IN PURSUIT OF PERFECTION

MMCi Thought Leadership
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The Healthcare System Is Broken!

- Lack of communication
  - Between clinicians
  - Between clinicians and patients
  - Between clinicians and administers
- Clinicians and nurses are unhappy
- Patients are unhappy
- Lack of interoperability (end to end)
- Systems are siloed
- Systems are out of date
- Medical errors are still a major cause of death

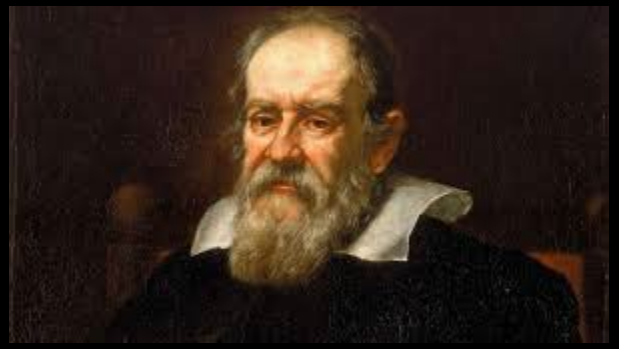
Bumps in the road to change

- We assume the barriers that currently exist are here to stay, and anything new we do must fit within those boundaries.
- We spend much of our time and money doing work-around rather than face the true problem.
- We are not willing to attack the really hard problems.
- We tackle today's problems with tools from yesterday.

More bumps

- We focus on a specific problem rather than looking at that problem within a total environment.
- We start with an assumed solution and attempt to solve the problem within the capabilities of whatever solution we have decided to use.
- We never look to see if someone else has solved the problem or are at least currently addressing it.
- You can’t get the perfect system by fixing today’s system.

What is the Galileo Project?



- The Galileo Project is to define the PERFECT Health System.
  - Health Care is a sub-component.
- The goal is not to address perceived problems of today, but to step into the future.
- Have held two “thinking aloud” Zoom sessions involving over 35 clinicians in 2020.
- Only constraints
  - Can’t say you can’t do that.
  - Can’t say that’s impossible.
- Next step – affiliated staff

The first step toward perfect

- Without patients, we would not need a health care system.
- Therefore, patients should be the center piece of the perfect system.
- We must approach every function from that perspective.
- What should we do to provide the most value to the patient.

- **PATIENT FIRST**

Perfect - for the patient

- There must be equity in health and health care.
- Access to care – whenever and wherever it is needed
- Service rendered cannot be influenced by what the insurance will pay but what is needed
- The appropriate medicine or treatment must be available to every person
- Health literacy is essential, therefore taught

More for the patient

- Patient navigation of the system should be enabled.
- Bring clinicians to patient, not patient to clinician.
- Mental Health should be an equal service.
- Virtual visits
- Home hospitalization whenever possible
- Once health system accepts a patient, it should accept full responsibility for that person

Digital Health demands …

- Every patient should have access to the Internet.
- Every patient should have a device capable of digital communication and interaction.
  - Smart phone
  - iPad
  - Computer
- Patient should have access to all their health data.

Community

- The community engages in the health system.
- The community must accept equal responsibility for the patient with the health system.
- This responsibility means issues of transportation, access to health food, access to social events, access to parks for exercise, and provide person safety and health and education.

The Human Metric Project

- If we knew everything about a person, could we do a more optimal job of guiding an individual to a high quality and a longest possible length of life? That is the basis of the human metric project.
- But this project is more than that. It identifies the types of data we must collect – clinical, behavioral, social determinants of health, economic, geospatial, genomic, and environment.
- It addresses first issues of common and consistent data elements, including ta common language. It addresses how data is collected. It addresses how data is used. It addresses various packaging of data.

The Basic Requirements

- Data Element – atomic level terms with rich attributes
- Data models – building complex structures from data elements such as blood pressure, heart murmurs
- Data sets – grouping of data elements for specific purposes
  - Phenotypes
  - Risk models
  - Knowledge models
  - Registries
  - Care plans

What is a perfect health system for clinicians?

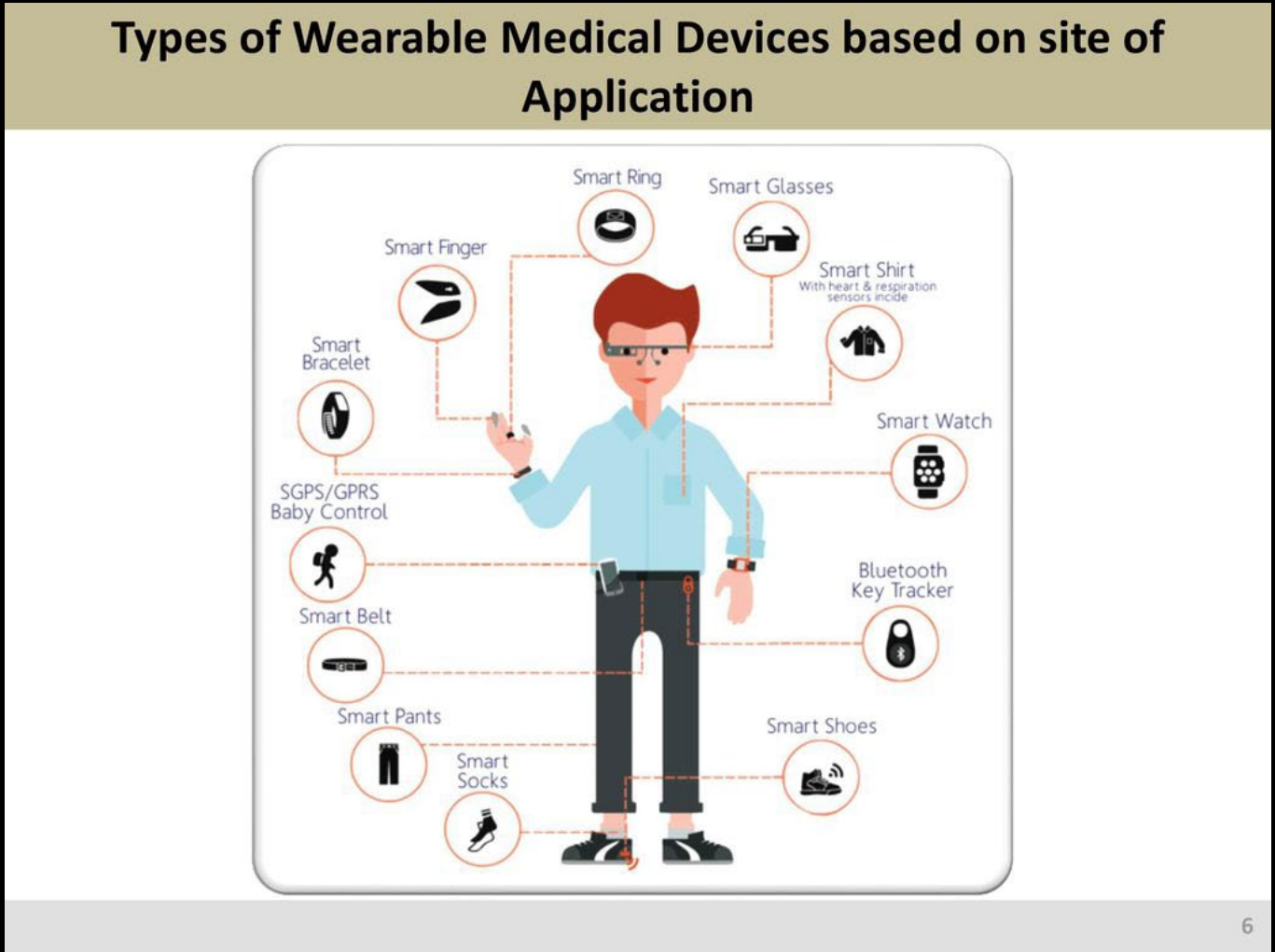
- Access to any and all data about a patient.
- Longitudinal presentation of patient data, aggregated across all sources
- High quality and trustable data available when and where needed.
- Presentation of data as the clinician wants to see it.
- We all speak the same language – a seamless world of data.
- New forms of data capture – much data capture is automated.
- Use of AI to reduce finding the right data among Big Data.

Mobile Devices

- The ubiquity of smart phones has changed communications between and among groups. A virtual visit will replace an office visit.
- Wearable sensors will give real time data about the person resulting in early interventions.
- Smart phone apps can be used for data collection by text, check boxes, and photographs with sufficient resolution to make clinical diagnoses in many areas such as dermatology.
- Smart phones can be used for education, behavior modification, and more.

Brick and mortar institutions will be replaced by virtual healthcare systems.

Wearable Sensors



- Real time data, all the time
- Sense instant change in condition
- Earlier intervention
- Appropriate intervention

Data Sharing becomes the norm

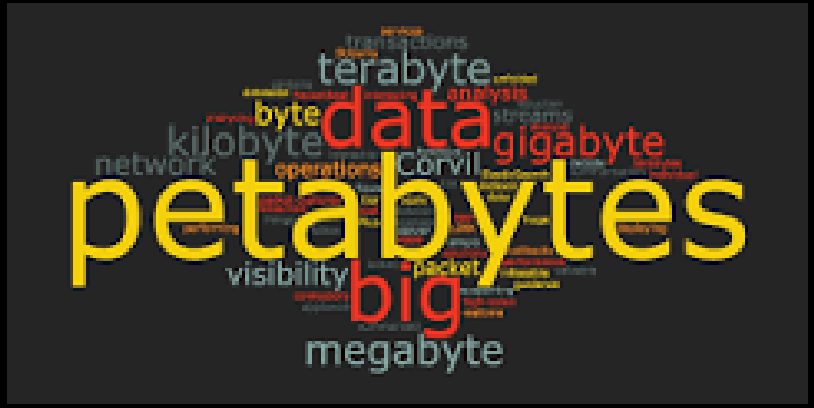
- Organizations unable to share patient data will find it very difficult to improve quality and avoid financial penalties under value-based care.
- Unique and universal patient identity becomes mandatory for error-free aggregation of data.
- Success depends on interoperability and that requires standards.

The New EHR

- Supports multiple use of data rather than secondary use.
- All data related to the patient is stored in a single virtual container labeled data box.
- Data box performs REST services – Create, read, update, delete
- Data storage is independent of data use.
- Use functionality is performed independently by functional apps.
  - Permits keeping up with new technology and new requirements
  - Allows specialization of data presentation and use
  - Enables competitive market
- Supports query based interactions: pull over push

Big Data and Its Impact

- Big Data is a consequence of more things that create data and more initiatives to merge data.
- For a single patient, we are talking about petabytes of data; for a aggregated database of multiple patients, we are talking about exabytes or more.
- Computable knowledge is an award of Big Data.
- Requires new and innovative methods of analyses to create new knowledge
- NoSQL databases making their appearances to provide higher speed necessary for analyses.
  - Hadoop, mongoDB, others



In 2017, we created 44 zettabytes of new data daily.

Decision Making

- The amount of data and the kinds of data influencing health and health care has far exceeded the ability of the human brain to make fact based decisions.
- Therefore, most health care decisions will be made by computers and executed directly without human engagement.

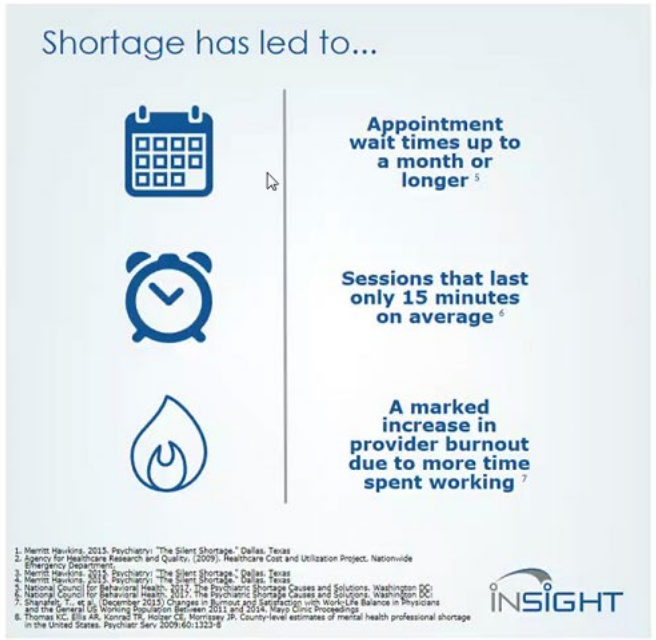
Perfect requires

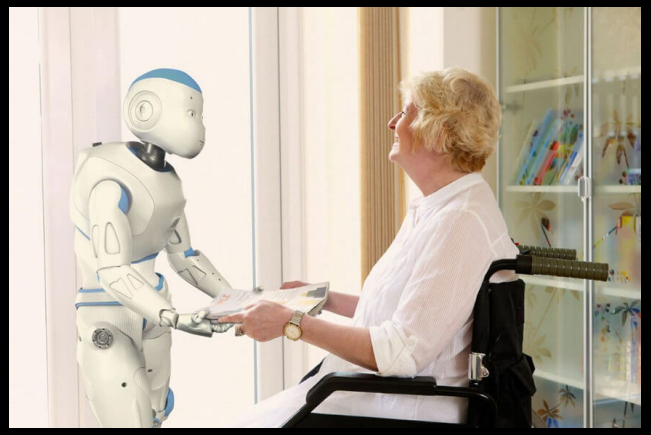
- Universal Person Identifier
- Unique and atomic data elements creating a common data model
- Consistency in how data collected, how represented
- Increased data quality and trust
- Quality checked with data entry
- Document identification
- Common templates
- Common transport

The Power of AI

- We can teach computers to do specific things. We are a long way from Artificial General Intelligence.
- Computers learn from environment. Needs sensors to read environment.
- What we can gain through AI is specific narrow tasks which includes decision making, surgery, or like tasks.
- Challenge is the John Henry syndrome.

Psychiatry shortage escalates as mental health needs grow





So, what can we expect?

- "Soon, it will be hard to imagine a doctor's visit, or a hospital stay that doesn't incorporate AI in numerous ways. With healthy clinical evidence, we'll see AI become more mainstream in various clinical settings, creating a positive feedback loop of more evidence-based research and use in the field. In addition, AI and ambient sensing technology will help re-humanize medicine by allowing doctors to focus less on paperwork and administrative functions, and more on patient care.

Pete Durlach, senior vice president for healthcare strategy and new business development at Nuance.

More perspectives

- “Healthcare AI technology is currently in the testing phase and organizations will continue to push into the broad adoption phase,” he said. “The possibilities are endless; the key is that when done successfully, it won’t even feel like AI. AI will simply be another tool in our toolbox to help payers and providers.”
- AI-powered practice management assistance: patient acquisition, efficient intake and scheduling, and efficient billing. AI will be able to identify patterns between a practice management activity and the end action and predict behavior moving forward.
- “The simplest pattern could be multiple missed appointments, but that is not a challenge to detect with classical systems,” he said. “AI can combine all of the data inclusive of missed appointments, lead time for scheduling an appointment, time-to-respond to an appointment confirmation, even time of the year, perhaps. Disengagement is seasonal or based on the time of day. The power of AI is the ability to take an ever-increasing set of variables and produce a predictive model with more powerful predictive power than what could be explicitly coded.”

Tim Costantino, AdvancedMD

Perfect and the future

- Society should demand the perfect system.
- Can we make the changes necessary to enable the perfect system?
- How much will the transition cost?
- Should it be global?
- Who will be the leaders?