic impacts on various industries that will happily pay for access to such information to further their goals, whether these are governmental or commercial. Indeed, exercise, body weight and dieting apps are amongst the most popular downloaded health apps (Fox, 2013). Moreover, 80% of the population in Europe has carried out a health-related search on the Internet and mobile phone subscriptions worldwide reached nearly 7 billion in 2013 (Chan, 2013). In this context, the present paper focuses on the utilization of self-tracking mobile technologies associated with physical activity lifestyle and health

promotion. Changes in public health promotion focused on “lifestyle” have been brought about by rapid developments in digital health technologies (Miah & Rich, 2008).

### **A Public Education Approach to mHealth**

In their comprehensive mapping of the field and review of literature spanning 1894–2010, Sandlin, O’Malley, and Budrick (2011) identify a lack of definitional theoretical clarity in the way in which public pedagogy has been theorized and applied across a broad. In attempting to contribute to this developing theoretical discussion, they approach these issues from a different perspective, attempting to make clear a justification for a critical engagement with mobile health technologies from a public teaching approach. Thus, they wish to reposition a critical perspective on digital health and suggest that an effective way of doing so is through the lens of public education. This study does not argue that this approach should replace others, but that it offers a complementary approach within a multidisciplinary critical perspective that is capable of synthesizing a range of critical priorities in how we analyze digital health interactions. Hickey-Moody, Savage, and Windle (2010) argue, public education approaches function as “bridges or rather, as multiple crossing points, between the fields of education, sociology and cultural studies”.

In conclusion, this paper has outlined a critical approach to understanding digital health in the context of theories of public education. There is a lack of research on individual’s experiences of these technologies, particular in terms of the implications for “embodiment, selfhood and social relationships” (Lupton, 2012).

## **Chapter 4-Recommendations**

After looking at the study done by Miah and Rich (2009), the issue with digital health is not the technology in itself. However, the issues and areas that possess the greatest opportunity are in the ability to see all perspectives of the spectrum. Similar to the mobile health approach, Froedtert and the Medical College of Wisconsin should adopt the method of educating all members of the organization the same way done at the University of Bath. A way this could have been done is for Company P to conduct a system wide educational seminar that also discusses the importance of mobile health. Digital health and mobile health almost always is the same thing as most of our digitized lifestyle exists within smart phone. To help get the organization on board, Inception Health could have scheduled different units within the organization to have a scheduled demo done by Company P. This would ensure education and awareness on the program. This would also allow outstanding questions or concerns to be addressed to not only company P, but also to those who may be affected, however, not considered. We have seen the various forms of miscommunication within this digital health solution. In the examples given, we have also seen the difference in the teams operations that may warrant errors to surface. The best policy moving forward would be to forecast these issues and to mitigate them on the front end of the work. By incorporating as many units of the health system on a demo, this would take care of the “need to know” information on the digital health solution.

In the future, another way to optimize this technology would be to offer Company P's solution through Epic. By offering Company P through Epic, this would be prescribed by the patient's physicians and would mitigate any additional documentation that had to be done by various teams. Imagine the clinical team member going into the patient's Epic account and order the digital health solution as a next phase. This would make the work by the Pharmacy Team and the Virtual Core Team obsolete. Ultimately, this would help reduce any documentation errors and unnecessary staff being involved in the process. As seen in the study at Bath, the premise of utilizing mobile health approaches is to make care and resources more available for the patient and the clinical care team. In order for digital health solutions to be ordered through Epic, there would have to be some integration of another technology that would sync with Epic and allow for digital health solutions to be prescribed. This too gives the program the coherence and legitimacy that it requires from the provider, so that the patient sees the value in participating in the program.

The Virtual Core Team's documentation errors are not solely due to missed opportunities. The miscommunication also lies in the idea that the pharmacy world is rigid and detailed in their documentation. Not to mention, no one from the Virtual Core Team is a pharmacist by background. So, the precise documentation would cause friction between both teams. The Virtual Core Team was responsible for getting as many patients enrolled in the program as possible. The pharmacy team over-time added additional tasks for the Virtual Core Team that needed to be done, so that documentation was not compromised. All this did was create more work for the Virtual Core Team.

Understanding that the Pharmacy Team's role in this initiative was to be primary point of contact for the patient, their method for accuracy became a burden on the Virtual Core Team.

The Pharmacy Team's approach to digital health can be modified to capture what the program was intended to do. Documenting encounters with patients is part of the process; this process could have been modified a bit differently. Being that the Pharmacy Team is the primary point of contact for the patient, it is evidenced that their workflows and requests were usually being implemented. However, looking at the design of the program, this digital health solution was intended to automate patient medication adherence. However, there was little effort to automate or decrease the points of contact that were involved with roping encounters. Best practice for the Pharmacy Team would be generating a patient list, which the Virtual Core Team sends an outreach letter to. This then allows the patient to become familiar with the technology. A week later, the Virtual Core Team reaches out to the patient and then documents the encounter with the patient in Epic. Each patient is assigned to a specific pharmacist that is divided up by the Pharmacy Team. When the pharmacist goes into the encounter, the pharmacy team would be the one who would do any additional follow up for the patient. The current process has the pharmacy team involved after the patient accepts or interested in joining the program. The issue with this is the expectation of the Virtual Core team to operate under the Pharmacy Team's expectations, which allows for more miscommunication and errors to surface. To mitigate as many errors from occurring, the Pharmacy team should align their practice with the intention of the program. In order to align the Pharmacy Team and the

overall initiative, the Pharmacy Team should consider automating as much of the work as possible, so that enrollment process to the patient data capture is as seamless as possible.

Many of the errors that were made simply were patient notes that were too vague or in areas that were out of the Virtual Core Teams field of scope. Documenting in healthcare is one thing that many institutions struggle with. Sometimes, clinical staff documents hours after rounding with a patient, which makes the information in Epic incorrect. Similar to this scenario, the Virtual Core Team incorrect documentation was not a new growing opportunity. However, when routing patients to their appropriate clinical team, there can be a lot of clerical issues. One hundred percent is tough when there are more than four hundred patients to connect with. To help mitigate these issues, a solution would be for the pharmacy team to do training on the operations from the Virtual Core Team's perspective. In return, the Virtual Core Team should review the perspective from the Pharmacy Team, so that the Virtual Core Team is able to perceive the operations from the Pharmacy team's perspective and minimize errors entirely.

## Conclusion

Digital Health is a new concept for many patients let alone many healthcare organizations. It is proven that technology has allowed things to be provided more readily. Healthcare is one of those transformations that are happening right before us, as digital health approaches begin to reshape our infrastructure. It will be important to understand the best idea solutions will not be always generated from those at the meetings, but from others who are tackling the same issues across the globe. The digitized model of health care is slowly turning the healthcare model to the patient opposed to the provider. For many years, a patient depended one hundred percent on the advice and council of their providers. The struggle for many healthcare institutions will be to shift their thinking toward innovation and aligning their organizations to meet patients where they are. Organizing for innovation continues to be a challenge for many companies. It is not enough to craft a strategy or to build innovation processes; you need to build and embed innovation into the overall organization. Successful innovation requires choosing, building, and preparing the right organization and the right people for executing and scaling the innovation. Many large organizations have struggled and by their own description failed in the attempt to integrate innovation into their organization. They often find that the organizational components of innovation are rejected or marginalized by the mainstream organization (Davila, Epstein, and Shelton 2013).

APPENDIX A

Virtual Core Team Outreach Letter

October 15, 2017

John Smith  
8614 N Maple Rd  
Milwaukee, WI 53202  
Dear John,

Froedtert and the Medical College of Wisconsin is dedicated to giving you the highest level of care and service. That is why your health care team has suggested you as someone who may benefit from a new program. Froedtert and the Medical College of Wisconsin is offering to help measure your medication effectiveness and help you improve your health.

This program uses a digital health technology (Company P®) that automatically logs information about your medication taking and daily activity. The technology can help you and your health care provider understand if the medication you're taking is the right medicine for you. The program puts you in control of your own health and helps you easily collect the information you, Dr. Robert Jones, and the care team needs to create a plan to improve your health, designed just for you. This service is being offered to you at no additional cost as part of receiving your care at Froedtert and the Medical College of Wisconsin.

During the program, you will continue to see your health care providers and take your medicines, as you work together to improve your health. The program is generally used for 3 months, however you can decide with Dr. Jones to continue or stop the program when you are ready.

A member of our care team will be calling you to give you more details about the program or you can call (262)-555-3777 or visit <http://www.companyp.com/video/> to learn more.

On behalf of Froedtert and the Medical College of Wisconsin, we look forward to building an even stronger partnership and giving you a great health care experience.

Sincerely,

Rachel Gazer, Pharmacist  
and

Dr. Robert Jones  
1443 W Junction Ave  
Milwaukee, WI 53208

## References

- Arthur, C. (2014, April 02). *Apps more popular than the mobile web, data shows*. Retrieved December 04, 2017, from <https://www.theguardian.com/technology/appsblog/2014/apr/02/apps-more-popular-than-the-mobile-web-data-shows>
- Baym, N. K. (2010). *Personal Connections in the Digital Age* (2nd ed.). New York, New York: Polity Press.
- Bell, D., & Kennedy, B. M. (2000). *The Cybercultures Reader*. Retrieved December 12, 2017, from [https://books.google.com/books?hl=en&lr=&id=MKtr\\_svfY1kC&oi=fnd&pg=PR13&ots=9gsDmN2eDK&sig=ZYEix9nR0mlWtM0SE4dULIE51hA#v=onepage&q&f=false](https://books.google.com/books?hl=en&lr=&id=MKtr_svfY1kC&oi=fnd&pg=PR13&ots=9gsDmN2eDK&sig=ZYEix9nR0mlWtM0SE4dULIE51hA#v=onepage&q&f=false)
- Budryk, Z. (2016, February 01). *Healthcare miscommunication cost \$1.7B--and nearly 2,000 lives*. Retrieved December 04, 2017, from <https://www.fiercehealthcare.com/healthcare/healthcare-miscommunication-cost-1-7b-and-nearly-2-000-lives>
- Chan, M. (2013). Mobile phones and the good life: Examining the relationships among mobile use, social capital and subjective well-being. *New Media & Society*, 17(1), 96-113. doi:10.1177/1461444813516836

- Collste, G. (2002). Medicine, Health Care and Philosophy. The Internet doctor and medical ethics. Ethical implications of the introduction of the Internet into medical encounters. *Medicine, Health Care and Philosophy*, 5(2), 121-125. Retrieved December 12, 2017, from <https://link.springer.com/article/10.1023%2FA%3A1016083021422#citeas>.
- Davila, T., Shelton, R. D., & Epstein, M. J. (2013). *Making Innovation Work: how to manage it, measure it, and profit from it*. Upper Saddle River, NJ: Pearson Education.
- Fox, S., & Duggan, M. (2013, January 27). *Tracking for Health*. Retrieved December 18, 2017, from <http://www.pewinternet.org/2013/01/28/tracking-for-health/>
- Hickey-Moody, A., Savage, G. C., & Windle, J. (2010). Pedagogy writ large: public, popular and cultural pedagogies in motion. *Critical Studies in Education*, 51(3), 227-236. doi:10.1080/17508487.2010.508767
- Lupton, D. (2012). M-health and health promotion: The digital cyborg and surveillance society. *Social Theory & Health*, 10(3), 229-244. doi:10.1057/sth.2012.6
- Miah, A., & Rich, E. (2008). *The Medicalization of Cyberspace*. London: Routledge.
- Sandlin, J. A., O'Malley, M. P., & Burdick, J. (2011). Mapping the Complexity of Public Pedagogy Scholarship. *Review of Educational Research*, 81(3), 338-375. doi:10.3102/0034654311413395

