

Sharing Some Bold Thoughts

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Quotes

- *A bold act requires a high degree of confidence.* Robert Greene.
- *Boldness is ever blind, for it sees not dangers and inconveniences, whence it is bad in council though good in execution.* Francis Bacon
- *I love those who yearn for the impossible.* Johann Wolfgang von Goethe
- *Develop the strength to do bold things, not the strength to suffer.* Machiavelli
- *Be bold in pursuing what others believe is unrealistic because this will achieve more than being bland and unimaginative.* Janna Cachola
- *A bold attempt is half success.* Danish proverb
- *Whatever you dream of, be bold and pursue it.* Lailah Gifty Akita



The value of interoperability

- Can you imagine a world in which all health systems use the same data elements and collect the same data for the same purposes and have agreements in place that permit sharing and access to data for research while protecting patient privacy?



Mirror, Mirror, 2021 Reflecting Poorly

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
Overall	3	10	8	5	2	6	1	7	9	4	11
Access to care	8	9	7	3	1	5	2	8	10	4	11
Care process	6	4	10	9	3	1	8	11	7	5	2
Admin Efficiency	2	7	6	9	8	3	1	5	10	4	11
Equity	1	10	7	2	5	9	8	6	3	4	11
Health care outcomes	1	10	6	7	4	8	2	5	3	9	11

Source: Eric C. Schneider et al., *Mirror, Mirror 2021 — Reflecting Poorly: Health Care in the U.S. Compared to* (Commonwealth Fund, Aug. 2021). <https://doi.org/10.26099/01DV-H208>



Barriers to resolving these problems

- A unique person identifier
 - Enabling tracking patients across multiple sites
- Fully specified data elements used globally
- New design of EHR system
- Greater use of APIs
- Greater use of Clinical Decision Support
- Affordable and equitable care
- Sharable data across sites



Galileo Project

- Who should define the perfect health system?
 - Patients – but which patients?
 - Community – but who in community?
 - Clinical Professionals including affiliated professionals
 - Payors
 - Government including regulators



Galileo Brainstorming Groups

- Physicians, PAs, NPs
- Allied Health Professionals
- Nurses
- Older people
- Race minorities (together or separate)
- Disparities
- LGBTQ+
- Technical (IT and data scientists)
- Medical Students
- Teenagers
- Local public health groups
- Mothers with children, 5 yo
- Pregnant women
- Nursing home residents
- Who else?

A Perfect World



- Common set of data elements with rich attributes including a data numeric identifier
- Embedded knowledge within data elements
- Standardize data collection – methods, data elements, and contents
- Establish trust, data quality, consistency
- Full provenance – know how, when and where data collected



Data elements value enhanced



- Create structured sets of data elements into larger groupings
 - Simple cases such as blood pressure, heart murmurs
 - More complex sets such as echocardiogram, cardiopulmonary exercise testing
 - Structures to capture complex phenomena yet are easy to work with
 - Functional sets such as well baby work-up, pediatric growth, kidney function, maternal health
 - Phenotypes – diagnostic, treatment, monitoring
 - Tracking Covid patients (and others) across time and space
 - Registries
 - Computable knowledge built into the data element
 - Any defined purpose for a standardized grouping of data elements

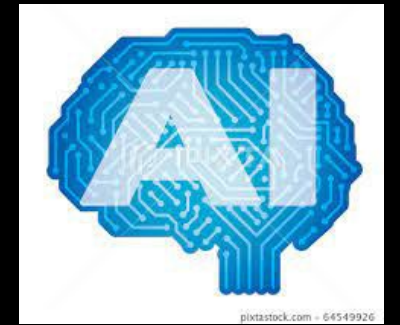


Out with the old, in with the new EHR

- 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



Artificial Intelligence



- Knowledge exceeds the ability of humans to use available facts to make decisions
- Computers are becoming able to learn from data and knowledge that is available on the internet and other sources. Computers are becoming self-aware. Create new knowledge.
- Driver for new groups entering the HIT marketplace: Google, Apple, Microsoft, Amazon, others
- When will computers become smarter than humans?
- What will be the role of computers vs humans?



Artificial Intelligence at Duke



- Researchers at Duke use the tools of artificial intelligence to assist with various important societal problems, including healthcare, antibiotic and cancer resistance, criminal justice, detecting fake news, allocation of public resources to those who need them, environmental sustainability, energy reliability, and political districting. For many of these applications, it is essential that the system satisfy certain interpretability, transparency, morality and/or fairness conditions.

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The future is yours. Boldly tackle the challenges to make it perfect.

Thank You!

