

# Revolutionizing Healthcare with Generative AI

Presented by Senthil Kumaran



# Agenda

- 1. About Telehealth**
  - Virtuwell
- 2. Gen AI in Healthcare**
- 3. AI and Telehealth**
- 4. AI and Diagnosis**
- 5. Smart IOT**
- 6. Future of Gen AI**

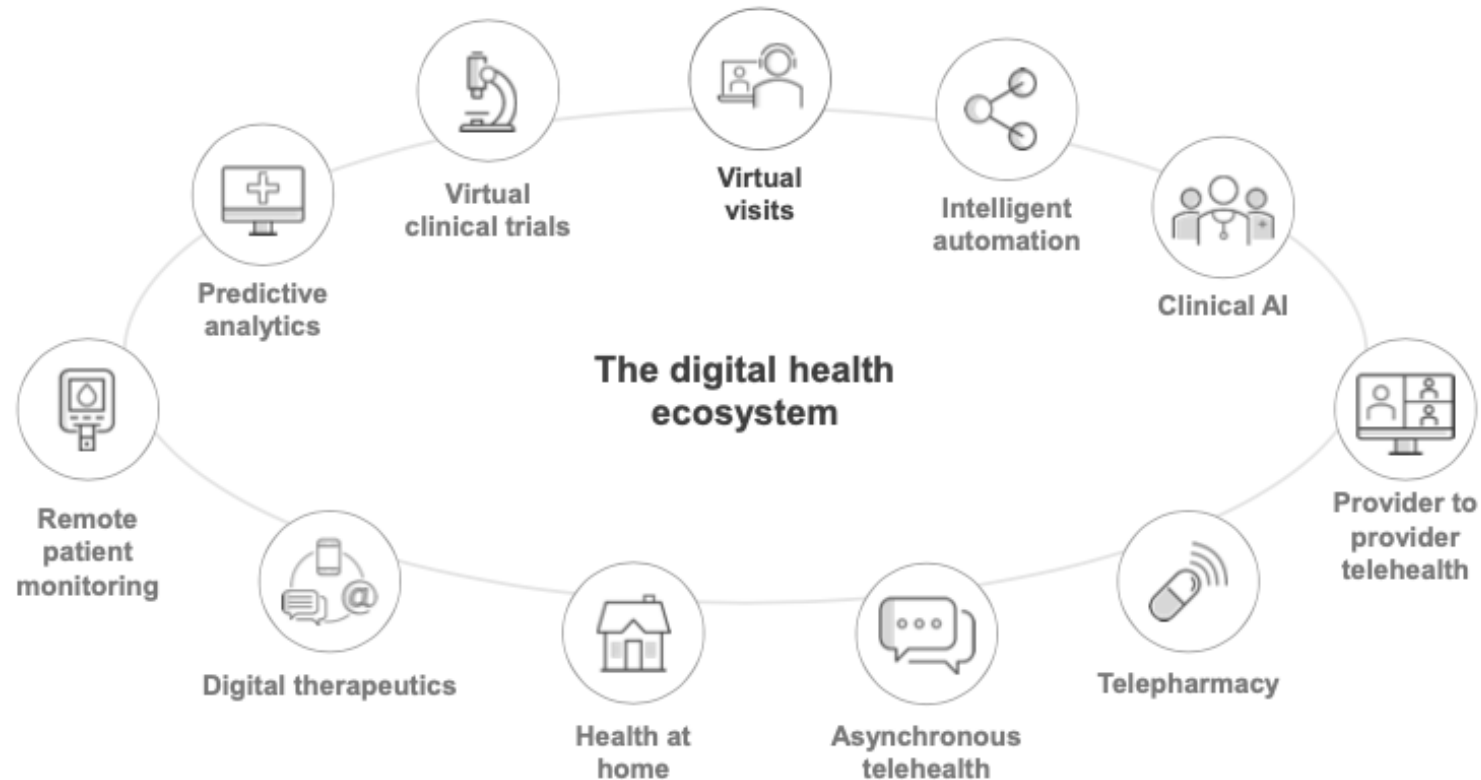


# About Telehealth and Virtuwell



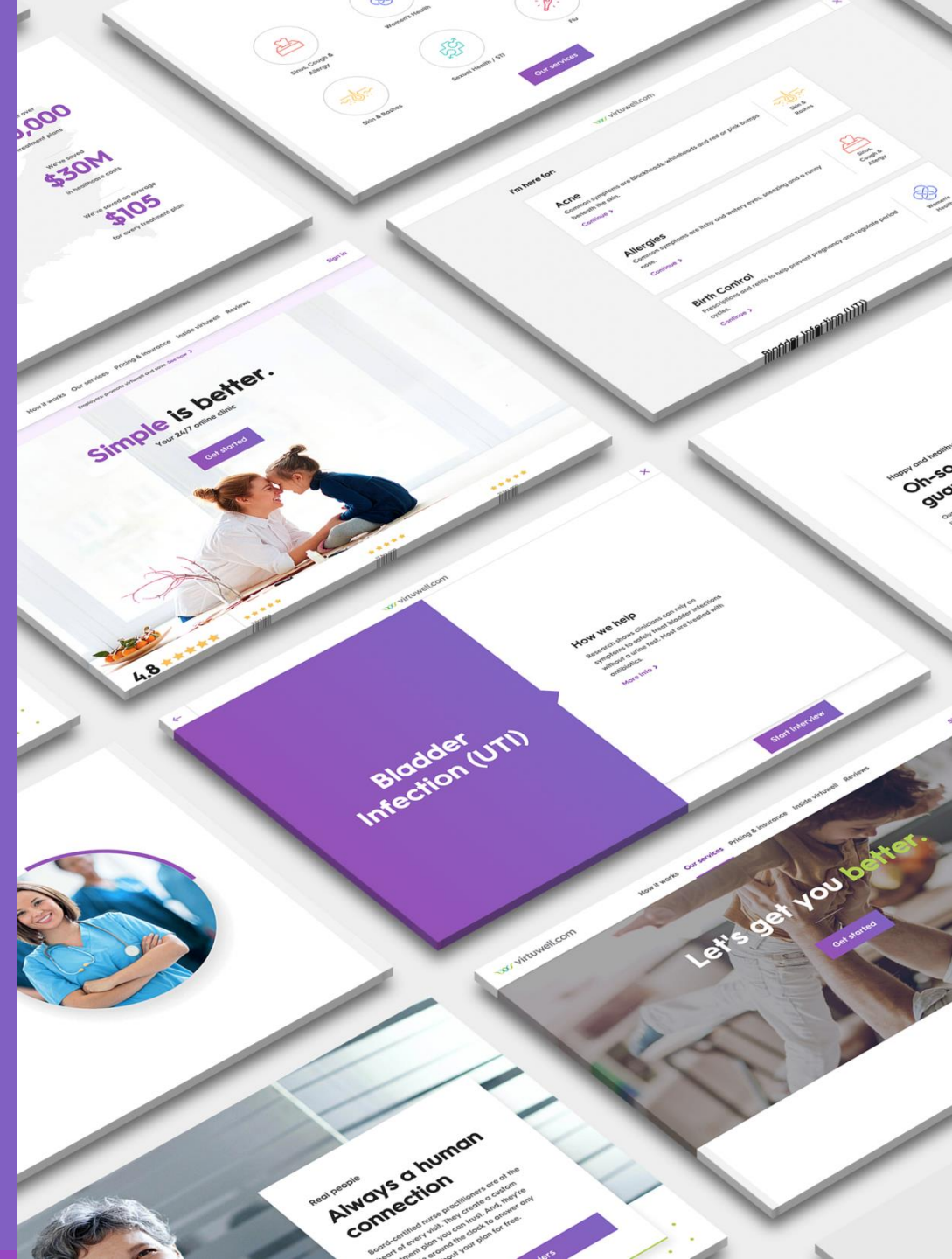
# Digital health is so much more than you think

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# virtuwell

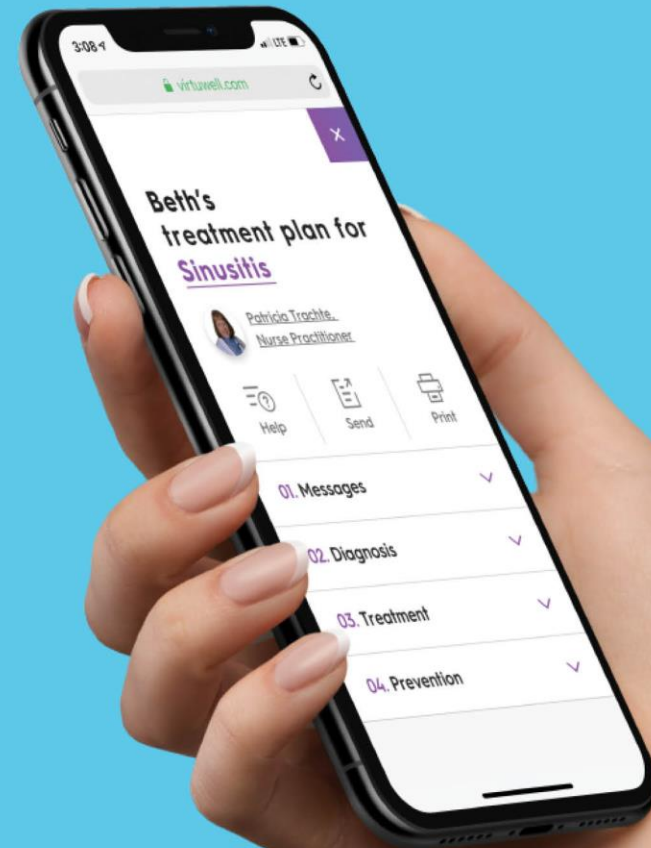
A 24/7 online clinic that reinvents the diagnosis & treatment experience.





**Incredible.  
Best health care  
experience I've had  
in my entire life.**

 verified virtuwell customer



# What we treat.

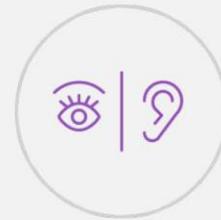
60 common conditions safe for online care



Sinus, Cough & Allergy



Women's health



Eye & Ear



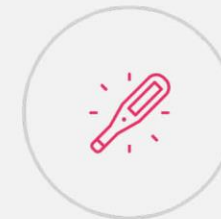
Kid's health



Skin & Rash



Sexual health / STI



Flu (seasonal)



Chronic & Preventive

## A triple aim success.

**\$57Mil**

Healthcare costs  
saved

**Affordability**

**500K+**

Treatment plans  
provided

**Health**

**98%**

Highly recommend  
us to others

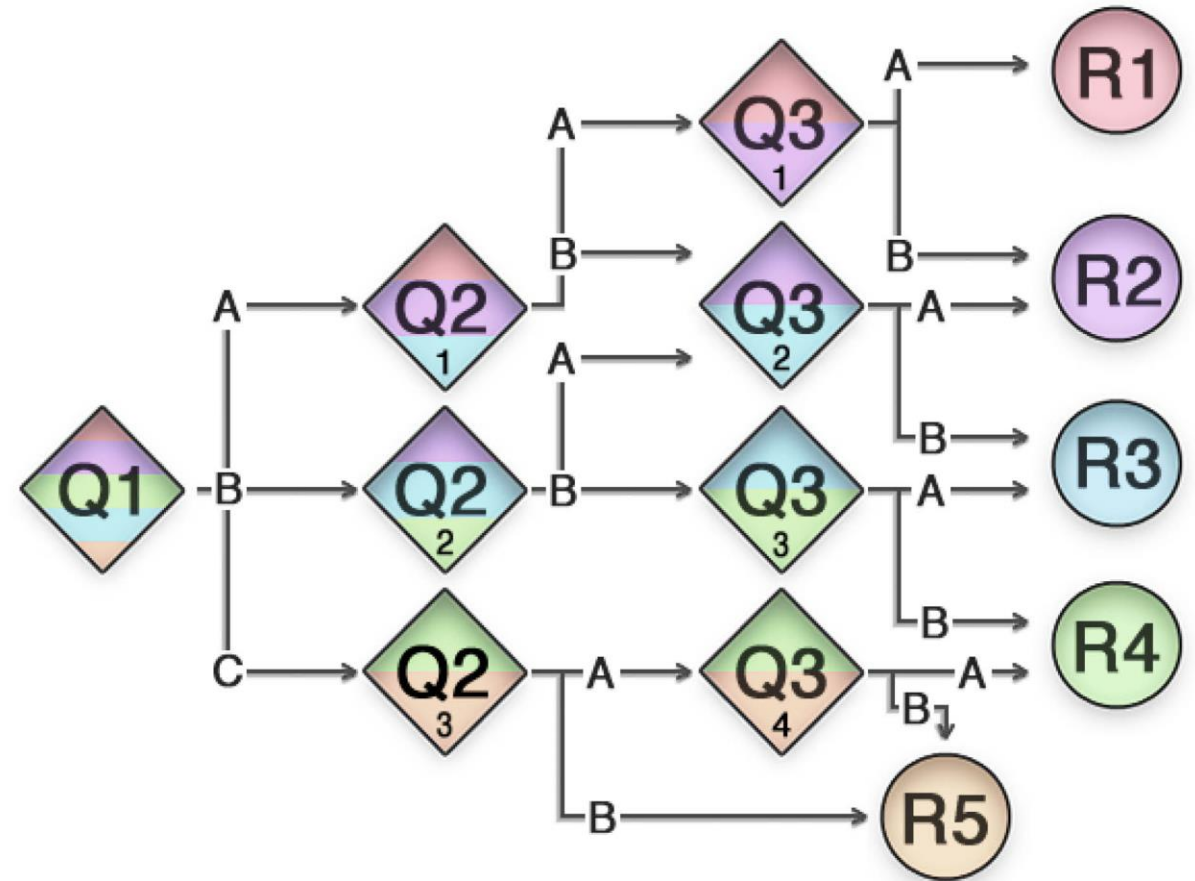
**Experience**





# Patient Q and A

Using dynamic decision trees, AI will be able to route questions to the doctor with the best outcomes for a patient's symptoms instead of just sending them to the first doctor available.



# Generative AI in Healthcare



# Care Delivery

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## Clinical Decision Support

Support clinicians by providing relevant medical info

## Virtual Medical consult

Inject AI to telemedicine platforms in diagnosis prediction

## Health and Wellness

Personalized health and wellness advice to individuals helping them lead a healthier life



# Medicine

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## Personalized Medicine

Analyze massive medical data to uncover patterns, forecast outcomes

## Drug Discovery

Identify possible targets for new meds and predicts compounds likely to be effective

## Research

Prompting like “what drugs have higher chance of curing migraine if I am taking xyz”



# Health Plan

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## Unstructured Medical Data

Convert it to structured format to get insights for clinicians

## Increased Enrollment

Provide useful info and timely reminders to boost engagement

## Diagnosis and Screening

Identify diseases based on data and get to TPs faster.



# Medical Research

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## Identifying new Drug Targets

Analyze large datasets of biological data to identify new proteins and other molecules

## New Drugs and Therapies

Design new drugs and therapies with specific properties, such as the ability to bind to a particular drug target or to have a desired pharmacological effect

## Predicting Clinical Trial Outcome

Identify the most promising drug candidates and to design clinical trials more efficiently



# Patient Centric

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## Medical Record keeping

Store medical records  
and reduce risk of errors

## Patient Education

Provide educational  
resources to patients on  
various treatments

## Customer Service

Answer common  
questions and address  
concerns



# Generative AI and Healthcare - Examples

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Insilico Medicine - **Accelerate** the drug discovery process.

Verily- New diagnostic tests for diseases such as cancer and diabetes.

DeepMind - New treatments for diseases such as Alzheimer's and Parkinson's.

Atomwise - New drugs and therapies.

Paige.AI - New diagnostic tools for cancer.





# AI and Telehealth



# Top 10 savings potential of AI in health care.

**\$40B**

**Robot assisted surgery**

**\$20B**

**Virtual Nursing Assistants**

**\$18B**

**Admin Workflow Assistance**

**\$17B**

**Fraud Detection**

**\$16B**

**Dosage Error Reduction**

**\$14B**

**Connected Machines**

**\$13B**

**Clinical Trial Participant Identifier**

**\$5B**

**Preliminary Diagnosis**

**\$3B**

**Automated Image Diagnosis**

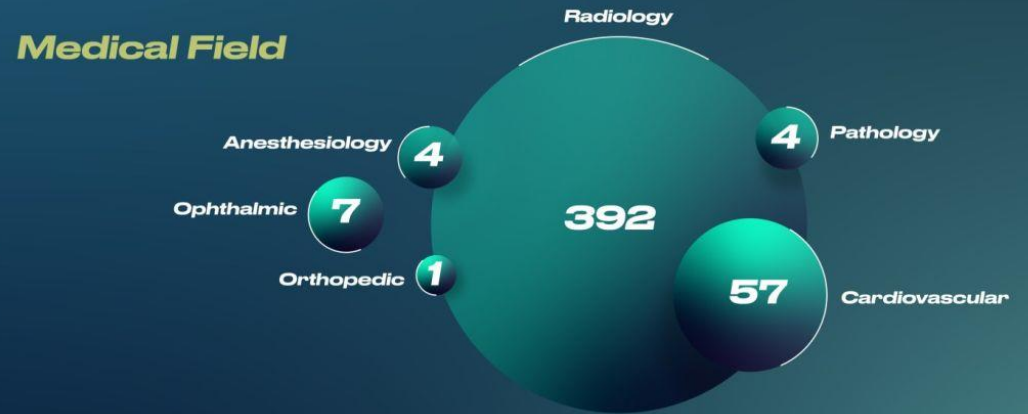
**\$2B**

**Cybersecurity**

# FDA Approved

Autonomous vs Augmented

# FDA-Approved AI-Based Medical Devices



Data visualization by The Medical Futurist

## AI Initiatives

**Help patients choose  
the right pharmacy &  
reduce call backs.**

## AI Initiatives

**Reduce over/under  
staffing by predicting  
the future.**

## AI Initiatives

**Apply machine  
learning to improve  
surge forecasting**

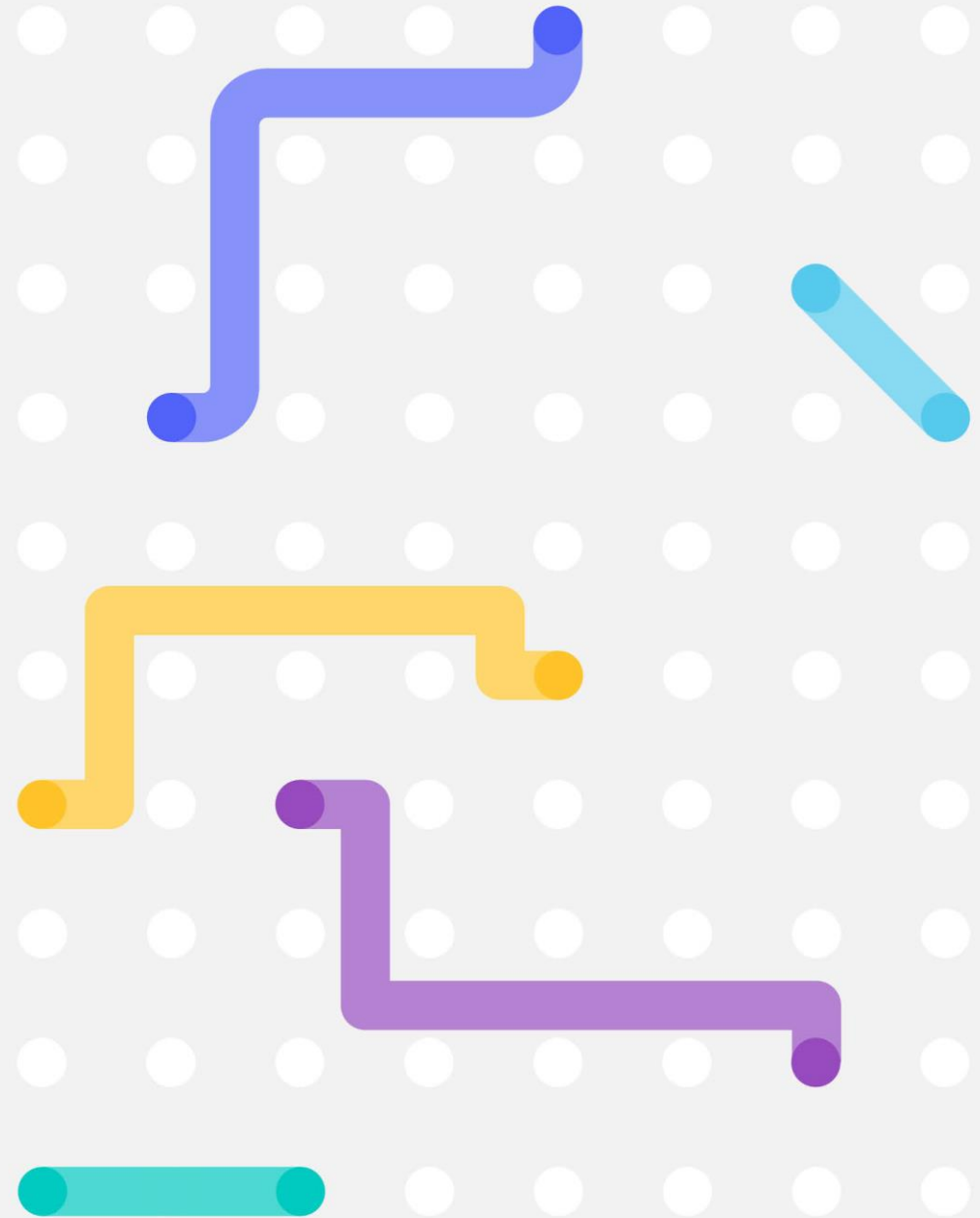


Other AI Initiatives

**Analyze patient data for  
systematic follow ups**

Other AI Initiatives

**Connect patients with  
the right clinician at  
the right time**



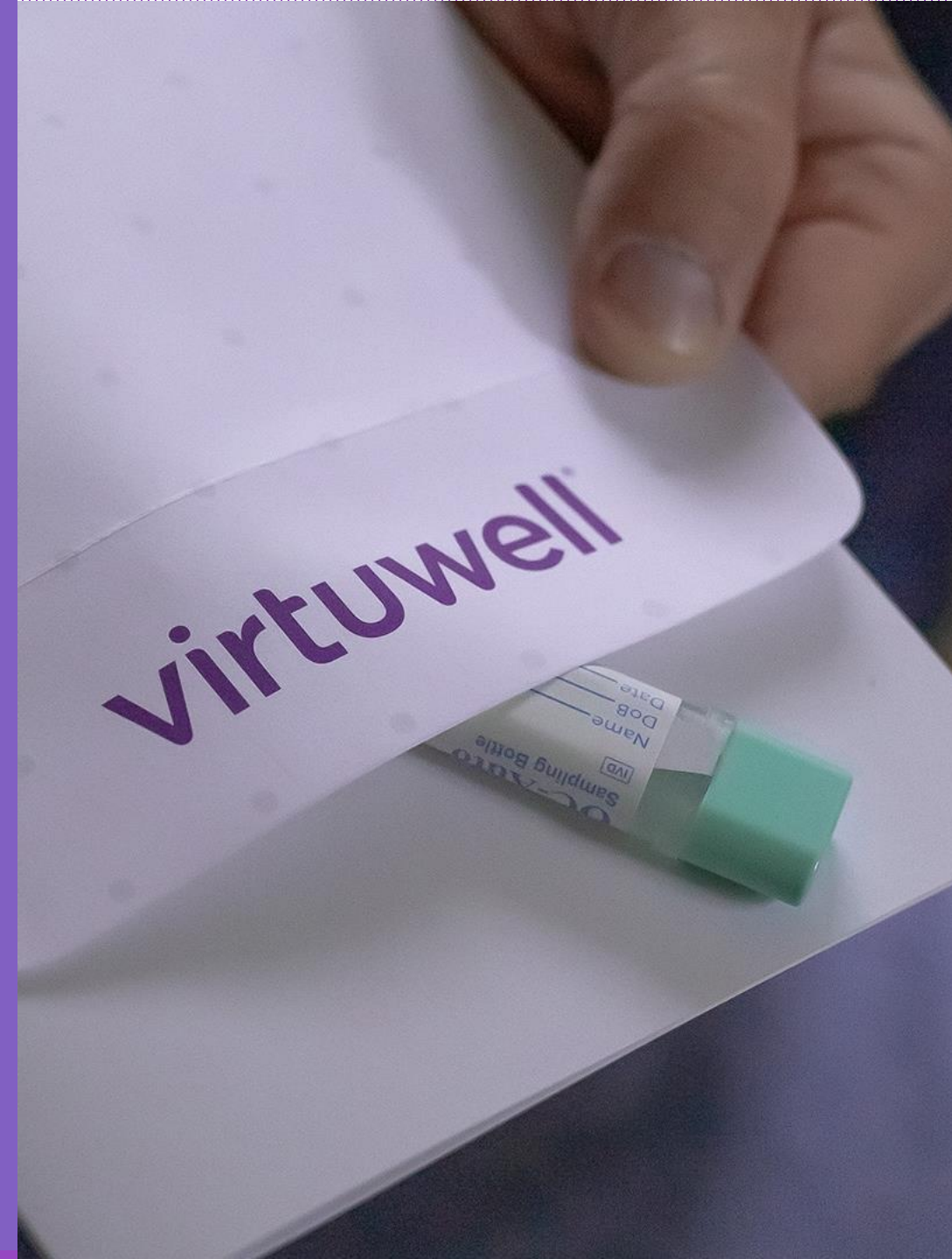


## Other AI Initiatives

**Funneling relevant data to  
electronic medical records**

# At-home kit for colon cancer screening and STI

- Empowering
- Non-invasive
- Evidence-based
- Personalized TP
- Delivered to your home
- Results delivered online



# Outcomes of at-home kit

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## Improved screening rates

Convenience - One step process makes screening easier

## Prevented invasive labs

20 percent no shows in colonoscopy is mainly because of anxiety.

## Savings for both member and plan

150\$ completely covered by Insurance is better than 2500\$





# AI + Diagnosis



Optellum

# Optellum

Clinical trials have shown that this AI system can rule out the harmless cases of lung cancer via scans.

Save time and money.



# Ultramics

Using machine-learning techniques yields highly diagnostic metrics about cardiac function and disease

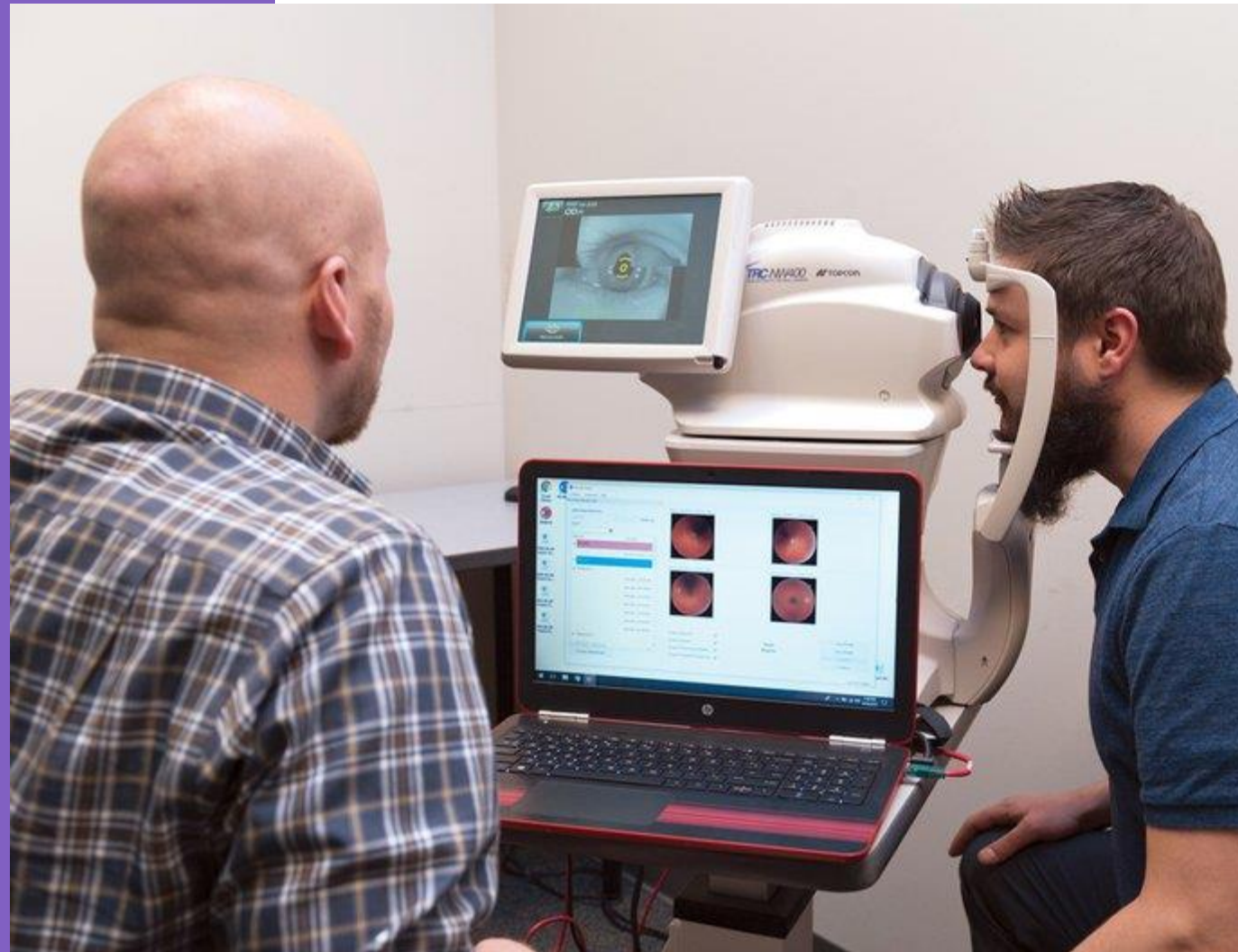
Increase diagnostic accuracy of coronary heart disease from 80% to >94%.



# IDx-DR

Correctly identifying diabetic retinopathy by 87.4% ( that's 8% better than industry standard)

FDA approved 2018





# Smart IOT machines & telehealth



# Kidney analysis at home

Startup Healthy.io claims it's making urine analysis as easy as taking a selfie.

Its first product, Dip.io, uses the traditional urinalysis dipstick to monitor a range of urinary infections.

Computer vision algorithms analyze the test strips under different lighting conditions and camera quality via a smartphone.



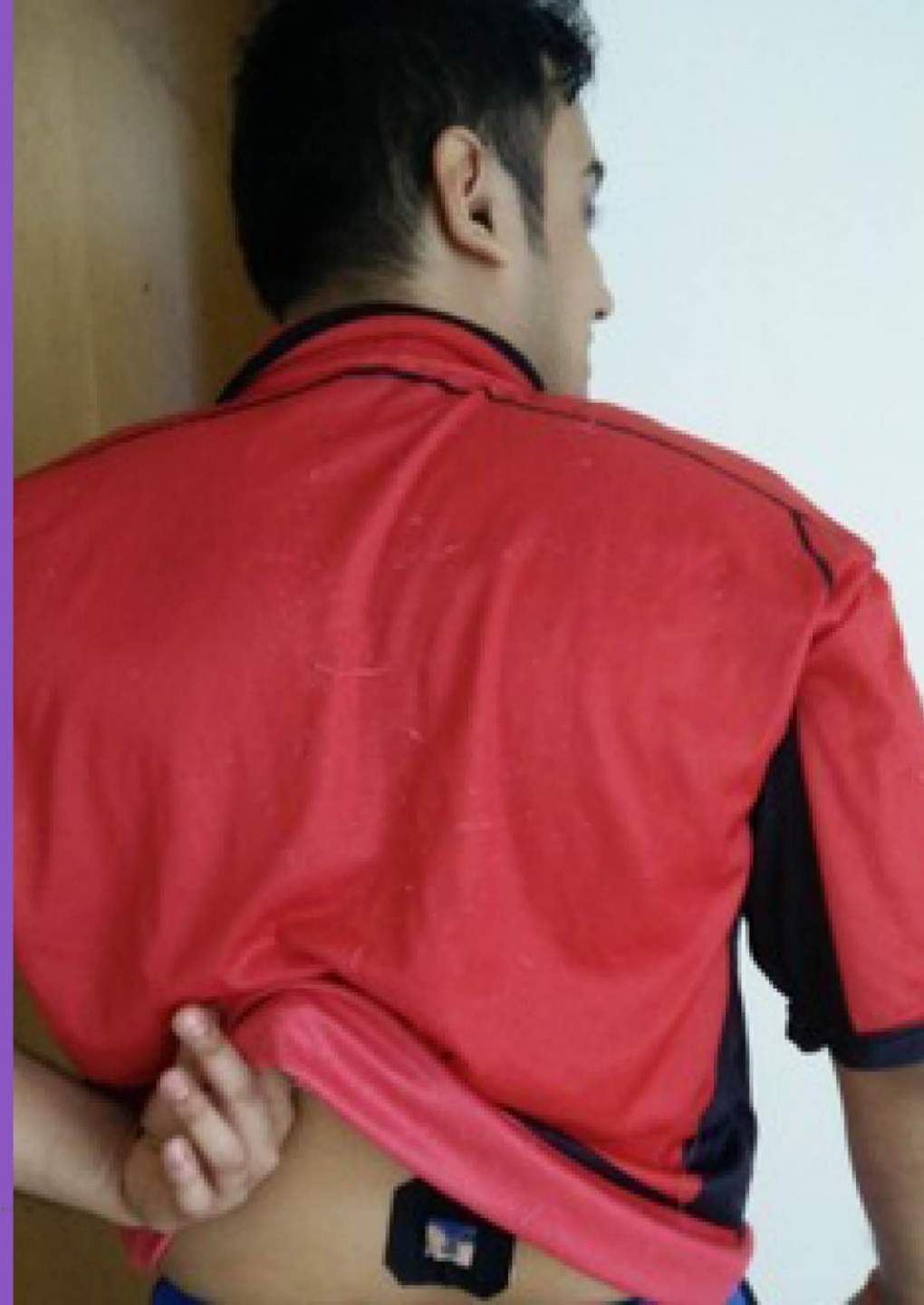
# Detecting CAD through voice recordings

Mayo clinic partnered with Beyond Verbal, that analyzed acoustic features in voice, signs of stress, pleasure, or other emotional states based on tone or pitch in patients with coronary artery disease (CAD).



# Sweat Sensors

"sweat is the new blood," GraphWear is developing wearables that analyze your sweat, a more convenient and cost-effective way to collect critical health data than drawing blood.



# Hearables

With Apple AirPods' new Live Listen feature being just one example, hearables are not just giving real-time access to virtual assistants,

but completely changing the way people with hearing loss can interact with the world.

Wireless hearables are already helping millions around the world through their smartphones, but the coming extended ranges and mesh capabilities will only make hearables better and more helpful.





# Ingestibles

An ingestible sensor is not only less invasive but again less costly and are finding use in both diagnosing disease and monitoring medication's impact on the body.



# Moodables

Head mounted, these mood-altering devices send low-intensity current to our brain to augment and in some cases even replace anti-depressant medications.



# Smart Dispensers

Often sold pre-filled and pre-programmed according to the physician's instructions, dispensers can operate automatically for weeks, even adjusting dosages per the doctor's



# Charting

IoT-enabled devices and dashboards make patient data more accessible, automate redundant tasks, reduce errors, and most importantly, allow doctors to focus on what's most important, their patients.





# Future of Generative AI



Ethical issues

Securing sensitive patient data

Bias and Discrimination

Harmful medical decisions



# Q & A

