



DIGITAL HEALTH FROM HYPE TO IMPACT

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HACKINGMEDICINE.MIT.EDU

HACK = CLEVER SOLUTION

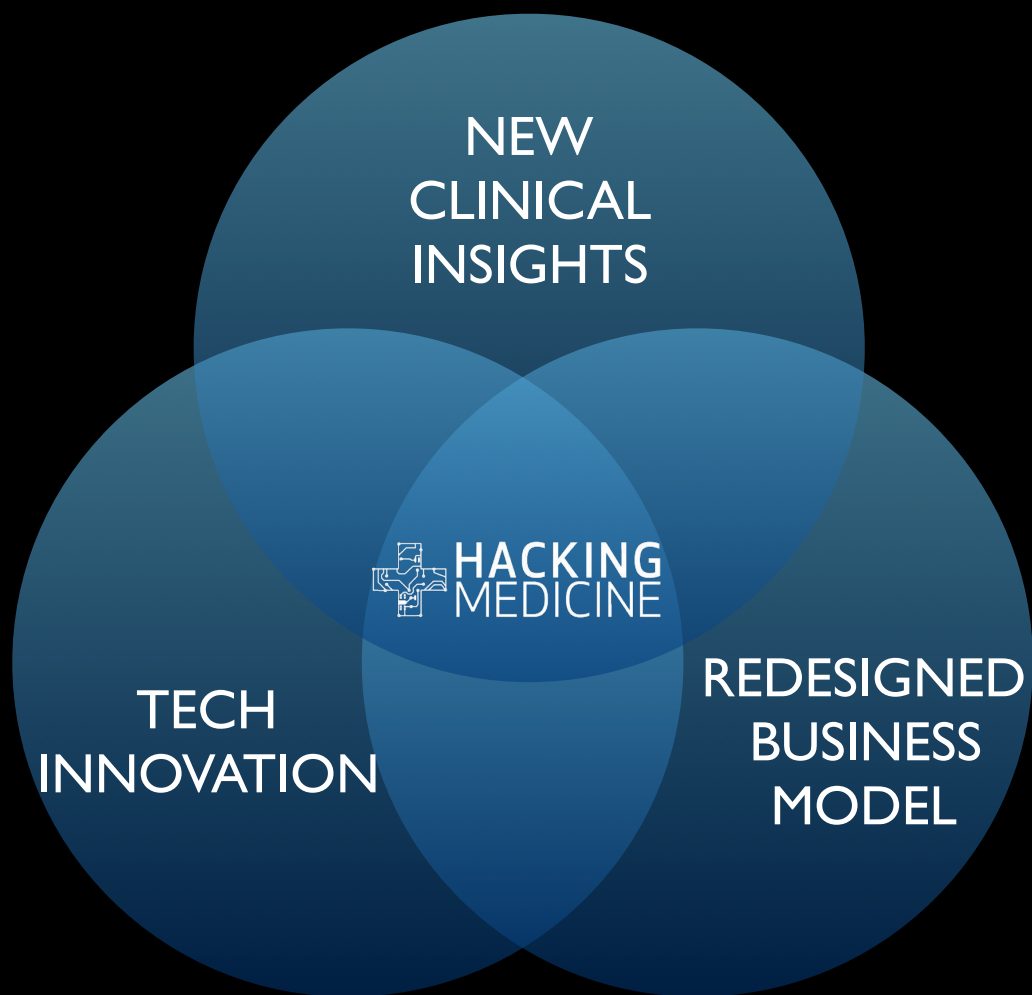
HACKING MEDICINE INSTITUTE
BREAK IT DOWN. BUILD IT UP. MAKE IT BETTER.



HackingMedicine.MIT.edu

@HackMedInst

TECH + CLINICAL + BIZ MODELS



SPONSORS + ECOSYSTEM

MIT HACKING MEDICINE

VIT UNIVERSITY

aetnaSM

BlueCross BlueShield

Medtronic

NOVARTIS

DANA-FARBER CANCER INSTITUTE

Children's Hospital Boston
The first place for children

MGH 1811 MASSACHUSETTS GENERAL HOSPITAL

biogen idec

Pfizer

SAMSUNG

GE Healthcare

MERCK

Microsoft

GE

Allscripts™

Celgene

care innovations™
an Intel • GE company

PARTNERS HEALTHCARE

SIT SINGAPORE INSTITUTE OF TECHNOLOGY

Epic

athenahealth

47 EVENTS HELD

6532 INNOVATORS

23196 CUPS OF COFFEE

1560 HOURS HACKED

HACKATHONS ACCELERATE
PROBLEM VALIDATION + TEAM BUILDING

TECTONIC SHIFTS

ACROSS HEALTHCARE PAYMENTS, INCENTIVES,
DISTRIBUTION, TECH, GLOBAL REACH...

GAPS = OPPORTUNITIES

ENTREPRENEURS ADAPT TO
FILL GAPS FASTER

NOW IS BEST TIME
IN HISTORY TO BE A
HEALTHCARE ENTREPRENEUR!



Gap between American Plate and Eurasian Plate

MIT **IMPACT** EQUATION

IMPACT = INVENTION **x** COMMERCIALIZATION

IMPACT REQUIRES ENTREPRENEURSHIP

MIT FOUNDER COMPANIES
EQUAL

WORLD'S 10TH LARGEST ECONOMY

IMPROVING PATIENT EXPERIENCE



MEDIEVAL PATIENT CARE

RE-INVENT DOCTOR'S BAG



Pill Pack Pharmacy Simplified 1-855-745-5725
How it works | Sign up | Log In

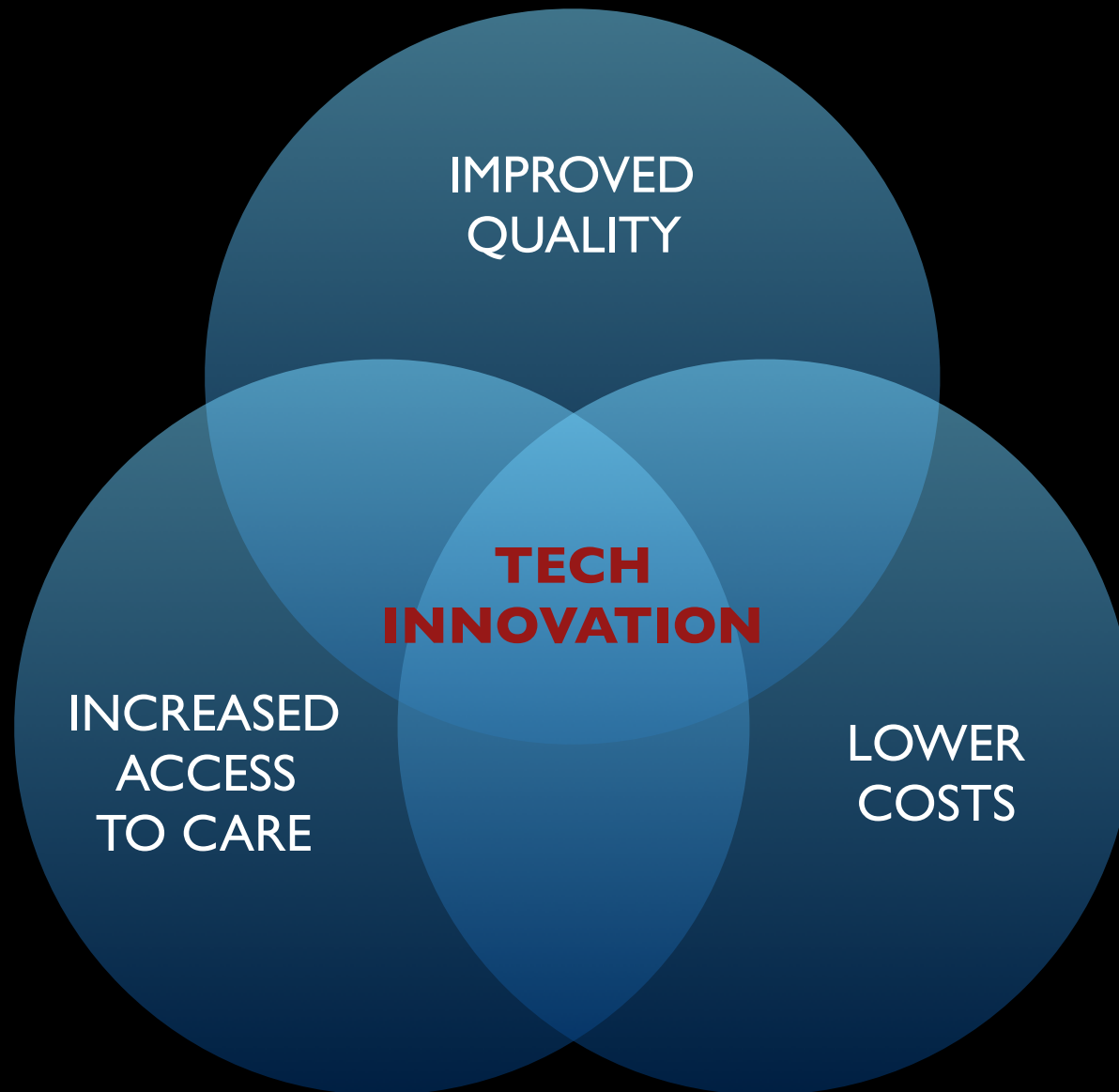
PillPack™ is pharmacy simplified
We fill, sort, and deliver all your medications in personalized packets based on when you need to take them. Our service helps you take the right meds at the right time, every time.

[Get Started](#)



CONNECTED APPS + MED DEVICES
RE-INVENTED TECH ENABLED SERVICES

IMPACT HEALTH **TRIPLE AIMS**



DIGITAL HEALTH

=

INTERNET 1995



@MITHACKMED

WHAT IS DIGITAL HEALTH?

BETTER

FASTER

CHEAPER

HIGH TECH IS INSUFFICIENT!

CHANGE HEALTH EXPERIENCES

CONVENIENCE

CAPACITY

TRUST

BETTER

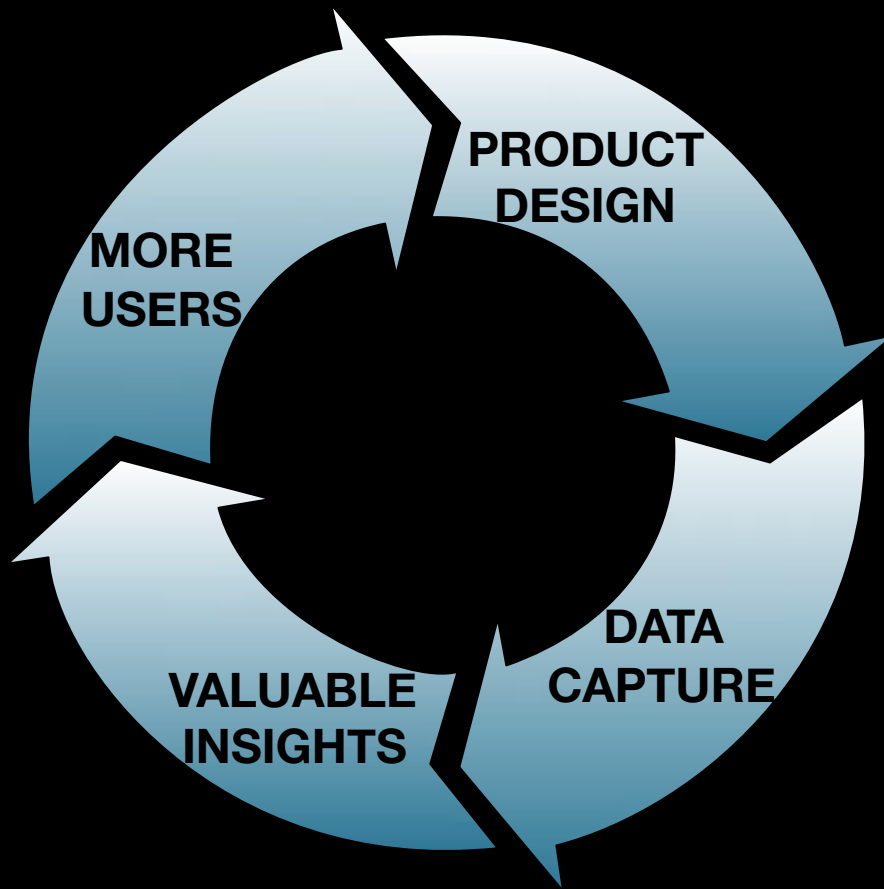
FASTER

CHEAPER

INCUMBENTS INTEGRATE WHOLE PRODUCTS

VIRTUOUS CYCLE OF D-HEALTH

PRODUCTS IMPROVE WITH DIGITAL DATA



BETTER ACCURACY
MORE SAMPLES
MORE TIMEPOINTS
NEW BIOMETRICS
BETTER ENGAGEMENT
REAL WORLD EFFECTS

NEW EFFICACY EQUATION

DIGICEUTICALS

$$\text{EFFICACY} = \text{M} * \text{PHARMACEUTICALS} + \text{D} * \text{BEHAVIOR} + \text{L} * \text{ENVIRO}$$

PHARMACEUTICALS

TECHNOLOGY
SCALES
MEDICINE

NEW TECH
CHANGES CARE
+ BIZ MODELS

INCUMBENTS
ADAPT
SLOWLY

ENTREPRENEURSHIP
ACCELERATES
IMPACT

>\$150M INTO VENTURES IN 5 YRS

Pill Pack Pharmacy Simplified 1-855-745-5725
How it works | Sign up | Log in

PillPack™ is pharmacy simplified
We fill, sort, and deliver all your medications in personalized packets based on when you need to take them. Our service helps you take the right meds at the right time, every time.

[Get Started](#)



PATIENTPING



A Smart, Connected Foot Mat

The Podimetrics Mat™ is a wireless, in-home monitoring technology that collects foot temperature scans. Step on it for twenty seconds a day and we'll take care of the rest. Your toes will thank you.



Clinical Admin



Digital Med Devices



EHR/EMR



Population Health Mgmt



Online Health Communities



Gamification



Patient Engagement



Genomics



Digital Health

760 Companies

Contact

info@venturescanner.com

to see all

Medical Big Data



Services Search



teleHealth



Remote Monitoring



Online Health Destination



Healthcare Mobile Communications



Mobile Fitness / Health Apps



Payments & Insurance



IOT Health & Fitness



Robotics



Healthcare Marketing

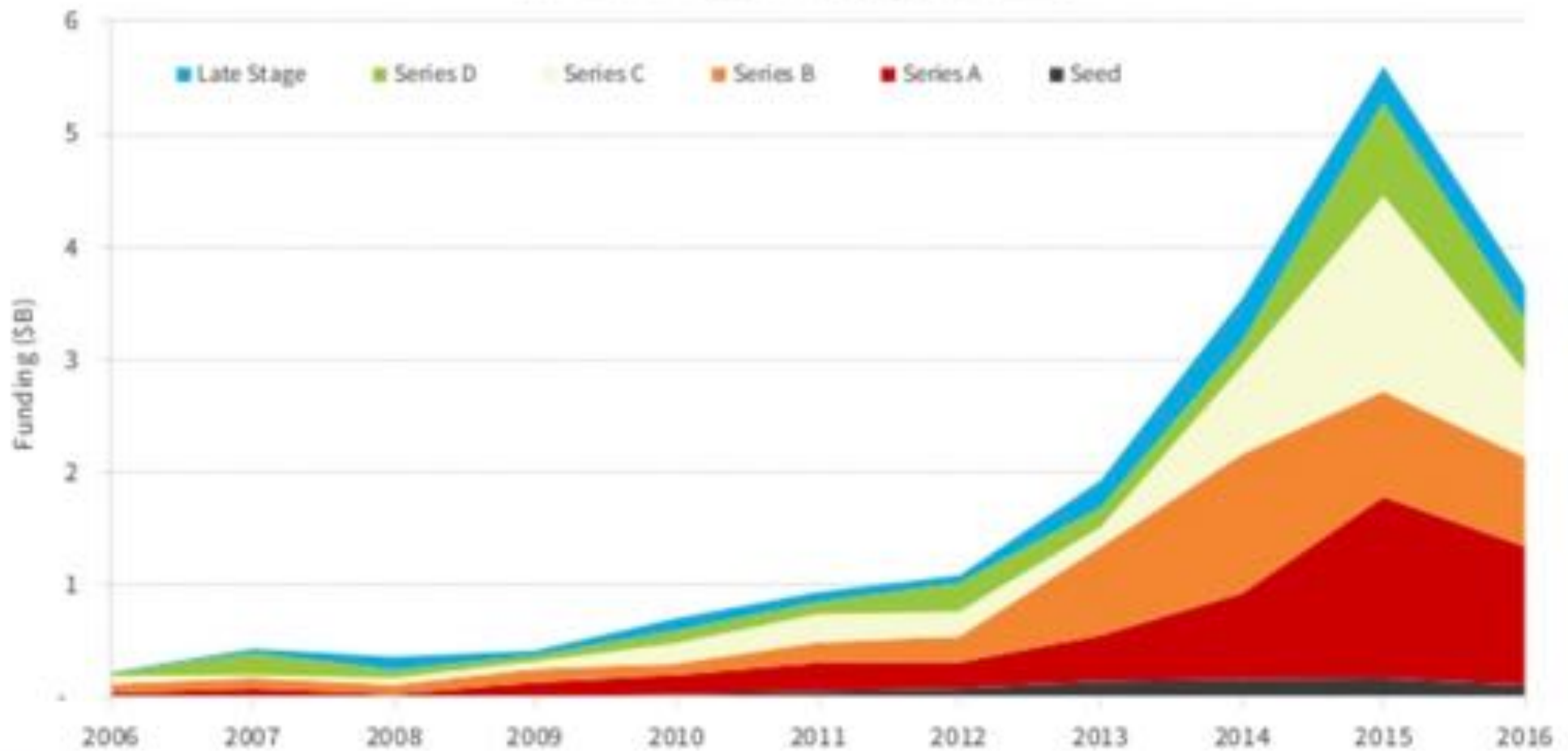


Venture Scanner

DIGITAL HEALTH HOT!

2015 saw *expansion of HealthTech funding at all stages*

Health Technology Funding By Type Over Time



GLOBAL INNOVATION

Health Technology Startup Count by Country



CHINA BOSTON UNIQUE TRUST

中国—波士顿 的独特信任

> 100 YEARS IN COLLABORATION WITH CHINA MEDICAL BOARD, HARVARD, MIT
与美国中华医学基金会、哈佛及麻省理工有100多年的合作经验



Dr. CHEN Zhu, Outgoing Minister of Health for PRC, presenting health reform priorities at Harvard Medical School

陈竺（卫生部部长）在哈佛医学院阐述医疗改革重点



Dr. William Hsiao, Harvard School of Public Health
China Policy + Field Work Since 1981
William Hsiao博士
哈佛公共卫生学院
中国政策+实地工作（1981年起）



Dr. Lincoln Chen, President
China Medical Board
Harvard School of Public Health
Lincoln Chen博士
美国中华医学基金会会长、哈佛公共卫生学院

EXAMPLE VENTURES

@MITHACKMED

CROWDSOURCED DIAGNOSIS



Q11 whole-body dried, crusty, lichenification with cracking and bleeding that started at feet. What is it?

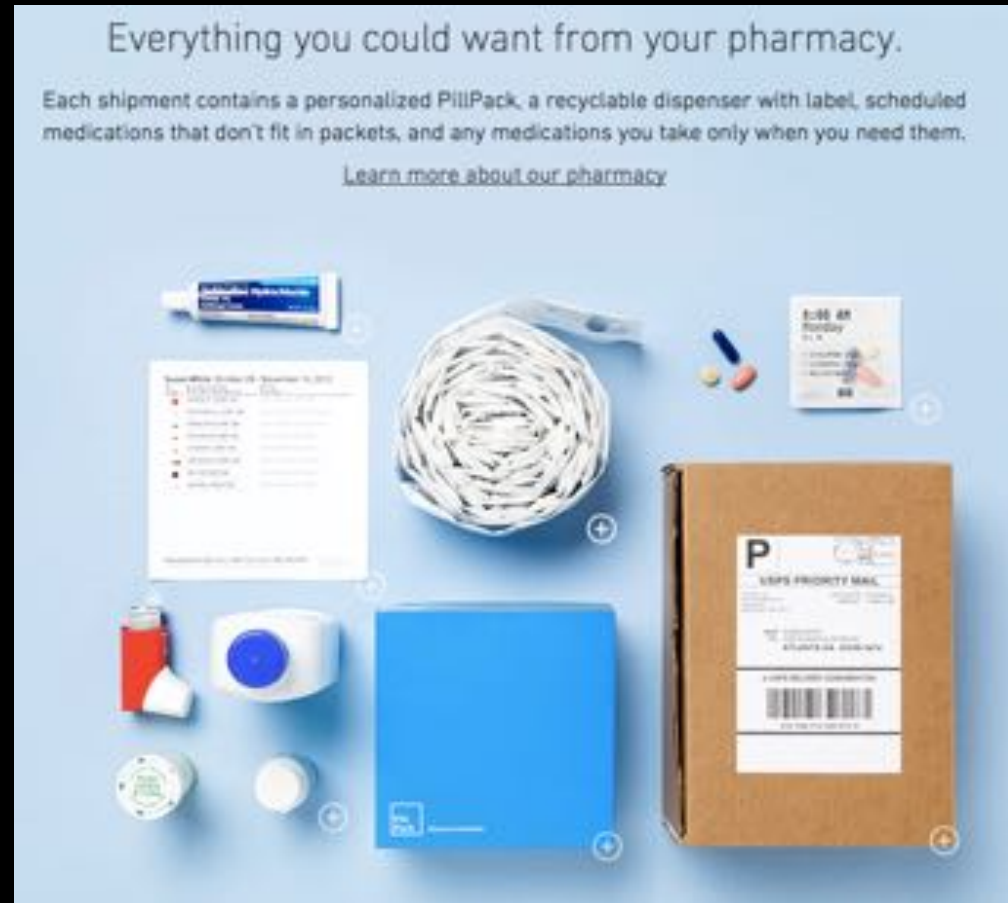
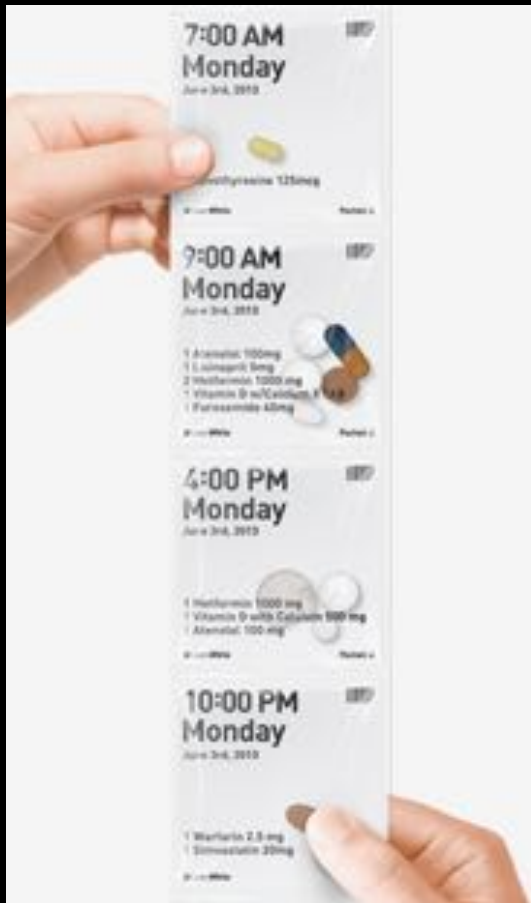
Allergy and Immunology | Dermatology | Infectious Diseases | Lower Limb | Medical Case

105 362

INSTAGRAM FOR DOCS
1MIL DAILY; 190+ COUNTRIES
(DISCLOSURE: ZEN INVESTOR)

REINVENT PHARMACY

MULTI-DRUG COMPLIANCE ZAPPOS



PILLPACK.COM
(DISCLOSURE: ZEN FIRST INVESTOR)

FOCUSED FACTORY TELEMED



NEVER SAME DOCTOR

\$1,600 SAVED PER CALL

PREVENT ER VISITS

SLOW ENTERPRISE SALE CYCLE

CALL9 TELEMEDICINE TO CHANGE HIGH VALUE EXPERIENCES + SAVE LIVES AT SCALE

REMOTE PHYSICIANS, HANDS-ON CLINICAL CARE SPECIALISTS



On-site Clinical Care
Specialists are connected to remote Emergency Physicians.



Team delivers care to **patients with extreme needs** who would otherwise be sent to the hospital.



Timely care prevents escalation of acuity and **follow-up treatments** ensure the patient gets better.

CALL9.COM
(DISCLOSURE: ZEN INVESTOR)

HACK REFERRALS & RETAIL

The screenshot shows the Direct Dermatology website. At the top left is the logo with 'DD' in a blue circle and 'DIRECT DERMATOLOGY' in blue text. To the right is 'The Online Dermatology Clinic' and 'Patient Login | Provider Login'. A navigation bar below contains links: 'I AM A PATIENT', 'I AM A REFERRING PROVIDER', 'MEET OUR DOCTORS', 'WHO WE ARE', 'RESOURCES', and 'CONTACT US'. The main content area has two columns. The left column is titled 'I am a Patient.' and features a photo of a woman and child. Text below says 'We provide you with 24/7 Access to US Board-Certified Dermatologists Online' and includes a 'LEARN MORE' button and a link for 'ALREADY A MEMBER? SIGN IN'. The right column is titled 'I am a Primary Care Provider.' and features a photo of a doctor. Text below says 'We help you care for your patients' skin problems' and includes a 'LEARN MORE' button and a link for 'ALREADY A MEMBER? SIGN IN'. Below these are three sections: 'HOW DIRECT DERMATOLOGY WORKS' with 'Three Easy Steps' (1. Describe problem, 2. Upload pictures, 3. Get answers), 'Online access to board-certified dermatologists.' with a video player showing a 02:31 video, and 'Resources & Tips' with links for 'Vitamin D & Sun Exposure', 'Sunscreens & Your Skin', 'Stay Protected in the Sun', 'Facts about Skin Cancer', and 'Dry Skin Care'. At the bottom left is copyright information and at the bottom right are social media icons for Facebook, Twitter, LinkedIn, and YouTube.



DIRECTDERMATOLOGY.COM
(DISCLOSURE: ZEN INVESTOR)

MOBILE PHONES AS SENSORS



The image shows a screenshot of the GINGER.io website and its mobile application. The website header includes the logo 'GINGER.io' and navigation links for 'The Platform', 'The Science', 'Data Privacy', 'News & Blog', and 'About Ginger.io'. The main content area features the headline 'Big Data, Better Health' and a sub-headline: 'Ginger.io is a behavioral analytics platform that turns mobile data into health insights.' To the right, a smartphone displays the GINGER.io mobile app interface, which shows a large number '405,023' and a smaller text 'Total data points generated so far...' below it. The app interface also includes a top navigation bar with the GINGER.io logo and three icons: a lightbulb, a globe, and a person.

FROM TECH TO HELP HOSPITALS
TO REDESIGNED MENTAL HEALTH SERVICES

REINVENT HIPAA DEV



Manage Security & Compliance

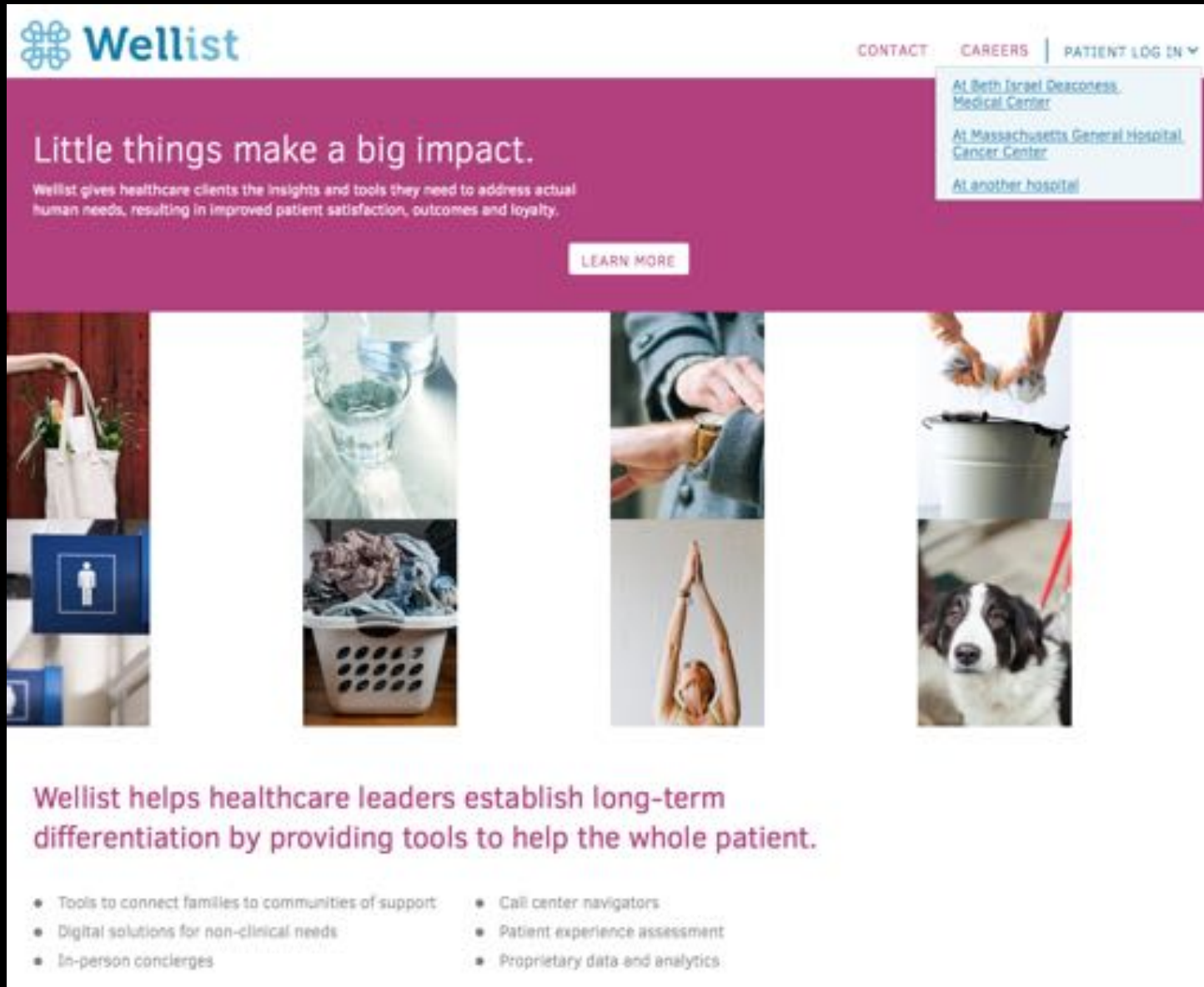
Gridiron

Aptible Gridiron helps software engineering teams stand up and scale agile information security programs. Gridiron makes compliance with complex regulations like HIPAA fast and easy.

Aptible helps hundreds of digital health companies get to market faster with less risk.



SERVICES AROUND HOSPITALS



The image shows a screenshot of the Wellist website. At the top left is the Wellist logo, a blue flower-like icon followed by the word "Wellist" in blue. To the right are navigation links: "CONTACT", "CAREERS", and "PATIENT LOG IN" with a dropdown arrow. Below the navigation is a purple banner with the text "Little things make a big impact." and a sub-headline "Wellist gives healthcare clients the insights and tools they need to address actual human needs, resulting in improved patient satisfaction, outcomes and loyalty." A "LEARN MORE" button is centered in the banner. To the right of the banner is a white box with three links: "At Beth Israel Deaconess Medical Center", "At Massachusetts General Hospital Cancer Center", and "At another hospital". Below the banner is a grid of six images: a white tote bag with flowers, a glass of water, a person's hands being washed, a person's hands being washed in a sink, a person's hands being washed in a sink, and a dog. Below the grid is the text "Wellist helps healthcare leaders establish long-term differentiation by providing tools to help the whole patient." and a list of six bullet points: "Tools to connect families to communities of support", "Digital solutions for non-clinical needs", "In-person concierges", "Call center navigators", "Patient experience assessment", and "Proprietary data and analytics".

Wellist

CONTACT | CAREERS | PATIENT LOG IN

At Beth Israel Deaconess Medical Center
At Massachusetts General Hospital Cancer Center
At another hospital

Little things make a big impact.

Wellist gives healthcare clients the insights and tools they need to address actual human needs, resulting in improved patient satisfaction, outcomes and loyalty.

LEARN MORE

Wellist helps healthcare leaders establish long-term differentiation by providing tools to help the whole patient.

- Tools to connect families to communities of support
- Digital solutions for non-clinical needs
- In-person concierges
- Call center navigators
- Patient experience assessment
- Proprietary data and analytics

MOBILE PHONES AS SENSORS



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FROM TECH TO HELP HEALTH NETWORKS
TO **REDESIGNED MENTAL HEALTH SERVICES**

TREATMENTS TRANSITION FROM DRUGS TO SERVICES



FORTUNE SUBSCRIBE

TECH BIOELECTRONICS

Google Parent and GlaxoSmithKline Are Creating a \$715 Million Bioelectronics Firm

by Reuters AUGUST 1, 2016, 3:25 AM EDT

✉️ 🐦 f in

It will be owned 55% by GSK and 45% by Alphabet's Verity.

Photograph by FRANCOIS LO PRESTI AFP/Getty Images


It will focus on fighting diseases by targeting electrical signals in the body.

The image is a screenshot of a Fortune magazine article. At the top, the 'FORTUNE' logo is visible on the left and 'SUBSCRIBE' on the right. Below the logo is a navigation menu with icons for email, Twitter, Facebook, and LinkedIn. The article title is 'Google Parent and GlaxoSmithKline Are Creating a \$715 Million Bioelectronics Firm' and it is attributed to Reuters, dated August 1, 2016. A photograph shows a scientist in a white lab coat and hairnet working in a laboratory. Below the photo, there is a caption stating the firm will be owned 55% by GSK and 45% by Alphabet's Verity, and a note about the photograph being by Francois Lo Presti for AFP/Getty Images. At the bottom, a line of text states the firm will focus on fighting diseases by targeting electrical signals in the body.

ELECTROCEUTICALS



"ELECTROCEUTICALS"



- Cyberonics vagal nerve stim depression, epilepsy
- f(nm) CNS pacing for Alzheimer's
- NeuroPace CNS pacing for epilepsy
- Inspire Medical hypoglossal nerve stim for OSA
- Novocure electromagnetic fields for solid tumors
- Mainstay "neuro rehabilitation for axial back pain
- Nevro spinal cord stim for pain
- IntraPace gastric pacing for obesity
- BioControl vagal nerve stim for heart failure
- SetPoint Medical vagal nerve stim for inflammation

Medtronic | CORVOR

MY LATEST STARTUP REPLACES
MULTIPLE PHARMA FRANCHISES
NON-DRUG DEVICES WITH DRUG EFFECTS

HMi RankedHealth **REVIEWS**

RANKEDHEALTH.ORG

RANKED HOME ABOUT APPROACH TEAM APPLY

Curated Health Apps & Devices

With a Focus on Clinical Relevance, Safety, and Efficacy

Reviews by Clinicians, Researchers, & Patients.

Led by Experts From Top Ranked Teaching Hospitals & Universities.

CARDIOVASCULAR

Hello Heart Premium

Acceptable: 70

An outstanding mobile app for people interested in monitoring and tracking their blood pressure. However, it lacks high-quality evidence to backup their claims of helping people manage/optimize blood pressure control.

REPRODUCTIVE HEALTH/ PREGNANCY

Ovia Fertility

Acceptable: 70

A well designed app intended for women of child-bearing age for fertility planning.

DIABETES/ ENDOCRINE DISORDERS

mySugr Diabetes Logbook

Recommended: 80

A diabetes app that allows patients to record their lifestyle habits and blood glucoses, as well as integrates gamification, enabling users to 'tame' their diabetic monster in the quest to better manage their disease.

Senior Editors

Dr. Maulik Majmudar is a practicing cardiologist and Associate Director of the Healthcare Transformation Lab at Massachusetts General Hospital; and an instructor at Harvard Medical School. He lectures at Massachusetts Institute of Technology in areas of healthcare innovation & entrepreneurship, as well as medical device design and development. Dr. Majmudar started his career as a medical student at Northwestern University Feinberg School of Medicine, completed resident training in Internal Medicine at The Johns Hopkins Hospital, and followed by a fellowship in Cardiovascular Medicine at Brigham and Women's Hospital at Harvard Medical School. You can follow him on Twitter: [@mdmajmudar](#)

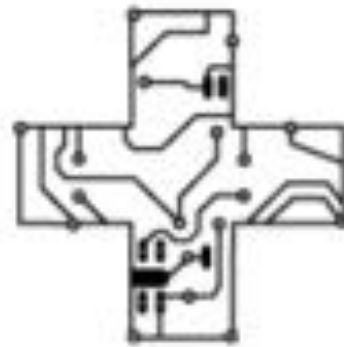
Dr. Adam Landman is an emergency physician and Chief Medical Information Officer at the Brigham and Women's Hospital (BWH). Dr. Landman holds degrees in information systems and health care policy from Carnegie Mellon University and a medical degree from UMDNJ – Robert Wood Johnson Medical School. After medical school, he trained in emergency medicine at the University of California, Los Angeles, and completed the RWJ Foundation Clinical Scholars fellowship in health services research, where he worked on qualitative and quantitative studies on the adoption of health information technology (HIT) in the emergency department (ED) and prehospital settings.

Dr. Ayesha Khalid is a practicing ENT surgeon at Harvard Medical School with an MBA in Global Leadership and Innovation from the MIT Sloan School of Management. Ayesha serves on several boards for medical organizations and is currently on the board of the American Academy of Otolaryngology- Head and Neck Surgery. Ayesha has experience with consulting for private equity firms to evaluate business opportunities in the health IT and medical practice management. She served as Vice-President of Business Development of a digital health start-up out of Johns Hopkins, Doctella. Ayesha is the Clinician Director for CBIT at the Yale School of Medicine and is curating early stage health IT startups. She lectures at the Yale School of Management on creating healthcare ventures. You can follow Ayesha on Twitter at [@ayeshakhalidm](#)

CURATED BEST OF BEST + WORST
DIGITAL HEALTH APPS, DEVICES, SERVICES

HMI ARTIFICIAL INTEL CHALLENGE

HEALTH AI
COMPETITION
MASSACHUSETTS INSTITUTE OF TECHNOLOGY



HACKING
MEDICINE
INSTITUTE

ACCELERATE HEALTH CHATBOT **APPS**

GLOBAL CHALLENGE FOR EXTENDING
HEALTH ENGAGEMENT + AUTO INTERACTIONS

HACK MED
MISSION + PROGRAMS

ENTREPRENEURSHIP IN HEALTHCARE

EVENTS

FELLOWSHIPS

CONTENT

HEALTH POLICY

HEALTH TECH INNOVATION + CURATION



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