Healthcare Delivery: The need for Standards & Precompetitive Collaboration

Lessons Learned from History and Other Industries

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From roses to rockets; From cars to cancer



EEE







Primary Research Questions

CHILDREN'S ONCOLOGY

GROUP

- **1. How to integrate diverse systems for better performance?** *Or how do you put the pieces of a system together?*
 - 2. How to transfer lessons learned between domains? Or, what can we learn, both good & bad, from others?



Honey

DAIMLERCHRYSLER

OAK RIDGE NATIONAL LABORATORY

Note: *<u>Everyone</u>* considers themselves "<u>special</u>", where normal rules don't apply

mdeon™





ermore National Laboratory

Sparking Innovation: one place to start

- Creating Standards
 - Why they are needed
 - What happens without them
 - What happens with them
 - One way to create them
 - Precompetitive consortiums





SEE SE STAT

Does this sound familiar?

Half Full by Maria Scrivan





Another example of lack of standards

Forms required to be completed to do **Grand Rounds at one cancer center**

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College of Medicine Continuing Medical Education Planning Form for Serial Activities

(This form and the faculty disclosure form must be completed for EACH serial presentatio and submitted to the CME Office <u>PRIOR</u> to the activity)

Activity Title: Grand Rounds

Presentation Title: Date of Presentation: December 5, 2008

Speaker: David Dilts, PhD, MBA Academic/Professional Title: Professor and co-Director of the Center for Management Research in Healthcare, Owen Graduate School of Management; and Professor and Director, Engineering Management Program, School of Engineering, Vanderbilt University

Address: 401 21" Ave S, Nashville, TN Office Phone:

Fax Topic(s) to be Addressed: Time and steps to open oncology clinical trials

Learner Objectives: As a result of participation in this CME activity, physicians will be able to: 1. Understand the time required to open an oncology clinical trial

2. Understand the steps & processes required to open an oncology clinical trial 3.Understand the need to dramatically change the system before trials are no longer conduced at US cancer

centers 4. Faculty Disclosure Form Completed: (Faculty disclosure form must be submitted to the CME Office for each activity regardless of commercial support) XII Yes I No

How will the audience be informed of any significant financial interest or other relationship the speaker may have with a commercial company? One of the following methods MUST be checked. "Not applicable" is not an

Verbal Disclosure (you must complete a verbal disclosure form and forward documentation to us following the present Written Material XX Shide Other: (copies of written mustic), their or the mathed of disclosure and the forwards to us following the presentation)

Has commercial support been provided for this activity? \Box Yes XXX No

Please fax completed PLANNING FORM to Carla Harbour, CMP @ (813) 745-3874

E-mail Address: david.dilts@vanderbilt.edu Name: David M. Dilts Emergency Contact

Travel and AV Information Form

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NOTE: Please arrive one hour prior to the start of the conference to set up your presentation. Bring a back-up copy of your presentation. PLEASE FAX THIS FORM TO: xxx, No Later Than November 7, 2008

For Questions, Please Call: yyy



- COLORIANS

Another example of lack of standards



In filling out <u>exactly</u> the same thing 3 times, only in slightly different ways,

- 1. How much effort is wasted?
- 2. What are the chances of making a mistake?
- 3. How much trust do you have in the system?







Baltimore, MD, 1904

What happens without Standards

"The need for standards was dramatized in 1904, when more than 1,500 buildings burned down in Baltimore, MD, because of a lack of standard fire-hose couplings. When firefighters from Washington and as far away as New York arrived to help douse the fire, few of their hoses fit the hydrants. NBS had collected more than 600 sizes and variations in fire-hose couplings in a previous investigation..."

What happens without Standards Airbus A380



300 miles of wire and some 40,300 connectors on each plane didn't fit together



French rail company order 2,000 trains too wide for platforms

France's national rail operator admits it has already spent €50 million on 'shaving' 1,300 platforms that are too narrow to fit new trains



The mistake was made as part of a €15 billion makeover of France's Regional Express Trains Photo: Alamy



By Henry Samuel, Paris 10:37AM BST 21 May 2014

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It is a minor miscalculation, but one that will cost the French taxpayer a fortune.

France's national rail operator SNCF - which runs its prestigious TGV fast trains - has sparked hilarity, anger and ridicule after building a new generation of regional trains that are too wide for 1,300 stations, meaning platforms will have to be "shaved" to stop them getting stuck.

France

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What happens without standards: i.e., the interoperability gap

- Lack of interoperability in health IT in the U.S. costs the delivery system \$30 billion/yr.
- "The current lack of interoperability can compromise patient safety, undermine care quality and outcomes, contribute to clinician fatigue and waste billions of dollars a year."
 – The Future of Health Care May 8, 2018



SEE EEEEE

What happens with standards

1. Reduce user pain









2. Increase effectiveness





What happens with standards #3 Increase Safety



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What happens with standards #4 Expand Options





Why do we have hundreds of TV channels shown on flat screen TVs using digital signals?







What happens with standards #5: Increase Capacity

- Increase effective capacity by reducing unnecessary variation
 - Ashby's Law of Requisite Variety
 - "Only variety destroys variety"
 - Or "the variety in the control system must be equal to or larger than the variety of the perturbations in order to achieve control"
 - So, if your underlying system has high variety, you must have lots of ways to deal with it, which means it takes additional resources just to manage the variety.



ELECTION CONTRACTOR

The New York Times



The Business of Health Care Depends on Exploiting Doctors and Nurses



One resource seems infinite and free: the professionalism of caregivers.

By Danielle Ofri

Dr. Ofri practices at Bellevue Hospital in New York.

June 8, 2019

By far the biggest culprit of the mushrooming workload is the electronic medical record, or E.M.R. It has burrowed its tentacles into every aspect of the health care system.



Athena-UC System Workflow Study, 2013



Workflow Finding:

- Process for patient flow is fairly consistent across the 4 UC Sites
 BUT
- Data elements are captured and utilized inconsistently across the 4 UC Sites at multiple points in the workflow

duplication • missing • uncertain responsibility • mixed sources/locations



What did many EMRs do:

Take a mess of paper

- And put them into a mess of digital files
- How often have you heard:
 - "It's on the j-drive"
 - "It's in the EMR...somewhere"



JEBEBE

• Remember Ashby Law



"We can lick gravity, but sometimes the paperwork is overwhelming."

– Wernher von Braun

July 10, 1958 Chicago Sun Times



818



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Athena Study, 2013 Overarching Pain Points



Cross UC Collaborations

dilts +

348 pain points codes into 8 overarching pain point categories Only site-specific pain points presented on this chart

Process-Specific Pain Points

			Sit	te					Si	.e	
Process	Pain Point Category (group)	UC Davis	UC Irvine	UCSD	UCSF	Process	Pain Point Category (group)	UC Davis	UC Irvine	UCSD	UCSF
1. Screening	Difficult to Find Information	2		9	2	4. Registry	Difficult to Find Information		2	2	0
	Burdensome Process & Deficiencies	2	0	0	2		EMR Interface & Functionality	3	2	2	0
2. Diagnosis & Treatment	Difficult to Find Information	1	3	4	4		Collaboration among groups	0	2	0	1
Planning	EMR Interface & Functionality	4	4	3	5		Variability of Data Coding	1			1
	, Burdensome Process & Deficiencies	4	2	4	0	Overall	Difficult to Find Information	4	5	8	8
	Structured Data & Synoptic						EMR Interface & Functionality	4	3	2	8
	Reporting	6		U	1		Burdensome Process &		4	5	2
	Variability of Data Coding	3		5	3		Collaboration among groups	4	0	0	4
	Visibility of Clinical Trials	2		2	0		Structured Data & Supertie		•		
						-	Reporting		1	4	3
3. Treatment	Difficult to Find Information	1		3	6		Cross UC Collaborations		2		1
	EMR Interface & Functionality	2	4	1	5						
	Burdensome Process & Deficiencies	7	4	3	5						
	Collaboration among groups	3		2	7						



1. 19

Role-Specific Pain Points





A Solution: Building Trust into the System

- Who has ownership of what data element?
- What data elements should be captured?
- When should the data be capture?





SECTOR

A different way: "Trust" via standards





Again, remember Ashby's Law

So, how to set standards?

Alone

- COLORADO

- very, very time consuming and expensive
- And normally fails
- Together: a precompetitive consortium
 - It is much better to work & learn together
 - Example: LHC





LHC: "The largest scientific instrument ever built"



"You don't get a working cyclotron by funding a thousand R01s" – Joe Gray



<u>Jegggggg</u>

Some things to consider about Consortiums

- Scale of the problem being addressed
 - Focusing on the right problem, at the right time
- Focus on the overall goal
 - While achieving proximal objectives
- Direction Setting
 - Road mapping
- Key Membership
- Decision Making



SEE SEE

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High Variance = High Uncertainty = High Dissatisfaction Maister *The Psychology of Waiting Lines*





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Cooperative Group Processing Activities



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Process Flows for Designing a Phase III Cooperative Group Trial

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Process Flows for Opening a Phase III Cooperative Group Trial

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Time for Opening a Phase III Cooperative Group Trial



Total Median Time from idea to opening~920 days (2.5 years) Range: 456 – 2440 days (1.25 - 6.7 yrs)

* Depending upon site, based on the Phase III trials studied



Does time matter?



•All phase III studies activated and closed to accrual between 1/2000 – 7/2006 •Color Code:

- red : studies taking greater than the median time to open
- blue: studies taking less than the median time to open
- gray: studies closed due to reasons other than poor accrual

Some things to consider about Consortiums

- Scale of the problem being addressed
 - Focusing on the right problem
- Focus on the overall goal
 - While achieving proximal objectives
- Direction Setting
 - Road mapping
- Key Membership
- Decision Making

Proximate Objectives: Use OKR

- Objective and Key Results
 - Objective: what you want to happen soon
 - Key Results: what you need to measure along the way
 - Both: are quantitative, with time lines
 - Example:
 - O: Slash time to find current, accurate patient data by 90% within three years
 - KR: Use checklists for 50% existing information by next year, 75% by the year after
 - KR: Put xx data in a consistent spot in the EMR within two years

Some things to consider about Consortiums

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 - While achieving proximal objectives
- Direction Setting
 - Road mapping (a.k.a., pathways)
- Key Membership
- Decision Making

Translational Science Pathways

Pathways published in Clinical Cancer Research 2008; 14: 5663-5713

Generic Pathway

JEEEEE

- 1. Determine the goal
- 2. Determine the steps to get there
- 3. Design the path to achieving the goal
- 4. Map existing efforts on the path
- 5. Fill holes, eliminate unnecessary duplication
- 6. Measure success for <u>all</u> by goal achievement

Immune Response Modifier Pathway

OKR can be linked to a Roadmap

INTEGRATED MANUFACTURING TECHNOLOGY ROADMAPPING INITIATIVE

Roadmap for Information Systems Nugget 1 – Information-Driven Seamless Enterprise

- CONTRACTOR

Note: Referenced Sections of the respective IMTR Roadmap documents are indicated in parentheses

One thing you can do with a roadmap: Gap Analysis

A comparison of government-sponsored research projects versus industry-stated goals in research

Some things to consider about Consortiums

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Key Membership: YOU

- Scientific Thought Leaders
- Critical "Product" Leaders
 - e.g., Pharma, Biomarker, etc.
- Technology Experts
- Regulatory Leaders
- Funders
- Start Small with focus,
 - Then use the bandwagon effect

A guiding coalition

SEE SEE

Some things to consider about Consortiums

- Scale of the problem being addressed
 - Focusing on the right problem
- Focus on the overall goal
 - While achieving proximal objectives
- Direction Setting
- Key Membership
- Decision Making
 - Managing scope creep
 - Shared Destiny Model

Managing Scope Creep

"A 'No' uttered from deepest conviction is better and greater than a 'Yes' merely uttered to please, or what is worse, to avoid trouble."

--- Mahatma Gandhi

Shared Destiny Model

- We are in this together
 - e.g., difference between a team and a committee
- One critical, important fact about healthcare delivery
 - It is not all about the money, it is about the mission
 - But "first do no harm to my RVUs!"

SIG SIG STA

So,

- Figure out where to set standards
- Create a pre-competitive consortium
 - Scale of the problem being addressed
 - Focusing on the right problem
 - Focus on the overall goal
 - While achieving proximal objectives
 - Direction Setting
 - Road mapping
 - Key Membership
 - Decision Making
- And, finally two important implementation points...

EEEEE

Don't fall into the **Knowing-Doing Gap**

- You know what to do, you just don't do it
- One reason for the knowing-doing gap is that people confuse *talking* about something with *taking action*.
- So what actions should be done today?

Finally,

"Unless a decision has 'degenerated into work' it is not a decision; it is at best a good intention."

-- Peter Drucker "The Effective Executive", p. 114

- CONTRACTOR

Thank you

How to Read the Process Map

One way to build "trust": Ownership

 Railroads opened up novel distribution methods, forced novel integration methods, and presented unique business issues

A SECORE

The Pre-railroad Environment

- Pre-railroad travel was extremely inefficient:
 - Potholes were so large in the Great North Road in England in the 18th century that men and horses are known to have drowned in them
 - It took Andrew Jackson a *month* to travel from Nashville to Washington D.C. in 1829
 - To ship a ton of goods by boat 400 miles could easily quadruple the price

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The Railroads

Began significant inroads in the 1840's In 1860, to travel from Nashville to D.C. was reduced to 3 days • 2/3rd of the issues sold in the NYSE in the **1850's were Railroad stocks** Formed by entrepreneurs doing city-to-city connections i.e., only point-to-point, no real infrastructure - At every point, freight had to be off-loaded & reloaded on to different rail cars

But Where Was the Money Made?

• By Infrastructure Consolidators

- Entrepreneurs were good at starting railroads but not running them
 - In the depression of 1880-90's, 2/3rd of railroads went into receivership
- Cornelius (Commodore) Vanderbilt never built a railroad, he was an infrastructure consolidator
 - Created the only single line from NYC to Chicago, thus no need to off-load & "interoperable
 - He died the richest self-made man in the world

EBBBB

So, Use Standards

- Use standard interface points
 - a.k.a., breakpoints
 - Or key linkage data points
 - Or at major pain points

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