

PUBLIC HEALTH FOUNDATION OF INDIA







Certificate Course in

Healthcare Technology (CCHT)

Module 1 : Introduction to Health care Technology and its practical application



Introduction, Importance and basic terminology in Health technology and Role of technology/ IT managers in healthcare













Disclaimer

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Introduction, Importance and basic terminology in Health technology and Role of technology/ IT managers in healthcare

Learning Objectives:

- Become aware of the current gaps in health care delivery outside the four walls of hospitals, due to limited trained personnel and resources
- Get an overview of the field of digital medicine and how apps and digital therapeutics can bridge the gap in always connected care
- Learn how leading health systems, health plans and biopharma have started to "prescribe digital health" to support care transformation across the globe

Overview of Session:

COVID -19 has helped organizations see the tremendous impact of digital health. However, the true value of digital health goes beyond telemedicine to support alwayson connected care. In this presentation, Dr. Atreja who was one of the first Chief Innovation Officers in a health system (also known as "The App Doctor") shares Mount Sinai New York journey on how the Innovation gets the journey started and transformation leads to ultimate value. Through real examples and published studies, he will show how a Digital Health Prescribing Platform approach can prevent duplication and support multiple use cases for care and research transformation. Dr. Atreja believes the time has come to empower care providers prescribe digital health and digital therapeutics across all specialties, similar to how they prescribe medications till now.

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- 3. https://rxhealth.box.com/s/iofyp3l7293mc2qhewcyv8mv7cxi5d1z

4. https://rxhealth.box.com/s/gbkcxa5x7kajhfw1jjcz7ssvann73uln











Usability and Learnability of RxUniverse, an Enterprise-Wide App Prescribing Platform Used in an Academic Tertiary Care Hospital

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Abstract

The objective of this study was to assess the usability of RxUniverse, a novel platform that enables health care providers to directly disseminate proven, evidence-based mobile health apps to patients. Among five pilot clinical sites, 40 physicians and front-line providers were trained on the RxUniverse platform. They were educated on the platform's functionality and instructed how to prescribe apps to their patients. The well-validated System Usability Score (SUS) was used to assess the usability of the platform. The adoption goal was set as 100 prescriptions of relevant apps within an 8-week pilot period. Within the pilot period, over 2000 apps were prescribed. Nineteen responses were received from the System Usability Score survey, and the platform received a usability score of 84.2, which is in the 96th percentile across all systems. The pilot study outcomes demonstrate the high adoption and usability of the RxUniverse platform.

Introduction

Digital medicine is the subset of new technologies and mobile applications that demonstrate, or aim to demonstrate, positive impacts in the treatment and management of disease. Several hundred thousand digital medicine tools, such as mobile health (mHealth) applications, have been developed and released. In fact, there are approximately 259,000 mHealth apps available across the major app stores, and these are produced by an estimated 58,000 mHealth publishers¹. These numbers are increased from 2015 and years prior¹, and as the clinical community continues to seek solutions that further engage and empower patients, we can expect continued growth within the mHealth space in the years to come.

Such extensive proliferation of mobile health technologies can in part be explained by the increasing body of research that correlates more engaged and activated patients with improved clinical, behavioral, and utilization outcomes². Mobile health applications can potentially serve as tools to empower patients to become more actively engaged in their care, and thus more effective self-managers of their own health. For these reasons, developers are creating mHealth solutions ranging widely from remote monitoring tools, to chronic disease management platforms, to behavioral modification apps.

The rapid proliferation of mHealth apps has led to two notable unintended challenges. The first is that providers have no standardized way of ascertaining which apps are best suited to their patients. Evaluation of clinical interventions traditionally relies on rigorous study design and peer-review, but these are lacking for the vast majority of mHealth apps. Many developers advertise the potential health benefits of a given mHealth app to would-be patients and prescribers, and consumer reviews for some products do exist, but it is difficult to ascertain how much of these claims are substantiated by rigorous, evidence-based proof. As a result, health care providers find it difficult to objectively assess an app's efficacy and usability.

Second, providers have no streamlined way of directly disseminating the appropriate mHealth apps to patients. Current practices are bulky and place the burden on patients to locate and download the appropriate app, and on providers to accurately and efficiently direct them to the accurate app. There is a lack of effective filtering and organization of the mHealth apps within any given app store, and this translates to worsened execution in finding and disseminating a specific mHealth tool. As such, the benefits of mobile health technologies can neither be fully felt nor properly evaluated.

To address these concerns, RxUniverse (<u>http://rxuniverse.com</u>) was developed at the Mount Sinai AppLab. It is a digital medicine-centric care delivery platform that features a catalogue of apps that have been curated based off of published, evidence-based reviews regarding their efficacy and usability; additionally, it incorporates user-centered











features that enable efficient, direct dissemination to patients. The purpose of RxUniverse is to enable physicians to rapidly adopt digital medicine technologies and strategies within clinical care, to facilitate the effective dissemination of these technologies to patients, and to provide an ecosystem that promotes the evidence-based review of various digital medicine technologies.

A pilot study was conducted at the Mount Sinai Health System to assess the usability and adoption of RxUniverse, the first standardized platform to facilitate both curation and dissemination of mHealth apps.

Methods

Platform Description and Specifications

The platform assessed in this study was the RxUniverse mobile health platform, which was developed by Mount Sinai researchers at the Mount Sinai AppLab. RxUniverse integrates into any web browser, Android, or iOS device-based workflow. Development environment produced a Node.js web application built using AngularJS 1.4.3 framework hosted on an Azure back-end with a data model persisted in Microsoft SQL Server. Communication on the backend is done through full RESTful API for a data layer running on Azure SQL server. All data was stored on a HIPPA secure database that could only be securely accessed by members of the RxUniverse research team.

The application solves discovery challenges by allowing providers to find healthcare apps using an advanced filter relevant to their specialties, disease, type of app, or functionality, and to prescribe apps directly from their mobile device or within a linked EHR. RxUniverse addresses the evidence challenge by allowing providers to rank apps and share their rating with their peers, to find apps which are FDA approved, and to read a brief peer-reviewed synopsis about the app and links to evidence published in literature.

Clinical Sites and Participants

Five outpatient clinical sites within the Mount Sinai Health System were selected to participate in the eight-week pilot study: two primary care clinics, one pulmonology clinic, one gastroenterology clinic, and one cardiology clinic. Clinic sites were chosen based off the following general criteria: outpatient primary care or specialty clinic, standardized work-flows, clinician interest in integrating use of at least one mHealth app into clinical care. Project procedures were carried out as part of standard of care.

User Training on RxUniverse Platform

Among these sites, 40 physicians and front-line providers, consisting of medical assistants and receptionists, were trained on the use of the RxUniverse platform. They were individually instructed by one of two researchers using a standardized protocol of instruction, lasting approximately 5-7 minutes. Each instruction session consisted of introduction to the platform's purpose, a demonstration of its functionality in both the web and mobile interfaces, and an observed trial process of prescribing an app. Upon completion of the training, each new user was given a unique username and password.

Users were instructed to direct message via text or email from the platform's interface, or "prescribe", a mobile health app to each patient seen. Eight to ten institutionally approved apps were pre-selected for use during the pilot study and were available to the users on the platform to prescribe to patients. Careful consideration was given to the specific operational workflows of each clinical site, and both office managers and user volunteers were consulted in devising the optimal implementation plan for RxUniverse at each pilot site so as to minimize time burden on the volunteer users. Three clinics primarily relied on front desk receptionists to disseminate mHealth apps upon patient check-in. Two clinics utilized medical assistants to prescribe apps, either during patient intake or while patients waited in the waiting area. Two of these five clinical sites used a hybrid method that integrated both medical assistants and front-desk receptionists.













Indian Institute of Science

Indian Institute of Space Science and Technology

The System Usability Scale (SUS) is a very reliable tool^{4,5} designed to obtain subjective feedback on overall usability and user satisfaction. According to Nielsen, usability is a "quality attribute that assesses how easy user interfaces are to use"³. Learnability is considered to be a component of usability and refers to the ease by which users are able to learn to use the technology³. This is a 10-item questionnaire with a 5-point Likert scale, with response options ranging from 1 (Strongly disagree) to 5 (Strongly agree). Items 1, 3, 5, 7, and 9 are positively worded and items 2, 4, 6, 8, and 10 are negatively worded. The SUS is able to effectively discern both good and bad usability features even with small sample sizes (<10). Ratings for SUS scores are as follows: 0–64 is unacceptable, 65–84 is acceptable, 85–100 is excellent, with a score of 82 representing the likelihood to recommend (LTR) threshold. Users are likely to recommend a product that has an average SUS score of 82, whereas users would not recommend a product that has an average SUS score of 82, whereas users would not recommend a product that has an average SUS score of 82, whereas users would not additional information via two sub-scales: an 8-item "Usability" and 2-item "Learnability" scale^{7,8}.

Analysis

Success of the RxUniverse platform was measured in terms of number of apps prescribed and system usability. The number and type of apps prescribed by each user was tracked on a daily basis. The prescription of 100 relevant app prescriptions within the 8-week pilot period was set as the adoption goal. Adoption targets were based off of a prior study conducted by Mount Sinai AppLab researchers in determining the impact of a novel mobile health app, HealthPROMISE, in improving health and satisfaction outcomes. Weekly progress updates were sent to volunteer users and their respective clinic managers and physician sponsors.

Following the completion of the pilot study, the well-validated System Usability Score (SUS) was used to assess the usability of the platform. Descriptive analysis of demographic and individual SUS questionnaire items were conducted in excel to examine measures of central tendency and variability as well as level of use of the users. User responses were then converted to 0–100 percentiles as per SUS guidelines⁹ and scored by comparing them to standard rating scales¹⁰. The mean SUS score for all participants was calculated. Likelihood to Recommend (LTR) was determined by comparing overall mean SUS score to industry thresholds.

Results

Adoption

Within the 8-week pilot period, over 2000 apps were prescribed across all users among the five clinical sites. Of the 40 providers trained on the RxUniverse platform, 26 prescribed >5 apps during the trial period. Of these 26 individuals, 18 prescribed >20 apps, 14 prescribed >50 apps, and 5 prescribed >80 apps (Table 1). 58% of users reported frequent use (weekly or daily) of the platform.

2000
8 weeks
40
26
18 of 26
14 of 26
5 of 26

Table 1. RxUniverse Survey Statistics

Demographics

A total of 19 care providers / users completed the SUS questionnaire (response rate: 47.5%). Three respondents had more than 2 items with missing data on the SUS portion of their survey, they were still reported (Table 3), however











were excluded from the tabulation of the SUS scoring. In all, 63.16% of included respondents (n=12) reported their age as being between 36-45 and between 46-55 respectively. 73.68% of respondents were female (n=14). The sample was also diverse in terms of frequency with which users interacted with RxUniverse. In all, 57.9% (n=11) of the participants reported using RxUniverse "daily" or "weekly", with the remaining 26.32% (n=5) only using the system a few times per month (Table 2, 3).

Characteristic	Number	Percent
Gender		
Male	5	26.32%
Female	14	73.68%
Total	19	100%
Age		
18-29	2	10.53%
30-35	4	21.05%
36-45	6	31.58%
46-55	6	31.58%
55+	1	5.26%
Total	19	100.00%
Frequency		
Never	0	0%
Rarely	3	15.79%
Few times per Month	5	26.32%
Weekly	6	31.58%
Daily	5	26.32%
Total	19	100.00%

Table 2. Demographic Variables of SUS Respondents

Table 3.	Summar	y of SUS (Questionna	ire Results	for (Overall	Sample
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	SUS Items ⁱ	Mean	95% CI	SD	Variance	Count	Min	Max
Q1	I think that I would like to use RxUniverse frequently.	3.79	3.27-4.31	1.06	1.11	19	1	5
Q2	I found RxUniverse unnecessarily complex.	2.06	1.32-2.80	1.39	1.94	17	1	5
Q3	I thought RxUniverse was easy to use.	4.61	4.19-5.03	0.83	0.68	18	2	5
Q4	I think I would need the support of a technical person to be able to use RxUniverse.	1.4	0.82-1.98	1.02	1.04	15	1	5
Q5	I found the various functions in RxUniverse were well integrated.	4.12	3.58-4.66	1.02	1.04	17	1	5











Q6	I thought there was too much inconsistency in the RxUniverse platform.	1.67	1.02-2.32	1.14	1.29	15	1	5
Q7	I would imagine that most people would learn to use RxUniverse very quickly.	4.44	4.02-4.87	0.83	0.69	18	3	5
Q8	I found the RxUniverse platform very cumbersome to use.	1.82	1.19-2.46	1.2	1.44	17	1	5
Q9	I felt very confident using RxUniverse.	4.67	4.29-5.05	0.75	0.56	18	2	5
Q10	I needed to learn a lot of things before I could get going with the RxUniverse platform.	1.5	1.06-1.94	0.79	0.63	16	1	5

¹ Items 2,4,6,8, and 10 are negatively worded. Lower Means for these items represent higher perceived satisfaction.

SUS: System Usability Scale; CI: confidence interval; SD: standard deviation.

System Usability and Satisfaction

Overall, users felt that RxUniverse performed well. The group mean for overall SUS score was 84.2, an "Excellent" rating based on standard SUS⁹. RxU met the industry benchmark SUS score of at least 80 for users to likely promote your product. The mean score for the "Usability" sub-scale was 82.7 and the mean score for the "Learnability" sub-scale was 90. Individual item means are reported in Table 4. The majority of users had a favorable opinion about RxUniverse in terms of how confident they felt using the system (Q9) (4.67 with 95% CI of 4.29-5.05) and ease of use (Q3 and Q7). The "I found RxUniverse unnecessarily complex" question (Q2) indicates the respondents who felt mild concern.

A raw SUS score of 84.2 has a higher SUS score than 96.19% of all products. We can be 95% confident the population SUS score is between 78.28 and 90.06. With a mean SUS of 84.2 and a standard deviation of 10.6 - compared to global SUS population benchmark of 68 and standard deviation of 12.5 - a t-statistic was calculated. The sample standard deviation was selected as a point of comparison, since it is more specific to this technology. The resulting t-score yields a p-value below 0.005 (0.001), allowing us to confirm the statistical significance of this pilot sample (Figures 1, 2). RxUniverse scored highest in the learnability category of the SUS score, with an average score found to be 90 (Figure 1).



Figure 1. SUS Questionnaire Results





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Figure 2. SUS Questionnaire: Usability, Learnability

Discussion

As the pace of innovation continues to accelerate, health care providers will need to quickly integrate new digitallybased tools into their workflows, and patients will need to be able to easily and readily access these tools. It is equally important, however, to ensure that the technologies being disseminated to providers and patients pass performance and quality standards. RxUniverse not only provides the necessary mechanisms, user-friendly interface, and EHR integration functionality to accomplish these tasks, but it also surpasses industry standards in terms of usability and learnability.

The total number of apps prescribed on this platform surpassed 2000, which far exceeded the initial target of 100 apps. The type of mHealth apps prescribed varied widely, but the most common were MyChart, an app to help patients connect to their personal health records, a Mount Sinai Health Systems app, and two internally developed apps targeted Inflammatory Bowel Disease and Heart Failure. Additionally, the platform also scored an 84.2 (p = 0.001) on the System Usability Score, which is a score greater than 96.19% of all products and is considered to fall in the highest usability category of "excellent" (Table 4). According to industry standards, a score of 68 is considered to be average across all systems. By comparison, other health apps considered to be of respectable usability have reported scores of 77.5¹⁰. Additionally, RxUniverse received a high score within the learnability component of the SUS, which demonstrates the ease by which users were able to learn the technology utilized by the platform (Table 3). Research has shown that SUS scores provide reliable measures of usability and user satisfaction, and the high performance of RxUniverse on this scale demonstrates high achievement in these areas⁸. These outcomes demonstrate the high adoption and usability of the RxUniverse platform, an important platform that can be used to prescribe the latest technologies directly to patients.

User	Percentile	SUS	Usability	Learnability
1	81.20%	77.5	81.3	62.5
2	97.20%	85	87.5	75













3	100%	92.5	90.6	100
4	100%	95	93.8	100
5	48.40%	67.5	59.4	100
6	48.40%	67.5	59.4	100
7	99.80%	90	87.5	100
8	64.80%	72.5	68.8	87.5
9	88.10%	80	78.1	87.5
10	100.00%	97.5	96.9	100
11	88.10%	80	75	100
12	100%	95	93.8	100
13	97.20%	85	81.3	100
14	81.20%	77.5	87.5	37.5
15	100.00%	100	100	100
Mean	96.20%	84.2	82.7	90

This study may have some potential limitations. Surveys were offered to all users, but some bias may exist with respect to which users chose to fill out the survey or to participate in the pilot study. Additionally, the patient perspective was not assessed; the primary focus of this study, however, relates to the usability from the prescriber standpoint. Future iterations of this study will more closely involve the patient perspective.

Conclusion

RxUniverse is the first platform that creates an ecosystem that facilitates a standardized process for dissemination and curation of mobile health apps. The goals of this pilot study were to evaluate the RxUniverse platform and to compare to industry standards of usability and learnability. To further validate this platform, it will be important to conduct additional studies both health system-wide, as well as in partnership with other health systems across the United States. The platform is now being expanded for multisite collaborators. Future plans include full integration within the Mount Sinai health system's EHR, release of additional mHealth apps and content, assessment of usability from the patient perspective, and continued platform development and modification.

It is our belief that RxUniverse can serve as a valuable tool in connecting health technology innovation to the end users of clinicians and patients, as well as enable evidence-based review of mHealth solutions.











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Presentations





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Indian Institute of Space Science and Technology

Certificate Course in

Healthcare Technology (CCHT)

Module 1 : Introduction to Health care Technology and its practical application

Introduction , Importance and basic terminology in Health technology and Role of technology/ IT managers in healthcare





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Dr. Atreja has received formal training in public health and is board certified in gastroenterology, clinical informatics and internal medicine. Over the last fifteen years, he has led many public health and informatics initiatives at Cleveland Clinic and Mount Sinai Medical Center, NY that includes developing online education modules, leading EHR implementation, performing analytics on healthcare data and developing enterprise-wide mobile apps. As Chief Innovation and Engagement Officer, Medicine, he leads the Sinai AppLab (<u>http://www.applab.nyc</u>) that is one of the first collaborative hub within academic medical center to build and test disruptive mhealth technologies.

Dr. Atreja leads scientific registries for American Gastroenterology Association and serves in Innovation Advisory Board for American College of Cardiology. As an intrapreneur, Dr. Atreja has won innovation awards at Cleveland Clinic and Mount Sinai, successfully licensed technologies from academic centers and advises startups, accelerators and Fortune 500 companies in digital medicine. Recently, Dr. Atreja established non-profit Network of Digital Medicine (<u>NODE.Health</u>) to connect innovation centers worldwide and share best practices for digital medicine innovation and implementation between industry, payers and health systems. Dr. Atreja serves as Scientific Co-founder for Mount Sinai Spinoff, <u>Rx.Health</u> that brings first enterprise-wide app curation, prescription and engagement platform to risk sharing hospitals and payers in an affordable and scalable manner. Dr. Atreja has published more than 60 papers, presented more than 200 abstracts and has been a keynote speaker globally on topics related to digital medicine and health system transformation. Dr. Atreja was nominated among the Top 40 HealthCare Transformers in 2017.



Prescribing Digital Health for All The Time is Now!

Ashish Atreja, MD, MPH Associate Professor and Chief Innovation Officer Department of Medicine, Icahn School of Medicine at Nount Sinai

Scientific Founder and Board Member Rx. Health

Learning Objectives

- Become aware of the current gaps in health care delivery outside the four walls of hospitals, due to limited trained personnel and resources
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Background



Founded in 1852 Not-for-profit Academic Medical Center

8 Hospitals, 1 Medical School, 15 Institutes 36,000 employees ~ 7000 Physicians 2.6 million outpatient visits 500 thousand ER visits 170 thousand inpatient visits



Mount Sinai

This is our Burning Need

Can Mount Sinai he serious? The answer is a Can solution structure of seriods' if the survey is a resounding year. In fact, see could is the more serious, Moant Sina's number our mission is to keep prougle out of the hospital. We're focussed on propulation kealth management, as opposed to the propulation kealth management, as opposed to the intra the tremestory of the propulation of the series of the propulation kealth management, as opposed to the survey of the series of the series of the series of the survey of the series of traditional fee for service medicine. So instead of receiving care that's isolated and intermittent. patients receive care that's continuous and coordinated, much of it outside of the traditional hospital setting.

Thus the tremendous emphasis on wellness

Our Mobile Acute Core Team will treat patients at home who would otherwise require a hospital admission for certain conditions. The core team involves physicians, nurse practitioners,

registered nurses, social workers, community paramedics, care coaches, physical therapists, occupational therapists, and home health aides.

Meanwhile, Mount Stnai's Preventable Admissions-Gare Team provides transitional care services to patients at high risk for readmission. After a comprehensive bedside assessment, social workers partner with patients, family caregivers and 1-800-MD-SINAL healthcare providers to identify known risks such as

problems with medication management and provide continuing support after discharge. It's a sweeping change in the way that health care is delivered. And with the new system comes a new way to measure success. The number of empty beds.

Mount mountainathealth.org M Sinai

ARE FILLED, IT MEANS WE'VE FAILED.

IF OUR BEDS

Kenneth Davis, MD (CEO, Mount Sinai Health System)



AppLab Innovation Center in Digital Medicine

25 funded Projects, apps in 15 countries, 110 investigators served Global Digital Medicine Community created Digital Medicine can support the vision of anytime anywhere patient-centered care, <u>operations and research</u>, <u>exponentially</u>



450,000+ Mhealth Apps Telemedicine Linked Wearables AI/Machine Learning Secure Messaging Augmented/ Virtual Reality Voice commands/ Alexa Chat Bots **Biomarkers**, CRISPR

Advent of Wearables / Implantables / digestibles



mHealth + Telehealth World Congress, 2015

Start of Digital Therapeutics



In RCT, patients using BlueStar saw a greater mean A1c decline than those receiving usual care: 1.2% (1.9% vs 0.7%) over a 12 month period

Quinn, C et al, Diabetes Care, 2011

Somatix (AI + Smart devices)

Somatix is a behavioral medication software platform, utilizing real-time interventions based on data gathered from standard wearables. Its first product, SmokeBeat is addressing the global smoking cessation market; its customers include corporate employers, health insurance companies and clinics



www.somatixinc.com

Major Challenge in digital health Fragmentation and Lack of Evidence

Challenges due to Fragmented Digital Health and Point and Click separate Hardware and Software solutions



The 'Burden of Proof'

From \$4.5 Billion To Nothing: Forbes Revises Estimated Net Worth Of Theranos Founder Elizabeth Holmes



"In the wake of reports that question the accuracy and effectiveness of [Theranos'] technology... health-tech companies will now face a greater burden of proof to demonstrate that their technology is effective."

Future generations of startup founders should ensure they are working with venture capital firms that have *ample experience in health care.* These investors will understand that it takes time to build a successful and long-lasting company."

- Christina Farr, Fast Company

NODE Health: Network of Digital Medicine 20+ Health Systems: HIMSS, AMA, ACC, Academy Health



Slide

Our Mission



Evidence-Based Digital Medicine (EBDM)





4th Annual

Digital Medicine Conference Thurs, Dec 7- 11th New York City

http://node.health



How do you make evidence-based digital health available to patients?

"The Digital Daisy to Unify Fragmented Digital Medicine" Digital Gateway

Hardware



Telemedicine

Courtesy Bruce Darrow and Digital Medicine Team, Mount Sinai, NY

PRESCRIBING DIGITAL TOOLKITS (Software + Hardware)

Apps and Digital Tools sorted by evidence and packaged as digital medicine toolkits



Mount



APP LAB



Digital Prescription Platform: Increased Patient Activation to 92%



Figure 5. Adoption, Usability, and Learnability of RxUniverse vs. Industry Standards.

Patient activation:

92% patient engagement during in-person prescription

Provider Validation:

96th percentile rank in System Usability Scale for provider Usability and 90% ile for Learnability Makhni S et al. AMIA Annual



Symposium 2017, 9 Nov. 2017

R.Health

Prescribing Digital Medicine

21 Slide

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Digital Toolkits Deliver Value

Multiple validated use-cases developed and delivered through Rx. Health's platform

Heart Failure Readmission Reduction

Quality improvement trial monitoring CHF patients 30 days post discharge. Patients prescribed app + devices

Chronic Disease Management

NIH sponsored, 2-year pragmatic randomized trial collecting electronic patient reported outcomes in IBD Patients



Slide 22

Provider

Acceptance

Within 8 weeks, more than 2000 digital

app prescriptions by providers



Born out of Mount Sinai Prescribing DTx and smart devices

HEALTH IT, HEALTH TECH

Mt. Sinai spinoff creates COVID-19 toolkit for hospitals

Rx.Health, a spinoff of Mount Sinai Health System that stitches together digital health apps, put together a toolkit that will make it easy for hospitals to implement screening and virtual care for COVID-19.

By ELISE REUTER







Partnerships with Societies To create centers for excellence in DTx



Readmission Reduction (devices + Software) Heart Failure







Pinney S, et al. | Use of Electronic Patient Reported Outcomes and Automated Devices for Heart Failure Disease Management | iproc 2017;3(1):e24 and ACC 2018 (to be presented)

Slide 24

Real-time patient data from Connected Devices for Continuous Monitoring and Actionable AI powered Insights



Configurable kits in homes

Automated dashboards for the Care Team

slide 25

G hub to connect all devices and iOT and bring data back into EHR + Launch Digital Care Programs



RPM Monitoring Dashboard inside the EHR Rx.Health Platform

Confidential: Courtesy of **R**.**Health**

Mobile 4G Gateway

Monitoring Devices Blood Pressure

- Weight
- SP02
- Glucose
 - ECG
- Others

slide 26

Real Time Clinical Trial Recruitment and Engagement combined with biomarkers from devices

Mount Sinai Crohn's and Colitis Registry (MSCCR) is a registry of Inflammatory Bowel Disease patients. RxUniverse's bulk prescribe feature was used to contact eligible patients for an additional clinical trial. This feature is a way of contacting and recruiting large groups of patients with a single click!



Timeline of Response



Confidential: Courtesy of **R**.Health

Slide 27

Creating exponential value through multiple use cases



92% patient activation, 96th % ile in system usability

Medicare Bundle- Joint Replacement Digital Program



0.5 d LOS reduction, 20% more discharged

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Readmission Reduction

40% readmission reduction through RPM, ACC

Mount Sinai Crohn's and Colitis Registry (MSCCR) is a registry of Inflammatory Bowel Disease patients. RxUniverse's bulk prescribe feature was used to contact eligible patients for an additional clinical trial. This feature is a way of contacting and recruiting large groups of patients with a single click!



206 patients recruited in a day, now part of

DDD

Colonoscopy and Surgeries: Major source of revenue leaks

Percentage of patients with missed or delayed appointment (~6%, 15%)

Percentage of patients with poor preparation (15-25%)

Percentage of patients with ER after procedures (2-8%)

Patients not coming back at recommended intervals (30-70%)



50% reduced aborted procedure, \$ 1 M saved AGA

YOU CAN HELP STOP COVID-19 IN NYC

About New Yorkers, For New Yorkers

 Our researchers are tracking COVID-19 across New York City to help better advise ur healthcare community on how to help slow the spread of COVID-19.

 Want to join our efforts? Follow the steps below:

 • Text COVID to 64722
 • Complete a survey on your symptoms.
 You'll receive a daily text to check on on your symptoms.
 Zveryone can participate, even il you're healthy and have experienced
 no symptoms from COVID-19.

 Outtreached ~1 M Pts, 55,000 enrolled

Certificate Course in Healthcare Technology (CCHT)

Applying Platform Approach to COVID

Prevent, Triage and Monitor

Slide 29

There is an Urgent Need for health care organizations to protect 40% of their employees who are risk for serious illness with COVID



Digitally enabled care pathways to prevent, triage and monitor



Outreach and Prevention to Thousands of Employees within few days

- Bulk outreach to all members within few days through bulk prescription directly to Smartphones with backup of IVR
- Provides CDC content and option to Press 1 at any time 24/7 to activate triage
- Links to Assessment for
- COVID status and physical symptoms
- Emotional wellbeing
- Work satisfaction



Triage to Telehealth or best site of care (home, testing center, urgent care/ ER)



Text "mindful" to 64722 to enroll all employees



For nurses, physicians and all front line workers

In recognition of nurses week and may as mental health awareness month, we are providing a 21 days mindfulness program free of cost with simple, easy, quick and practical tools to help clinicians and allied health care workers contend with increased stress.

Want to enroll? Follow the steps below:

- 1 Text mindful to 64722
- Complete initial survey and you will receive daily dose of mindfulness tip and weekly webinar as daily text or in your email

Everyone can participate, without any restrictions.

https://rx.health/mindfulness/

Heal	th	COVID INITIATIV	E DIGITAL TRANSFORMATION ~	ABOUT US ~ PRESS FAQ CONT
	REG	ISTER NOW	AT NO COST FOR 21 DAY	S OF MINDFULNESS
	Your Name			
	Your Email			
	Tell us about y	yourself. What is yo	ur role?	
	Doctor			÷
	In general, wo	uld you say that yo	ur quality of life is as follows	
	Excellent			-
	In general, ho Excellent	w would you rate y	our mental health, including your mood	I and your ability to think?
	in general ho	w would you rate y	our satisfaction with social activities and	1 relationships?
	Excellent	w would you rate y	our sacistaction with social activities and	¢
	SEND	it a robot	reCAPTCHA Pelsag-Terms	
	ealth	-	Digital Transformation	Stay Connected
 Prescribi 	ing Digital Medicine"		Enterprise-wide Transformation	
is			Covered Initiative	U
ers			Payvidors and ACOs	+1 (646) 969-9939
			Life Sciences	engage@ry health
uest A Den	no		Platform and Approach	Cheage Chances and
tact Us			National IBD Initiative	
			GI Transformation	
			Cardiology Network	
	_			

CASE STUDY: STOP COVID NYC program, outreach to one million people in two weeks via text message and Chatbot

- COVID symptom checker and social determinants of health
- Al-based Chatbot
- 1M New Yorkers outreached in two weeks
- Self-enroll via text message deep link
- Self-enroll through text to enroll

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- Complete a survey on your symptoms. You'll receive a daily text to check on on your symptoms.

Everyone can participate, even if you're healthy and have experienced no symptoms from COVID-19.

	STOP COVID NYC
	Just now
	Do you have any other concerns that need attention such as:
	Difficult Getting OR Preparing Food
	Difficulty Obtaining OR Taking Medications
	Being Alone AND Feeling Very Sad
	Difficulty With Transportation
	Other Concerns
	None Of The Above
	Next
Ju	st now
	Powered by R. Health Prescribing Digital Medicine

https://www.mountsinai.org/about/newsroom/2020/mount-sinailaunches-covid19-app-to-track-spread-of-virus-across-newyork-city-pr



Mount

Enabled Digital Triage and Monitoring within 24 hours in Major Academic Centers

- Yale New Haven uses Rx.Health to support Telehealth workflow
- ~7000 Telehealth visits a day
- Patient onboarding
- Pre-visit check in
- Appointment reminder
- Follow up experience survey



- Mount Sinai prescribed digital care pathway to IBD
- 5712 IBD patients prescribe COVID-19 digital triage tool ~40% opted in.
- **2114 IBD patients** are being queried via triage bot to assess for symptoms based on CDC guidelines.
- **135** had one or more symptoms and triaged- call vs telehealth



Global Partnerships are Key for COVID as well as Decentralized Trials



R.Health



Bringing quality healthcare to the safety of your home Consult a Doctor



COVID AI Digital Monitoring <> Medanta, India

=

R. Hea Prescribin	alth ng Digital Medicine										Fasihuddii	n, Farahhhhh	
Filter F	Patients						First Pre	evious 1 Next	Last	Telehealth	Send Message	Add Patient	
Risk		Patient Name Contact	Status Days	DOB Age	+Covid Test _{Date}	+Symptoms	Group	Assigned To	Last Engaged	Clinical Pathway	RPM Data	Alert	
0		Connor, John (917) 732-5239	Quarantined 8 days	11-05-1993 26 years	Yes	• Tiredness or Fatigue, Aches and Pains or Headache, Diarrhea, Confusion or Sleepiness	IBD Patient 🕶	Ethan Hunt	Reply 14 days ago	Voluntary Quarantine	₽ 96°F ? 5	Not Resolved	d 🕶
0	-	Wayne, Bruce (334) 332-0339	Quarantined 20 days	06-22-1982 37 years	Yes	0 Cough, Diarrhea	Employee/Office -	Farah Fasihuddin		Voluntary Quarantine	₿ 96°F \$ 75	Not Resolved	d 🕶
•	-	Watson, Robert (917) 519-2944	Quarantined 30 days	02-15-1995 25 years	Yes	Asymptomatic	Employee/Office -	James Corden		Voluntary Quarantine	₿ 96°F \$\$ 75	In Progress	•
•	-	Miller, David (216) 312-6655	Quarantined 30 days	04-19-1966 54 years	Yes	Asymptomatic	Oncology Patient -	James Corden		Voluntary Quarantine	€ 96°F ₹ 75	Resolved	
0		Jhonson, Olivia (404) 822-7340	Quarantined 30 days	11-17-1947 72 years	Yes	Cough, Fever, Ansomnia	Oncology Patient -	James Corden	Reply a month ago	Voluntary Quarantine	€ 96°F ₹ 75	Resolved	
0	-	Jones, Chris (917) 732-5062	Quarantined 30 days	10-10-1989 30 years	Yes	9 SOB, Fever, Cough	SDOH Needs 👻	James Corden		Voluntary Quarantine	€ 96°F ₹ 75	Not Resolved	4.
•		Biden, Tom (216) 312-6724	Quarantined 31 days	03-02-1958 62 years	Yes	Asymptomatic	Oncology Patient -	James Corden		Voluntary Quarantine	€ 96°F 75	Not Resolved	4 -

Creating Global Centers of Excellence for DTx and Digital Trials



Slide 39

Prescribing Digital Health for All, Globally



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- 1. Innovation gets the journey started and transformation leads to ultimate value
- 2. A Platform approach can prevent duplication and support multiple use cases for care and research transformation
- 3. Its time to empower care providers, life sciences and pharma so they can prescribe digital health and digital therapeutics in relevant use cases across all specialties



PUBLIC HEALTH FOUNDATION OF INDIA







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