The Future of Health in the Age of Digitization, Interoperability & AI



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Hon. Albert Bryan Jr.





Wayne Gretzky


CHW
Johns Hopkins
Johns Hopkins
Johns Hopkins
Johns Hopkins



What innovations in modern society will have the most disruptive impact on healthcare in the next decade?

1800 – Railroad networks – Transcontinental commerce
1920 – Telephone networks – Audio communication at a distance
1930 – Electricity Grid – Agriculture, Industry to the Great Plains
1930 – Radio networks – Audio communication to mass audiences
1940 – TV networks – Visual communication to mass audiences
1950 – Interstate highway - Economic Growth and development

Infrastructure Networks



Broadband

The Disruptive Innovation of 21 Century



Six technologies changing the world!!

Broadband

Apps

AI

Robotics

VR/AR/XR

IoT

All 6 are built on Data

Healthcare Disruption



- Practice of Medicine
- Org. & Delivery of Healthcare
- Patient Experience
- Healthcare Revenue Models

Healthcare Realities

Healthcare is going virtual, moving out of hospitals, becoming “SMART” & automated.



Do we still need Hospitals?

David Payne

June 3, 2016

“ if observation takes place in the community with specialist services accessed digitally and remotely, doesn’t the hospital become more like a university campus, where the growth in online learning now means students rarely, if ever, need to set foot inside a classroom?”





Do Hospitals Still Make Sense?

Jennifer L. Wiler, MD, MBA,

Dec. 20, 2017

"inpatient care is not what the typical consumer needs"

The New York Times

Are Hospitals becoming obsolete?

Ezekiel J Emanuel

Feb 25, 2018

"While they may never completely go away, they will continue to shrink in number and importance. That is inevitable and good. "

Forbes

Healthcare May Eventually Become A Bigger Business For Best Buy Than Selling Electronics

Sept 24, 2019

Health monitoring services for seniors and other digital health initiatives … could generate anywhere between $11 billion and $46 billion.



The New York Times

CVS Health | aetna

CVS Health adds 1st digital health app to its offerings

Sept 24, 2019

- Sleepio, an all-digital insomnia treatment app
- Animated therapist giving behavior modification tx
- First purely digital therapy tool offered by CVS Health
- Chosen because it is backed by several rigorous studies

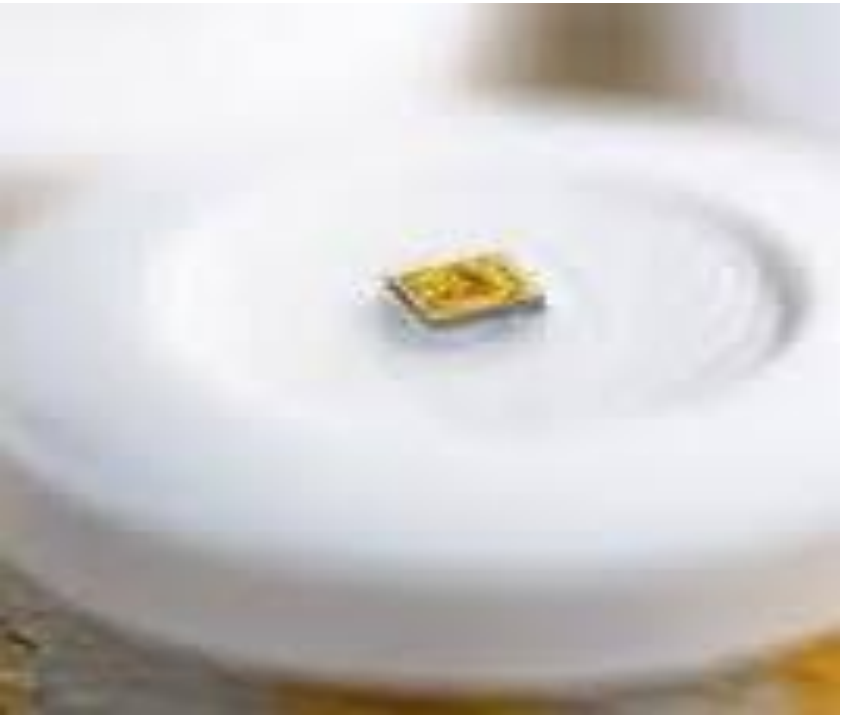


Apple Watch Virtual Clinical Trial

Nov 14, 2019

- ~ 420,000 participants
- Download study app to watch
- High PPV for Afib – few false positives
- 76% of participants f/u on alerts
- No clinic or hospital involved

The NEW ENGLAND JOURNAL of MEDICINE







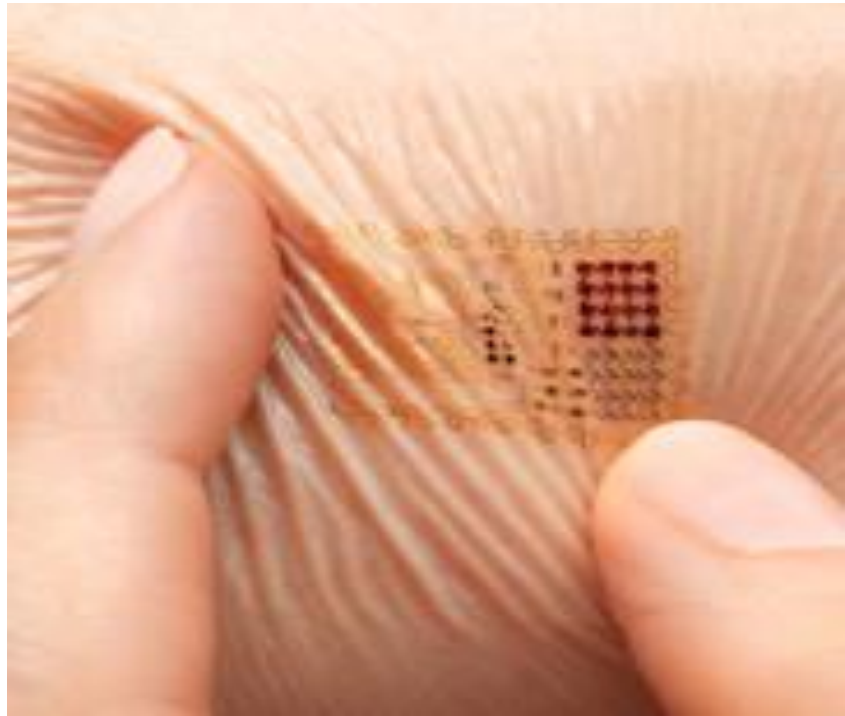


RESTING HEART RATE

76 bpm

TIME IN HEART RATE ZONES















The Future

Use technology, data, AI & broadband to deliver automated & in-person health services anytime, on demand, anywhere the person is located in the community.



Inpatient Care

*

Critically Ill
Complex
Procedures

*

MD driven

5-10%

"Hospital"@ Home
(inpt services @ home)

*

Lower acuity care & Procedures

*

MD driven

10-15%

Smart Care Communities
(Geo.ecosystems of care)

*

Post Acute Care
Facilitate CDSM+

*

NP/ N driven
Midlevel providers
CHW/PN

10-20%

Smart Care

Smart Homecare

- Prev Focused (pri, sec & tert) ecosystems
  - Facilitate independent living
  - Enhance patient and caregiver support
  - Algo/ML/Cognitive Computing driven
  - MD/NP Overseen/developed

Retail Healthcare

- Time & cost efficient care
- Low/med complexity, acute and urgent care

mHealthcare

- Focus: Health Promo/Wellness ecosystems
- Smart Cars, wearables, Apps, Alexa
- Place independent care,

Virtual Care

- Focus: "On Demand" interactions/Care triage

Command Centers

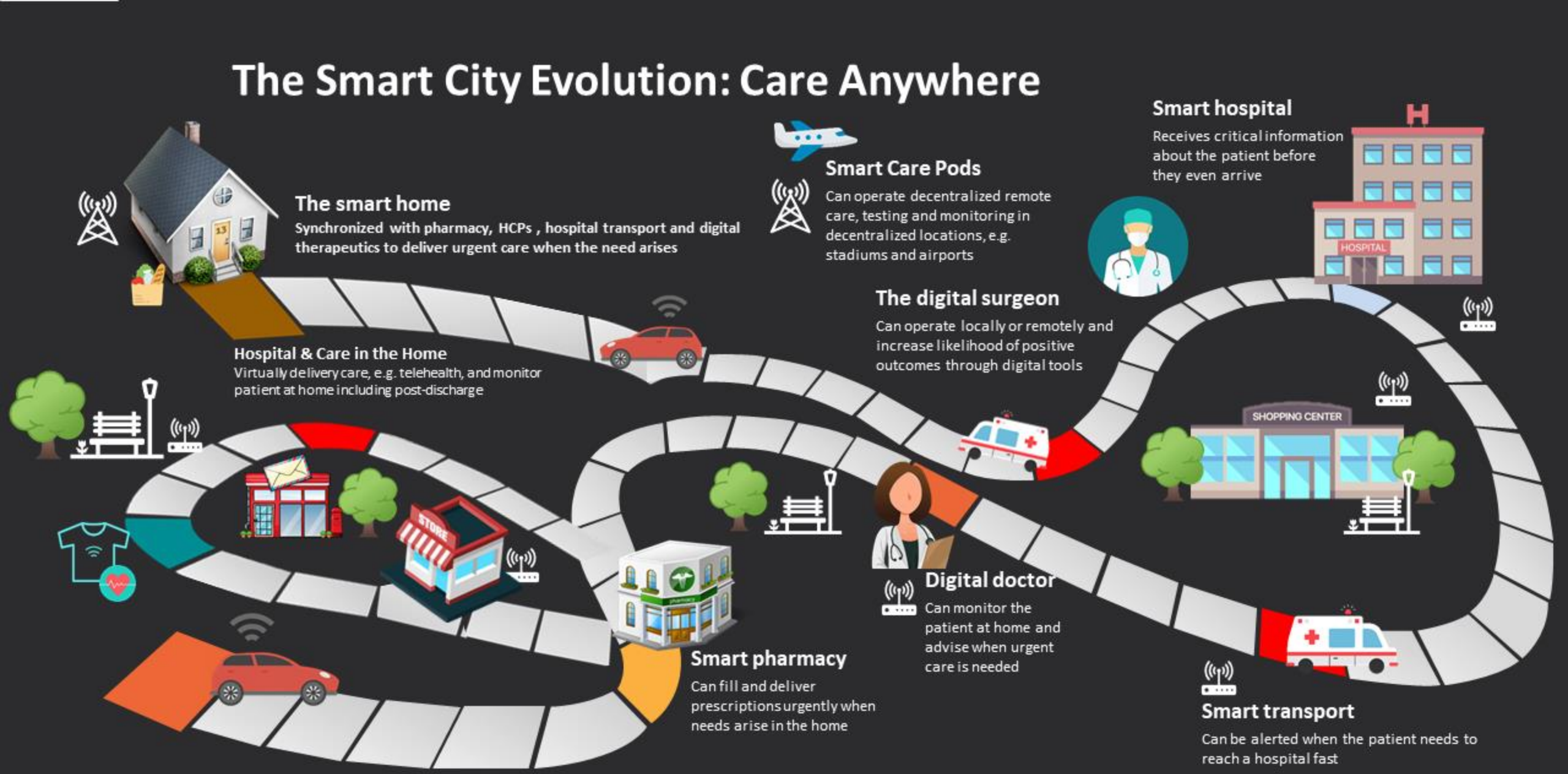
- Health Data Traffic Control

45+%

Future organization of Care in Smart Communities

Gibbons et al HMPI, 2017

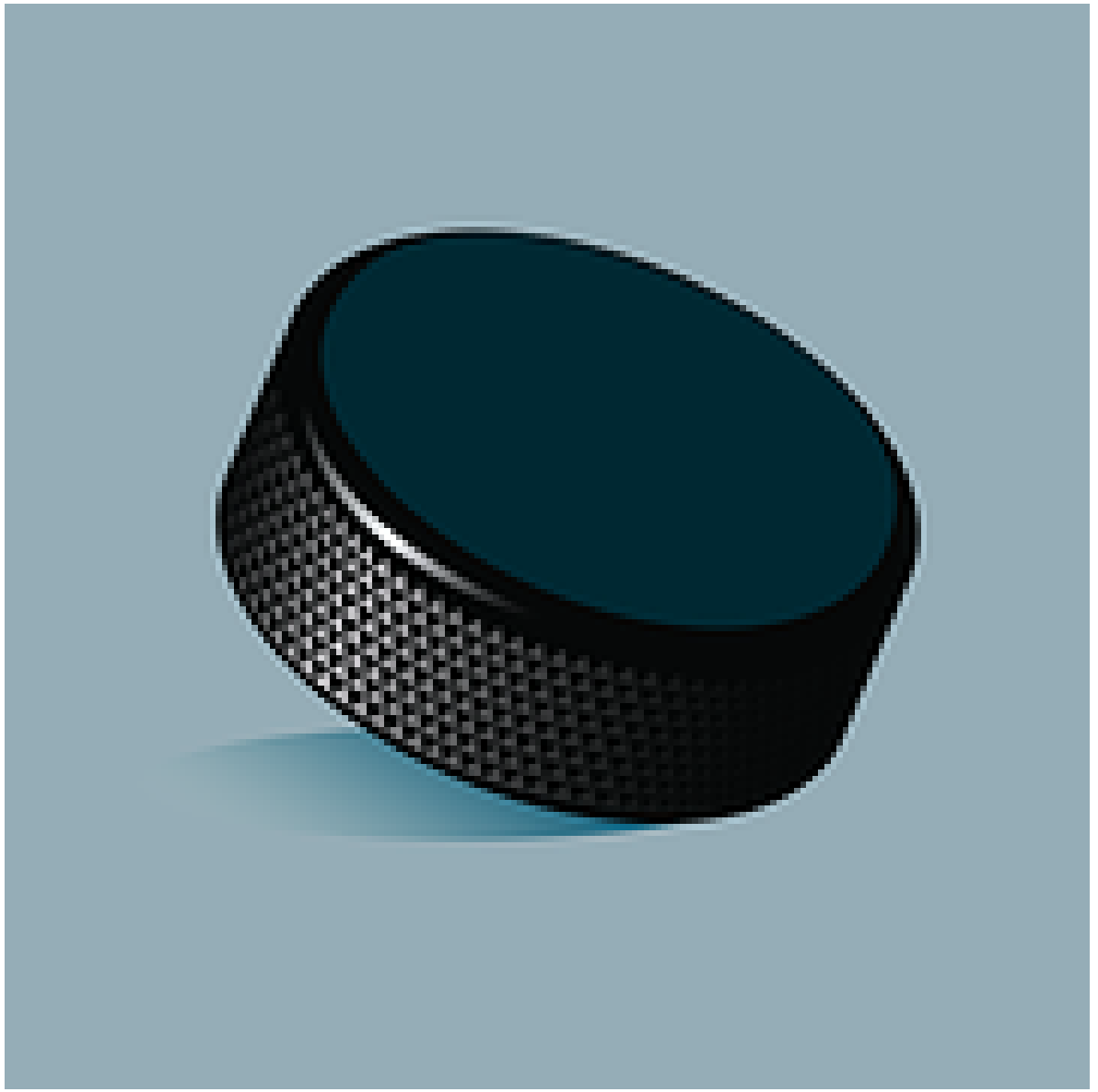
The Smart City Evolution: Care Anywhere



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This is where society (the puck) is going!

This is how you take advantage of (Ride) the wave!



What about Health Equity?

If developed equitably, deployed properly & everyone is connected, no population will be hard to reach, left behind or unable to benefit!!!



AI = Almost Impossible??



- **97%** of all households have a TV
- **96.1%** households below poverty have a TV
- **95%** of households have TV or BB
- **92%** of individuals own a cell phone
- **81%** households below poverty have cell phones



It can eliminate the "Hard to Reach" problem.

What does this mean for Patients?

- Insurance companies will become Health Companies
- Retail stores, pharmacies & post-offices become health centers
- Your TV (and any other screen) will become your doctor's office
- Your smartphone will become a health device
- Consumer electronics, clothes & apps will assist with health management
- Patients will support each other through social media, VR and AR
- Doctor's will treat environments not just patients
- Our medicines will tell us when they need to be taken
- Your car will become your ambulance
- No population will be hard to reach
- Healthcare becomes embedded in everyday life
- **Your Home will become your hospital**



Constant Care System

A new vision of health and care delivery in nonhospital settings to enable healthy living & convenient care, 24/7, at a fraction of the cost.

By connecting everyone to the people, information and supports they need to get healthy and stay well.

This is what data can do!!

Greystone Group



What's left for Hospitals?

Wrong Question!!



What must hospitals become?

Traditional Legacy Care Systems
Air Traffic Control Centers
Fulfillment Centers
Digital SmartCare Delivery Systems

People will still need care.

How, when & where they get it is changing!

Remember?

Woolworth & Woolco
Circuit City
A&P Grocery
Thom McAnn Shoes
Filenes Basement
Tower Records/Virgin Records
Blockbuster Video

**It will happen in the healthcare sector also!*

A Final Word

Innovation is easy. Change is already here. Transformation is coming quickly!

We have the opportunity to create our own future, but if for any reason we don’t, it will be hoisted upon us.


Everything is impossible, until the first person does it!
Thank You!