

A Presentation to the AMA House of Delegates

Ray Fabius MD, DFACPE November 2015

Have no fear:
Big Data Will
Change the
Practice of
Medicine in Many
Positive Ways!



SUNDAY, NOVEMBER 15, 2015 – 1 - 3 P.M. AMA INTERIM MEETING ATLANTA, GA

BIG DATA: PANACEA OR PANDORA'S BOX?



An explosion of data regarding healthcare has been collecting in our office charts, in hospital records, on computers, and in the cloud. What does that mean to the future practice of healthcare? Will it help us make clinical decisions, or get in our way with legal, ethical, and financial challenges? Listen to how it is shaping up and being tried in some practices and learn about possible changes in the future of practice of medicine.

The FORUM is offering a program to stimulate discussion and give you tools to answer these questions.

THE FORUM FOR MEDICAL AFFAIRS

What is Big Data? Exactly what is the Precision Medicine Initiative? What are potential barriers to its promise?

D J Patil, PhD US Chief Data Scientist White House Office of Science & Technology

Where is it Leading Us? Data security, ease of use and analytics – helpful or obstacle to patient care?

Ching-Yung Lin, PhD Adjunct Professor, Department of Electrical Engineering & Computer Science, Columbia University

Can it Help Me Take
Better Care of My
Patients?
How can the practicing
physician use Big Data to
enhance patient care?

Raymond J. Fabius, MD Ab₃Health, LLC, Co-founder, Health NEXT

The FORUM for Medical Affairs

4307 MacCorkle Avenue, SE Charleston, WV 25364

www.osmapandtheforum.com





RAY FABIUS MD Honored to be With You Today

- Over 25 years of medical management experience with Thomson Reuters, GE, Walgreens, Aetna, Cigna and others
- Served as front line primary care physician for over a decade
- Published articles, book chapters and three books
- Adjunct Faculty Harvard, Jefferson, ACOEM
- Distinguished Fellow & Faculty Member of American Association of Physician Leadership
- Co-founder of HealthNEXT
 - Emerging Leader in building organizational cultures of health



















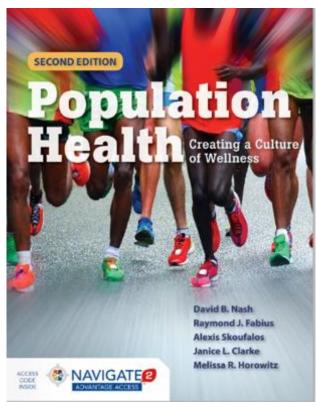






MY BACKGROUND: A PATIENT, A PROVIDER, A PAYER, A PURCHASER, A VENDOR, A CONSULTANT









12/17/2015



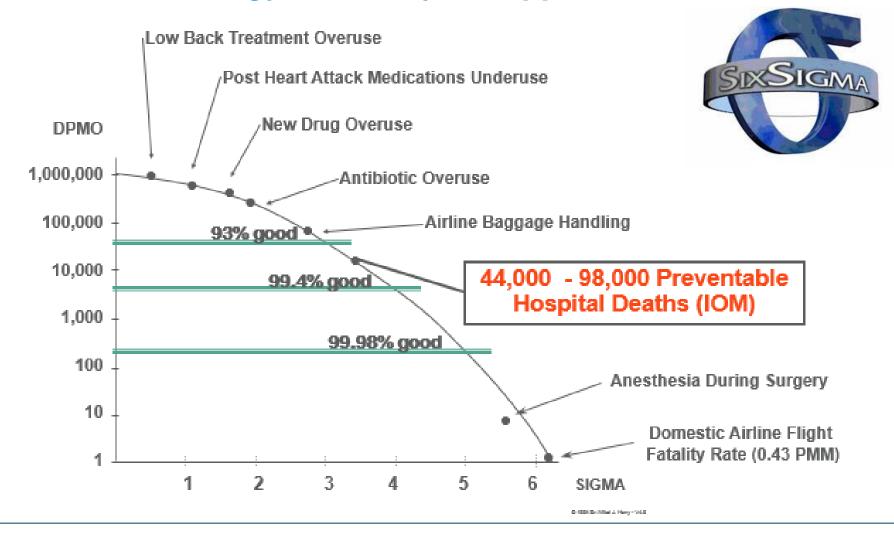


12/17/2015

UNFORTUNATE TRUTH:



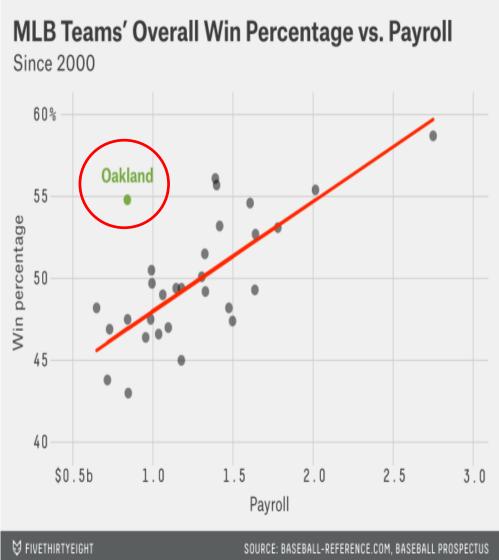
You cannot get to near perfect performance without technology and analytic support





BASEBALL BEFORE HEALTHCARE??? Winning with Big Data & Analytics









Are the Phillies really starting to embrace analytics?

Perhaps the slowest team in baseball to develop a true analytics department, it appears as if the Phillies are trying to catch up to the rest of Major League Baseball in the use of sabermetrics

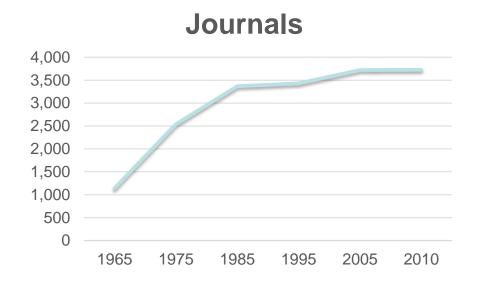
National League								
NL Central	W	L	PCT	GB	HOME	AWAY	L10	STRK
🚵 Cardinals	100	62	.617	-	55-26	45-36	4-6	L3
Pirates	98	64	.605	2.0	53-28	45-36	6-4	W1
Cubs	97	65	.599	3.0	49-32	48-33	8-2	W8
& Brewers	68	94	.420	32.0	34-47	34-47	4-6	L4
Reds	64	98	.395	36.0	34-47	30-51	1-9	L1
NL West	W	L	PCT	GB	HOME	AWAY	L10	STR
Dodgers Dodgers	92	70	.568	-	55-26	37-44	5-5	W4
Giants	84	78	.519	8.0	47-34	37-44	5-5	L1
Diamondbacks	79	83	.488	13.0	39-42	40-41	6-4	W1
S Padres	74	88	.457	18.0	39-42	35-46	3-7	L3
Rockies	68	94	.420	24.0	36-45	32-49	5-5	W1
NL East	W	L	PCT	GB	HOME	AWAY	L10	STRI
Mets	90	72	.556	-	49-32	41-40	5-5	W1
Mationals	83	79	.512	7.0	46-35	37-44	5-5	L1
Marlins	71	91	.438	19.0	41-40	30-51	6-4	L1
8∞ Braves	67	95	.414	23.0	42-39	25-56	6-4	W3
Phillies	63	99	.389	27.0	37-44	26-55	6-4	W1

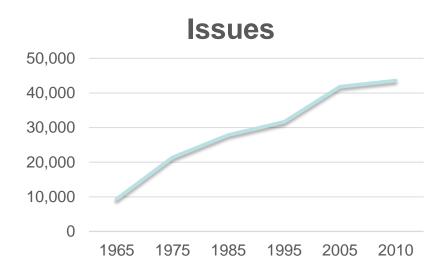
HealthWEXT

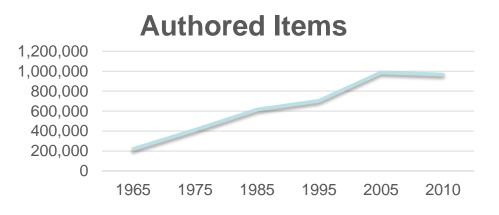
WE NEED OUR COCKPIT

Overwhelming Medical Information

Over 3500 Medical Journals, 40,000 issues & One Million Authored Items Annually







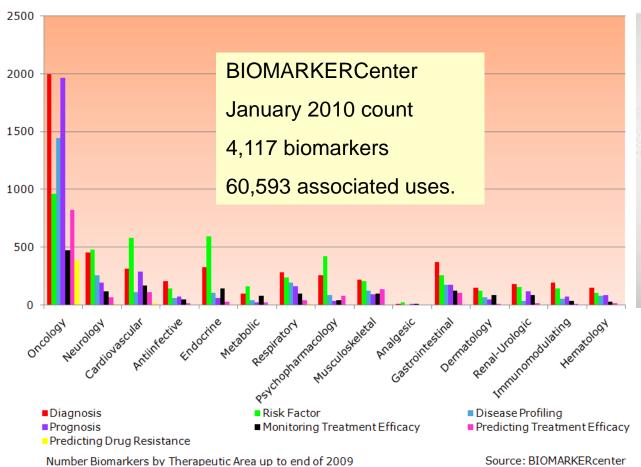


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WE NEED OUR VERSION OF MONEYBALL

Genomics, Proteinomics, Microbiomes, Over 4000 Biomarkers & Counting

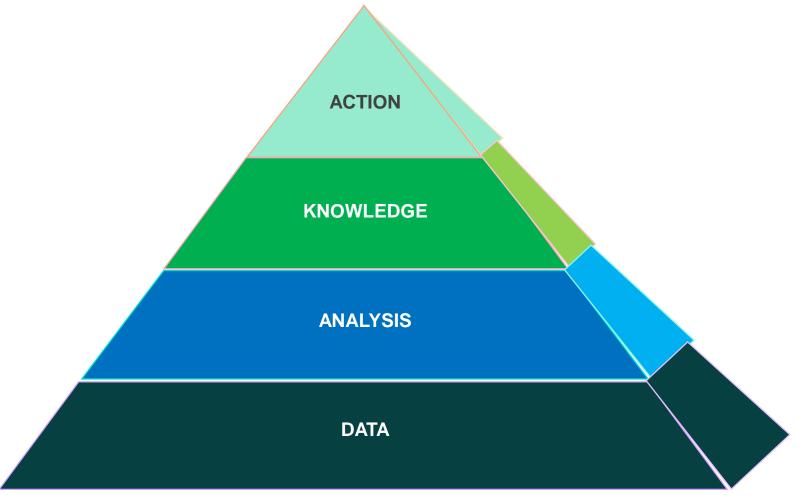






THE INFORMATICS POWER PYRAMID

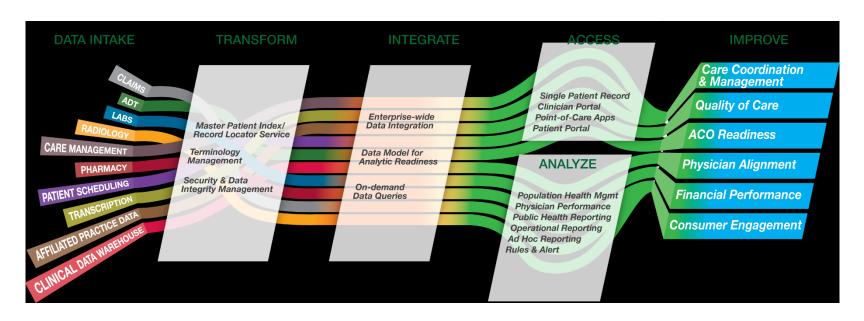
Data Generates Informed Action





MERGING CLINICAL & ADMINISTRATIVE DATA

Intake, Transform, Integrate, Report, Analyze, Improve



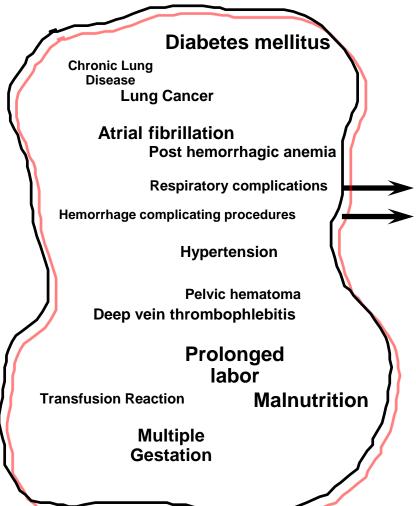
Provided by Truven Health Analytics

Garbage in / Garbage Out
The process depends on your input



TRANSFORMING DATA INTO KNOWLEDGE

Requires Physician Guidance

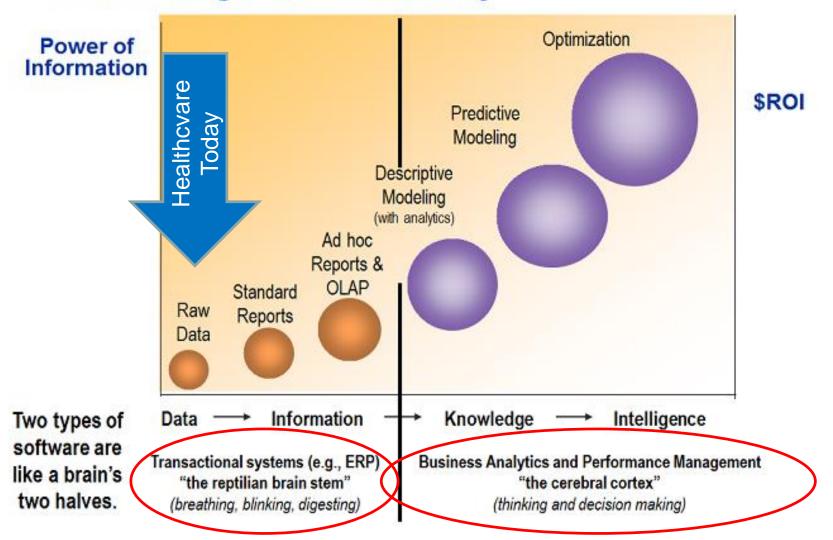


Adverse Events	Coexisting Conditions							
Obste	etrics							
Pelvic Hematoma	Multiple Gestation							
Deep Vein Thrombophlebitis	Prolonged Labor							
	Diabetes Mellitus							
General	Surgery							
Transfusion Reaction	Chronic Lung Disease							
Hemorrhage Complicating	Atrial Fibrillation							
Procedures	Hypertension							
Cardiology								
Respiratory Complications	Malnutrition							
Post hemorrhagic Anemia	Lung Cancer							



REQUIRES YOUR HELP

The Intelligence Hierarchy





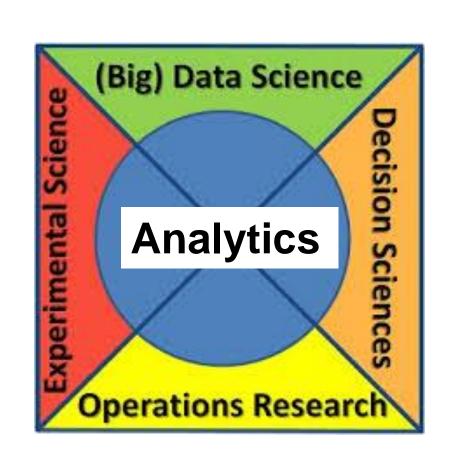
HAVE NO FEAR:

Big Data Will Change the Practice of Medicine in Many Positive Ways with OUR Help!

Make better decisions

Enhance care delivery

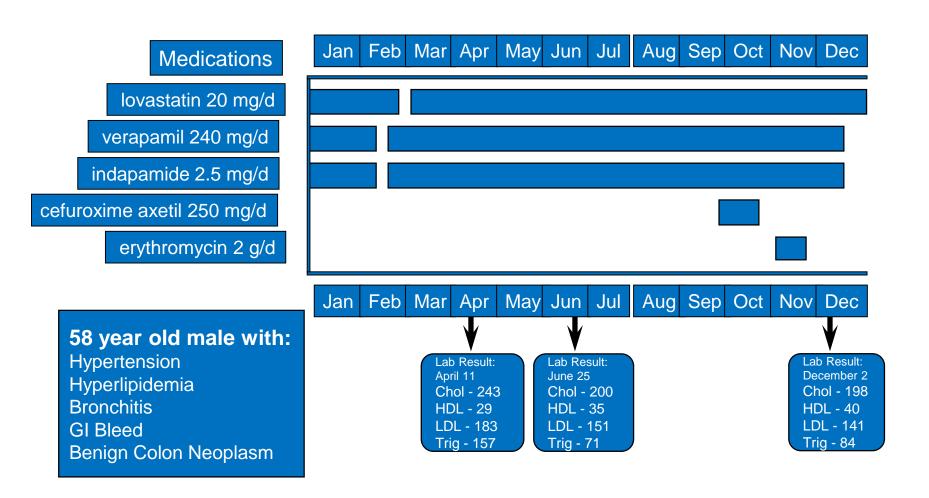
Speed cures to market





TRACKING PATIENT PROGRESS

Is My Patient Taking His Medications & Is It Working?

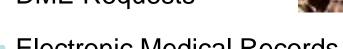




IDENTIFYING PATIENTS TO HELP

Early Warning System Before Catastrophic Event

- Hospitalization Claims
- Physician Referral
- Self Referral
- ER Usage
- Pharmacy Data
- Laboratory Data
- DME Requests



- Electronic Medical Records
- Health Information Exchanges



Define A Population's Health



Comprehensive Population Health Data Review

Risk
Factors

Stress 40%

High BF 39%

Overweight 32%

Obesity 13%

Sedentary 30%

High CHOL 22%

High BS 4%

DX Group Spend

Pregnancy Newborns

Muscular Joints

Cancer

Respiratory

Cardiac

Gastro Intestinal

Rx Medicines

Diabetes

Infection

CNS / Mental

Gastro Intestinal

Respiratory

Cancer

Arthritis

Chronic Illness

Mus Skel 13%

Asthma 10%

High BP

Heart Disease 5.7%

Depression 7%

Diabetes 5%

High Cost

Newborns

Cancer

Arthritis

Heart Failure

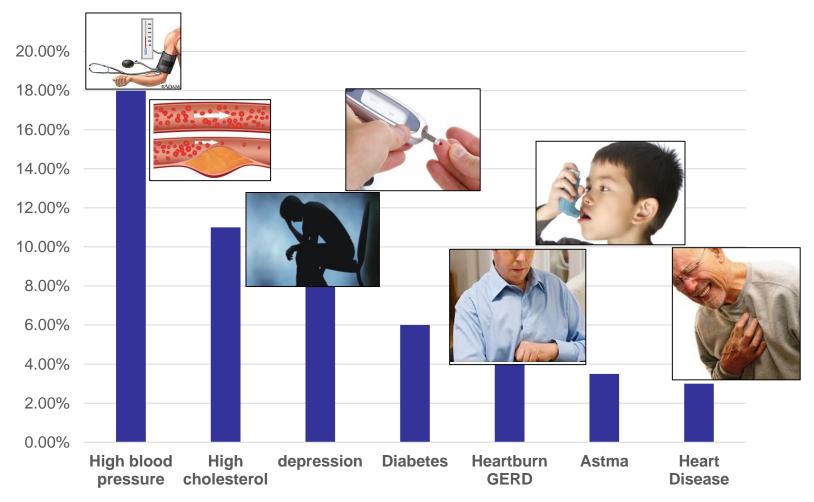
Renal Failure

Sepsis



ESTABLISHING THE CHRONIC ILLNESS BURDEN

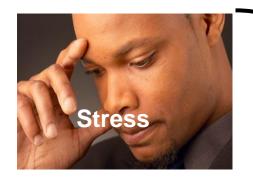
Of Your Patient Population



Explain Disease Progression

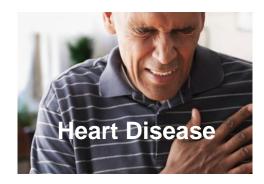
HealthWEXT

Dictates Population Health Continuum of Care



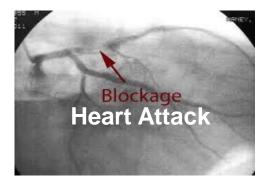


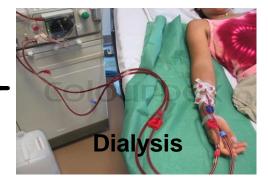


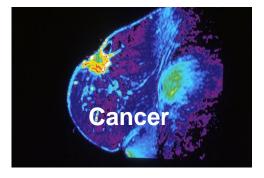














Let us Know How We Are Doing? Comparison to Normative Data

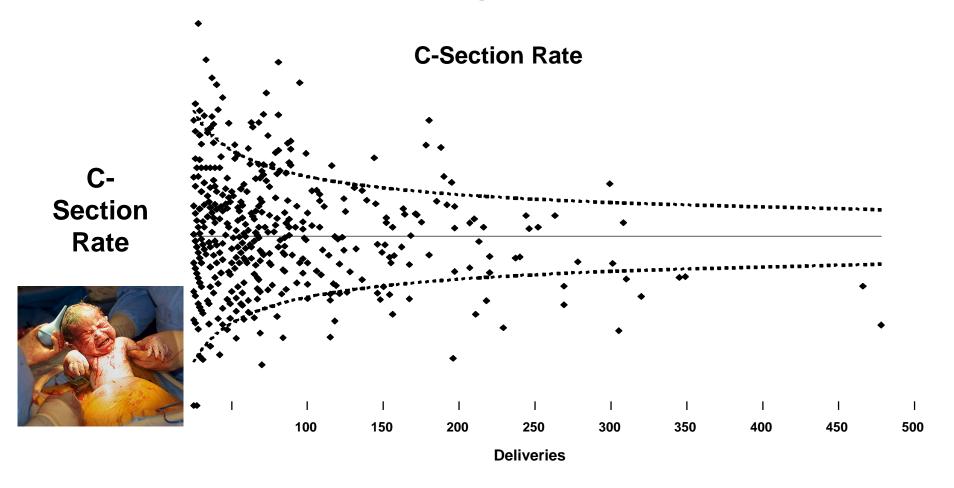
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	h Butterworth Hosp		T										
(Meijer Heart C		16.3	Better th	nan U.S. Na	tional Rate		Based on 704 pat	ients					
Saint Mary's He		19.3			S. National F		Based on 108 pat						
Metro Health Ho		20.2			S. National F		Based on 94 patie						
Mercy Health P	Death rate for h												
Campus				45.5									
	U.S. national 30-			15.5									
These percentages	Spectrum Health		Hospital							LONE .			
	(Meijer Heart Ce			16.3			n U.S. National F		Based on 598 patient				
	Saint Mary's Hea			16.2		-	n U.S. National F		Based on 146 patient				
	Metro Health Hos			15.7	No Differe	nt tha	n U.S. National F	Rate	Based on 119 patient	S			
	Mercy Health Pa	rtners - Merc	У										
	Campus	Rate of rea	admissio	n for pne	umonia pa	tient	S						
		U.S. nation	al 30-day	readmissi	ion rate	18.5							
		Spectrum H											
		Blodgett ho			16.03	17.4	No Differer	nt than	n U.S. National Rate	Based on 1,1	131 natients		
		Saint Mary		are	-	16.9	B-100 BAV-200	100000	n U.S. National Rate	Based on 23			
	Part of the second seco	Metro Healt				19.4			n U.S. National Rate		sed on 195 patients		
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		Mercy Heal	ın Parıner	S - Mercy		17 4	N Diff		n I.I.S. National Rate	D			
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		M	letro Hea	th Hospit	al		11.4	No	Different than U.S. N	lational Rate	Based on 1	87 patients	
					ers - Mercy						A		
			ampus	KITT GITTI			11.4	No	Different than U.S. N	lational Date	Based on 2	293 patients	
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		Th	nese percer	itages were	e calculated fi	rom IV	ledicare data on p	atient	s discharged between J	uly 1, 2008 and .	June 30, 2011.		

Hospitals are posting their own results on their websites



Identifying Benchmarks to Emulate

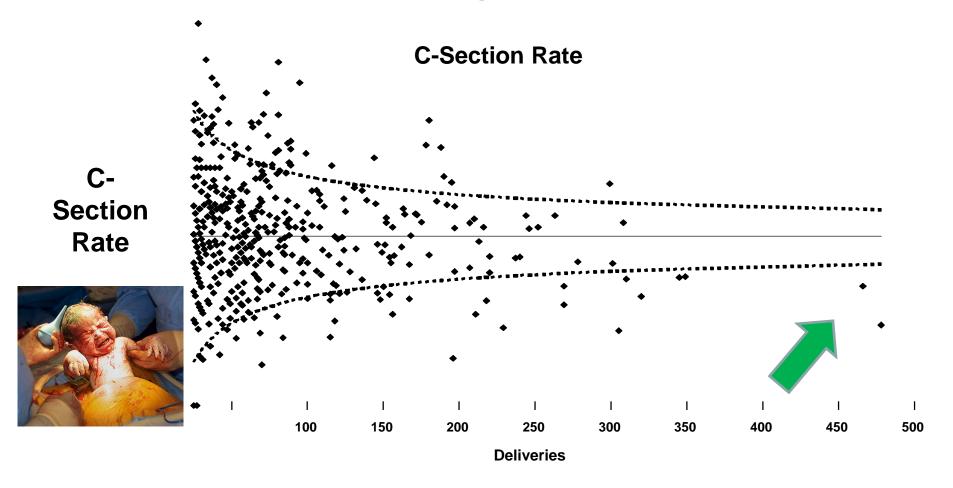
Peer Comparison to an agreed upon standard





Identifying Benchmarks to Emulate

Peer Comparison to an agreed upon standard



Early in the Healthcare Journey



Big Data Timeline



□ PHASE IV - INTELLIGENT

SEVERITY INDEXING

PERSONALIZED PRECISION MEDICINE
COMPARATIVE EFFECTIVENESS
GENOMICS, PROTIENOMICS, MICROBIOMES
SCIAL NETWORKING
PREDICTIVE MODELING

□ PHASE III COLLABORATIVE

HEALTH INFORMATION EXCHANGES POPULATION HEALTH MESSAGING TRANSPARENCY INCOME FOR OUTCOME

☐ PHASE II - CLINICAL

E-PRESCRIBING
ELECTRONIC MEDICAL RECORDS (EMR)
REGISTRIES
CLINICAL DECISION SUPPORT (CDS)
PERSONAL HEALTH RECORDS (PHR))

We Are Here

PHASE I - ADMINISTRATIVE

HEALTH INSURANCE COVERAGE
MEDICAL TREATMENT CODING
ELECTRONIC BILLING
ELECTRONIC DATA INTERCHANGE
PRACTICE MANAGEMENT SYSTEMS

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1990 1995 2000 2005 2010 2015 2020 2025 2030



Building Evidence into PracticeClinical Decision Support – the 5 Rights

To improve care outcomes with CDS you must provide:

the Right Information...
 Evidence-based, useful for guiding action and answering questions

...to the Right Stakeholder...
 Both clinicians and patients

…in the Right Format…
 Alerts, Order Sets, answers, etc.

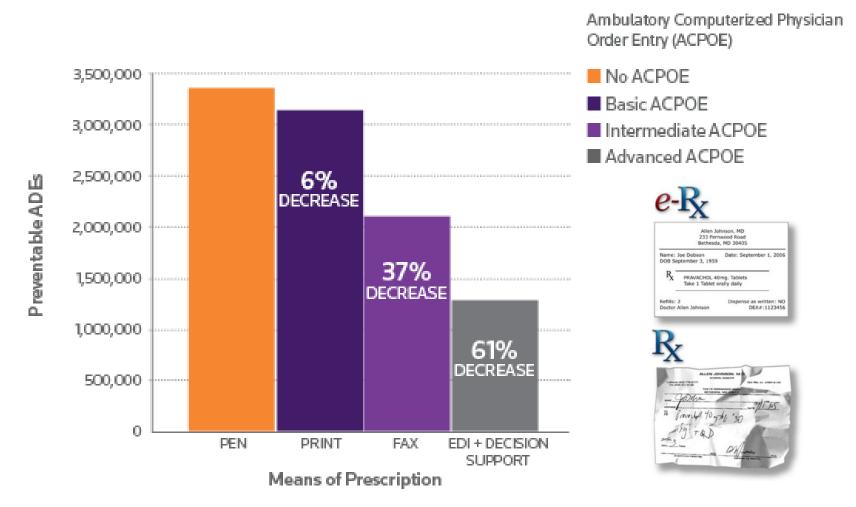
- ...through the Right Channel...
 Internet, mobile devices, clinical information systems
- ...at the Right Point in the Workflow to influence key decisions/actions





BUILDING CDS INTO CARE: EVIDENCE OF EFFECTIVENESS

E-prescribing & CDS Reduce Drug Misadventures By 61%

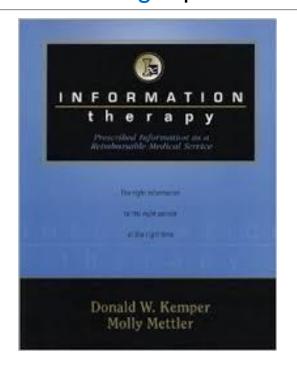


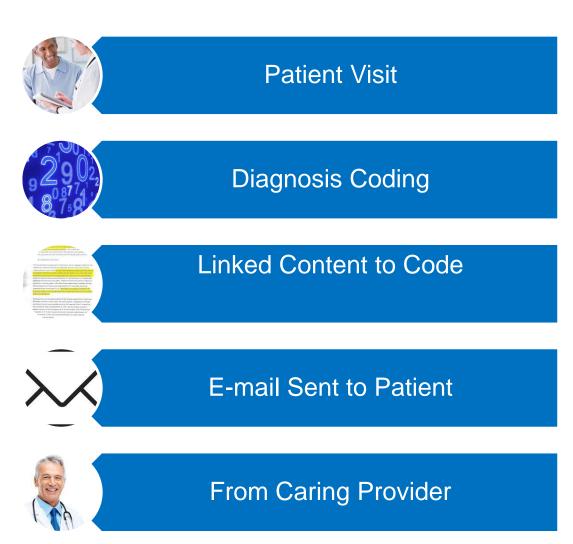


Information Therapy - 5 Rights

Strengthening the Doctor-Patient Relationship

Getting the right content
to the right patient
at the right time
in the right channel
from the right provider





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PERSONALIZED HEALTH REMINDERS

Employee Engagement

- Personalized reminders increase compliance
- Identify health improvement opportunities by mining individuals' claims data
- Personalize message text and change tone by leveraging consumer behavior research and make more compelling message
- Address barriers to getting the service
- Use humor effectively



HEALTH & WELLNESS TODAY

Wendy, in complex times, here's something refreshingly simple.

Lots of things are hard to protect yourself against. Luckily, breast cancer isn't one of them. Get regular mammograms.

Why get regular mammograms?

Breast cancer is one of the leading causes of cancer death among American women. But when caught early, it's highly treatable. That's why the American Cancer Society says it's important for every woman over the age of 40 to get regular mammograms.

What the test can do for you

Once you turn 40, getting a mammogram every year or two should be part of your routine medical care. They'll increase your chance of surviving if you do get breast cancer. And they're safe and easy.

Next Stept Call your doctor today and get a refreshing dose of cancer prevention. Get regular mammograms. Protect yourself.

Your Benefits

You are in the Preferred Health PPO plan. Your office co-pay for preventive services is \$0.

Your Information

Medications:

- . Paxil
- Abilify

Doctor:

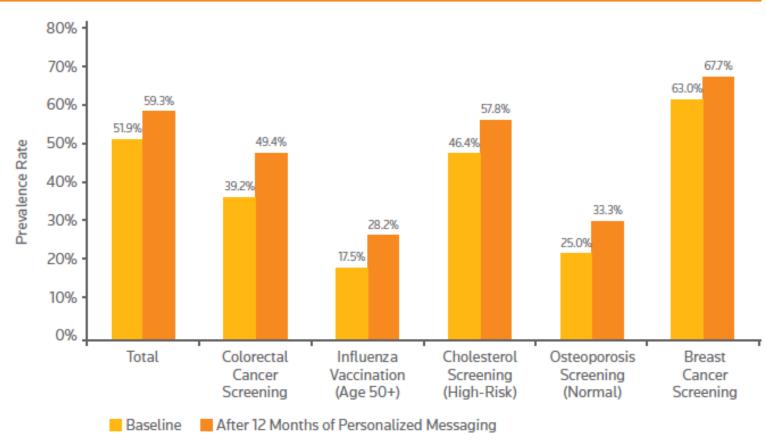
To find an in-network provider near you, call (800) 466-5000.



PROMOTING ACCOUNTABILITY

Population Health Messaging Works

FIGURE 42: Personalized Messaging Improves Preventive Service Compliance



Source: Thomson Reuters Case Study, "Tailored Messages Motivate Employees and Improve Health," 2010



PERSONALIZED HEALTH DASHBOARD

Getting Your Patients Activated

- Reinforce health goals with a personalized health dashboard
- Helps people
 monitor their health
 – understand what
 they need and
 when they last
 received care
- Raises health literacy and provides a simple tool to share with physicians

Type 2 Diabetes Care Guidelines

Care guideline	Frequency	Status	Last managed
<u>Cholesterol test</u>	Once a year	One Done	03/18/2010
Diabetic eye exam	Once a year	Overdue	05/14/2009
HbA1c (hemoglobin) test	Twice a year	Overdue	11/19/2009
Microalbumin test	Once a year	Done	06/16/2010

Source: American Diabetes Association recommended care guidelines.

Preventive Care Checklist

These are the recommendations for a 44-year-old woman:

Care guideline	Frequency	Status	Last managed
Blood pressure screening	At least every 2 years	Done	06/16/2010
Cholesterol screening	Every 5 years	Done	03/18/2010
Mammogram	Every 1-2 years	Done	06/30/2010
Pap smear	Every 1-3 years	! Overdue	02/22/2007

HealthNEXT

PRACTICAL INFORMATICS

Two Important Advances to Refine & Expand the Use of Data

Severity Indexing

- Prioritize & categorize registry based on illness burden
 - Severe Care Management
 - Moderate Coordinated Care
 - Mild Patient Education
- Achieving fairness when comparing



Predictive Modeling

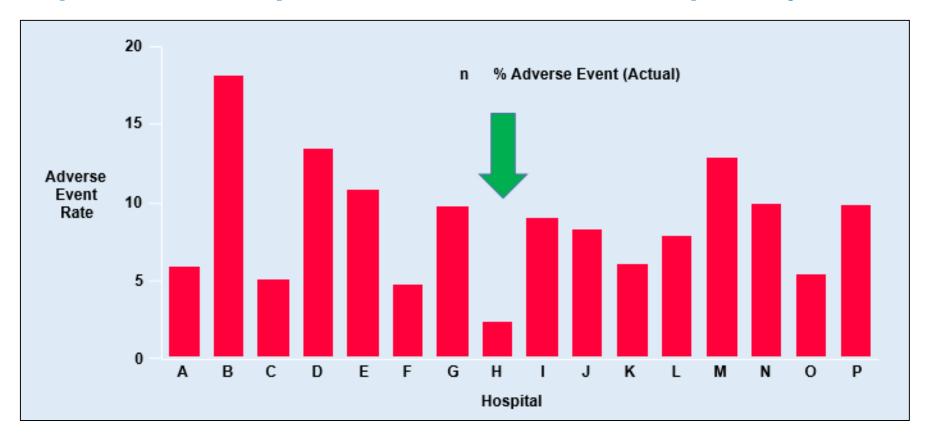
- Identify patients before the catastrophic event
- Predict future trends
- Prove that things did not happen





Adverse Event Rates

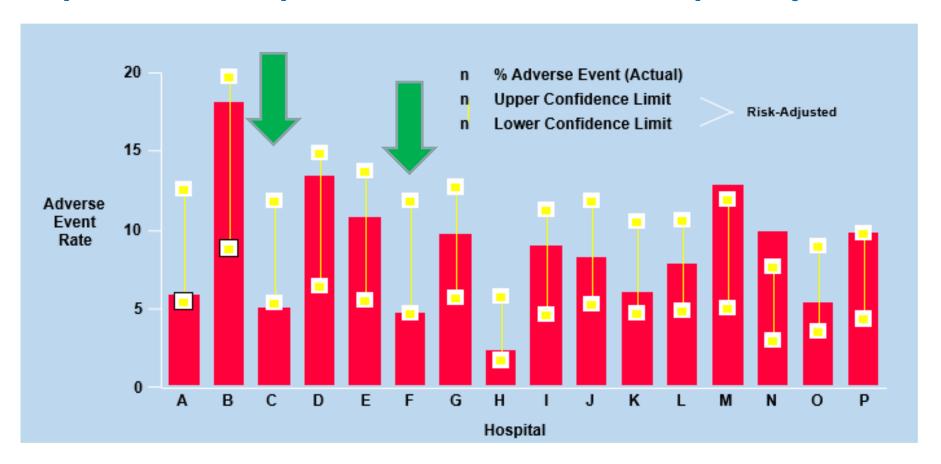
Department Comparison Across a Multi-Hospital System





Adverse Event Rates Severity Adjusted

Department Comparison Across a Multi-Hospital System



Which Hospitals are performing the best?



Proving What You Prevented from Happening Predictive Modeling

Process Indicators Correlate with Outcomes (N = 336)										
LAB Value	2003 Year 1	2005 Year 3	Variance							
HbA1C	9.1	7.8	-14.0%							
HDL Cholesterol	43	47	+9.3%							
LDL Cholesterol	138	108	-21.7%							
Triglycerides	288	201	-30.0%							
Systolic BP	131	126	-3.8%							

Calculating the impact of a medical invention program will be an important part of future practice



Proving What You Prevented from Happening

Predictive Modeling

			<u> </u>
	Projected Ca Patients wit (10 Year	h Diabetes	Avoided Costs (10 Years)
	Risk Year 1	Risk Year 3	
Lower extremity amputation	10.7	7.0	\$156,600
Blindness	4.7	3.0	\$54,400
End stage renal disease	7.0	1.3	\$4,934,200
MI or stroke	84	40	\$1,094,000
Total Medical*			\$6,238,600

Prevented:

3 Amputations

2 Episodes of Blindness

6 Dialysis Patients

44 Heart Attacks & Strokes

\$1,800 of avoided medical costs per patient per year (before inflation adjustment)

Saved over 6 Million Dollars

For Illustrative Purposes Only

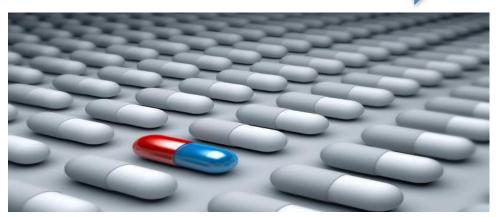
_{cuc}Health///

ADVANCING MEDICAL BREAKTHROUGHS

Connect Medical Scientists To Data & Knowledge

- Existing Research Database
- Clinical Trials Enhancement
- Biomarkers Registry
- Genomic Library
- Outcome Research
- Treatment Pathways
- Disease Profiles
- Evaluate Economic Impact

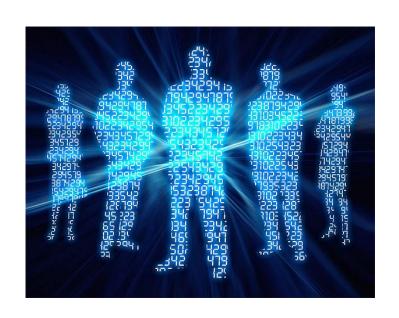
- The known
- Expedite Cures
- Identify Cohorts
- Coding our Species
- Proving What Works
- Real World Tracking
- Assess Progress
- Justify Costs





DATA & ANALYTICS WILL ASSIST YOU IN:

- Guiding your care
- Informing your patients
- Validating expert opinion
- Finding medical breakthroughs
- Measuring your impact



To Promote Health and Wellness AND....



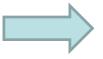
MEETING TRIPLE AIM

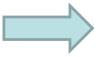
Goals

- Better Resource Allocation
- Improving
 Constituent
 Satisfaction
 - Provider
 - Purchaser
 - Patient
 - Health Consumer













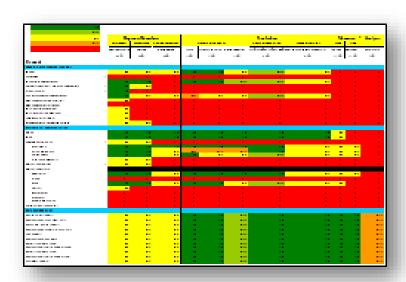


MEASURING A CULTURE OF HEALTH

Employer Health Opportunity Assessment

10 Weighted Assessment Categories

- People & management
- Marketing & communications
- Data warehousing
- Health & wellness plan design
- Environment
- On-site health activities
- Health & wellness activities
- Incentives and benefits design
- Engagement & navigation
- Vendor integration



- 218 "Elements"
- In 10 "Categories"
- 11 "Thresholds" of implementation
- 5 "Degrees" of completion



Measuring a Culture of Health

"Gaps From Benchmark" Summary

People & Management Support

People & Management Support											
Leader	1.00	1.00	0.75	1.00	1.00	0.50	1.00	0.50	1.00	0.75	0.75
Champion	1.00	1.00	0.75	1.00	1.00	0.50	1.00	0.75	1.00	0.75	0.50
Leadership Commitment	0.75	0.75	0.75	1.00	1.00	0.50	1.00	0.25	0.25	0.25	0.25
Corporate Wellness Steering Committee	0.75	0.75	0.75	1.00	1.00	0.75	1.00	0.75	1.00	0.75	0.75
Cinical Leader	0.50	0.50	0.25								
Lire Maragement commitment	0.75	0.50	0.25								
Management Responsibilities	0.50	0.50									
Management Assessment	0.50	0.50									
Local Health Champions	0.50	0.50	0.25								
Local Wellness Committees	0.50	0.50									
Employee Assessment	0.75	0.75	0.75	1.00	1.00	0.50	0.50	0.50	1.00	0.75	0.25
Alignment with corporate culture	0.50	0.50	0.50								

Marketing & Communications

Marketing & Communication											
Brand	1.00	1.00	0.75		1.00	0.75	0.75	0.50	0.50	0.25	0.25
Loge	1.00	1.00	0.75		1.00	0.75	0.75	0.50	0.50	0.25	0.25
Cammunication Plan	0.50	0.50	0.50	1.00	1.00	1.00	1.00	0.50	0.50	0.25	0.25
Multireda	0.50	0.50	0.50	0.75	0.50	0.75	0.75	0.50	0.50	0.25	0.25
At the workplace	0.50	0.50	0.50	0.75	0.50	0.75	0.75	0.50	0.50	0.25	0.25
To the home	0.50	0.50	0.50	1.00	1.00	1.00	0.75	0.50	0.50	0.25	0.25
into the community	0.75	0.75	0.50	0.75	0.50	0.50	0.50	0.25	0.25	0.25	0.25
Marketing Program	0.50	0.50	0.50								
Marketing Material	0.50	0.50	0.50								
Nevdeter	0.50	0.50	0.50								
Video	0.50	0.50	0.50	0.75	0.50	0.50	0.50	0.25	0.25	0.25	
Vib	0.50	0.50	0.50	1.00	1.00	0.50	0.50	0.50	1.00	1.00	0.25
Posters	0.75	0.75	0.50	0.50	0.25	0.50	0.50	0.25	0.25	0.25	0.25
Vallet Cards	0.50	0.50	100				100				
Brachures	0.50	0.50	0.50				1.00	0.50	0.50	0.25	0.25
Mibile messaging	0.50	0.50									
Personal Health Records	0.50	0.50									

Data Warehousing

Data Warehousing											
Health claims reports	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75
Aggregated health claims data	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75
Dehavioral Health reports	0.50	0.50	0.25								
Aggregated behavioral Health data	0.50	0.50	0.25								
E4P Reports	0.75	0.75	0.50	1.00	1.00	1.00	0.25		1.00	0.75	0.50
Appropried EAP Reports	0.75	0.75	0.50	1.00	1.00	1.00	0.25	1.00	1.00	0.75	0.50
Disability Reports FSTD	0.50	0.50	0.25								
Aggregated Disability Reportal STD	0.50	0.50	0.25								
Disability Reports FLTD	0.50	0.50	0.25								
Aggregated Disability Reports LTD	0.50	0.50	0.25								
Pharmacy Reports	0.75	0.75	0.75	1.00	1.00	1.00	1.00	0.50	1.00	1.00	0.50
Aggregated Pharmacy Paports	0.75	0.75	0.75	1.00	1.00	1.00	1.00	0.50	1.00	1.00	0.50
Compensation Data	0.50	0.50	0.50					-			-
Other Data Aggregation	0.50	0.50	0.25								
DataIntegration	0.75	0.75	0.75				1.00	0.25		1.00	0.75
Data Analysis	0.75	0.50	0.50	1.00	1.00	1.00	1.00	0.25			
Absenteeism tracking	0.50	0.50	0.25								
Presented smitracking	0.50	0.50	0.25								
Somords at six level	0.50	0.50	0.25								
Darhboards at program level	0.50	0.50	0.50			1.00	0.25	0.25	1.00	0.75	0.50
Health status program	0.50	0.50	0.25								
Behavioral Health program	0.50	0.50	0.25								
Disability Programs	0.50	0.50	0.25								
Coclipits at corporate level	0.75	0.50	0.50	1.00	1.00	1.00	1.00	0.25			

Health & Wellness Plan Design

Health & Wellness Plan Design											
Water	0.75	0.50	0.50				1.00	0.25			
Hosian	0.75	0.50	0.50				1.00	0.25			
Digarized Health & Wellness Strategy	0.75	0.50	0.50				1.00	0.25			
Integrated Wellness Coremittee Structure	0.50	0.50	0.25								
Shand Values	0.75	0.75	0.75	0.75	0.50	0.50	0.50	0.50			
Duhanal Narres	0.50	0.50	0.50	0.50	0.25	0.50	1.00	0.75			
Tough points	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.25			
Confrontation		1.00	0.50	0.25	0.25	0.25	0.25	0.25			
Peer Support	0.50										
Role Modeling	0.50										
Requirement & Selection	0.50	0.50	0.25								
Dribserding/Drienfation	0.50	0.50	0.50								
Training	0.50	0.50	0.25								
nefress	0.50	0.50	0.25								
divonic liness	0.50	0.50	0.25								
health consumer	0.50	0.50	0.25								
Rive, Filtuals, & Symbols	0.50	0.50	0.50		1.00	0.50	0.50	0.50	0.25	0.25	
Resource Commitment	0.75	0.75	0.75		1.00	0.50	0.50	0.50	0.25	0.25	
Deletration											
Short Torry Plan	0.75	0.75	0.75				1.00	0.75	1.00	0.75	0.5
Long Terre Plan	0.75	0.75	0.75				1.00	0.25	1.00	0.75	0.5
Short term Goals	0.75	0.75	0.75	1.00	1.00	1.00	1.00	0.75	1.00	0.75	0.5
Long Terre Goals	0.75	0.75	0.75				1.00	0.25	1.00	0.75	0.5
Annual assessment survey	0.50	0.50	0.25								
Data Vields Changes in Action	0.50	0.50	0.75								

Environment

Environment											
No smaling Palcy								1.00	0.50	0.25	0.50
designated smalling stores on facility								1.00	0.50	0.25	0.50
No analong in facility								1.00	0.50	0.25	0.5
No emoling on campus								1.00	0.50	0.25	0.5
full coverage of smaking cossalian meds								1.00	0.50	0.25	0.5
full coverage of smoking cessalism counse	1.00							1.00	0.50	0.25	0.5
Promotion of Stainvell Use	0.50	0.50	0.25								
sgrage	0.50	0.50	0.25								
capeling	0.50	0.50	0.25								
music and paintings	0.50	0.50	0.25								
Caletonia health promotion	0.75	0.75	0.75	0.50	0.25	0.50	0.50	0.75	0.25	0.25	0.2
identify and feature healthy options	0.75	0.75	0.75	0.50	0.25	0.50	0.50	0.75	0.25	0.25	0.2
subsidize healthy options	0.50	0.50	0.25								
post food content of all efferings	0.50	0.50	0.25								
Vending machines include healthy options	0.50	0.50	0.75	0.25	0.50	0.25	0.25	0.25	0.25	0.25	
Fitness Centers		1.00	0.75	0.50	0.25	0.50	0.25			1.00	0.7
Willingtrals	0.75	0.75	0.50	0.50	0.25	0.50	0.25	0.50	0.25	0.25	
Organized physical activities	1.00	1.00	0.75	0.50	0.25	0.50	0.25	1.00	1.00	1.00	0.7

Onsite Health Activities

On-site Health activities											
LunchandLearns	0.50	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.2
Health Fairs	0.75	0.75	0.50	0.75	0.50	0.50	0.25	0.25	0.25	0.25	0.2
Blametric Screening	0.75	0.75	0.75		1.00	0.50	0.50		1.00	0.75	0.75
Health Concurrent discoss on compute	0.50	0.50									
Specialists visits on compute	0.50	0.50	0.50	1.00	0.50	1.00	0.75	1.00	0.50	0.50	0.2
Drysile Health center	0.75	0.75	0.75	0.50	0.25	0.25	0.25	0.25	0.50	0.50	0.2
Near-site Health center	0.75	0.75	0.50		1.00	0.25	0.50	0.75	0.25	0.25	0.25
Health Education Center	0.50	0.50									
Integration of community resources	0.50	0.50	0.50	0.75	0.50	0.50	0.25	0.50	0.25	0.25	
Integration with community directal methods.	0.50	0.50									
Drait Pharmay	0.50	0.50	0.75	0.75	0.50				1.00	0.75	0.25
Lacteion Rooms	0.50	0.50	0.50	0.75	0.50	0.50	0.25	1.00	0.50	0.25	0.2

Incentives & Benefit Design

Incentives & Benefit Design											
Copay differentials	1.00	1.00	1.00							1.00	0.7
Pramacusicals	0.75	0.75	0.25								
Primary ductors	0.75	0.75	0.75								
Specialists	0.75	0.75	0.75								
Hospitals	0.75	0.75	0.25								
Reverds Programs					1.00	0.75	0.50	0.75	1.00	0.75	0.9
Trinlets	0.50	0.50	0.25								
Cash					1.00	0.75	0.50	0.75	1.00	0.75	0.9
Integrated into Benefit Plan					1.00	0.75	0.50	0.75	1.00	0.75	0.5
Recognition Programs	0.50	0.50	0.50		1.00	0.50	0.25	0.25	1.00	0.75	0.3
Compelitions	0.50	0.50	0.50		1.00	0.50	0.25	0.25	1.00	0.75	0.3
between individuals	0.50	0.50	0.50		1.00	0.50	0.25	0.25	1.00	0.75	0.3
Between departments at some locations	0.50	0.50	0.50		1.00	0.50	0.25	0.25	1.00	0.75	0.3
between distant competitive learns	0.50	0.50	0.50		1.00	0.50	0.25	0.25	1.00	0.75	0.3
Collection of Testimonials	0.50	0.50	0.25								
Collection of Complaints	0.50	0.50	0.25								
Mandales	1.00	1.00	1.00		1.00	0.50	0.50	0.25	0.50	0.50	0.9
Copay advantage for primary care	0.50	0.50	0.50								
No cape for chanic medicalisms	0.75	0.75	0.25								
Free Preventive Screening	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.3

Engagement & Navigation

Engagement & Navigation										
Program to reduce the medically hon	0.75	0.75	0.50	1.00	0.50	0.50	0.50	1.00	0.75	- 62
Invitation tracking	0.50	0.50	0.50	1.00	0.50	0.25	0.25	1.00	0.75	0.
Engagement trading	0.50	0.50	0.50	1.00	0.50	0.25	0.25	1.00	0.75	0.
Retention	0.50	0.50	0.25							
Completion I Graduation	0.50	0.50	0.50	1.00	0.50	0.25	0.25	1.00	0.75	0.9
Assessment of Baniers to Participation	0.50	0.50	0.25							
Health Literacy	0.50	0.50	0.25							
Health Advicacy	0.50	0.50	0.25							
Patreship with Community Providers	0.50	0.50	0.25							
High Performance Network	0.50	0.50	0.25							
Referal Management	0.50	0.50	0.25							
Health Care Diversity I Disparity Programs	0.50	0.50	0.25							

Health & Wellness Activities

b			1.75	1.00	1.00	8.75	8.58	1.00			8.5
latitic Biles Fran		-	8.58		1.00	8.75	8.58	1.00			8.5
Bygrapata Bata			8.58	7777	1.11	8.75	1.51	1.00			
English Billio Pro		- 111	1.00	1.00	1.00	1.00	1.25	1.00	•	•	
Magic Management Proposes			8.58	8.75	1.51	E. 5 E	1.25	8.25			1.2
Plana Ilana Pagasa			8.58	1.1	1.11	8.58	8.58	8.58			8.5
Enn Erlen			8.25						-	-	-
Bol Boy Boots Bololos Booss Weesgreen			1.51	1 1	1.00	E H I	8.25	1.75	-		- 5
Malala Bastasa Pagas			8.25								- 1
Codo Boso Manganet			8.25	-	-	-		-		-	-
Consum Salam Sanan Pagan			8.25	-	-	-		-	-	-	-
English Boot from Propos Ender Behalfeles			8.25 8.25						-		- 5
Endo Bilillia Egoloma Enon Mengenel			1.25								- 2
Bogodon Boom Mengenet			8.25			-					-
Biller Frigue			8.25		-	-		-	-	-	-
Baylones Proposa			8.25 8.25	-	-	-		-	-	-	-
Bogoloo Belellelea Bolle Mesoperal Proper			8.53	- 1							
Mari Barlean Pagas		- 1111	8.25								- 2
Mart Indones, Propose			8.25		-	-			-	-	-
Balallalas as cala			8.58	8.75	1.5	8.58	8.75	8.75			-
PlaneTlange BangaloweTlange			-5	8.75	-5	2.5	1.75	8.75 8.75	-		- 5
Broot Thorn			1.51	1.73	1.51	1.51	1.75	1.75			- 1
Mallat Mart Pages			8.75	8.58	8.25	8.58	8.25	8.25	-	-	
Anguarani			8.75	8.58	8.25	8.58	8.25	8.25	-		
			2.5	1.00	1.11	1.00	8.25	1.00			1.5
International SEP and Believe			1.51								
Boogalise Book		-	8.75	1.00	1.00	8.58	8.75	1.00			
William Browners Brown			8.75	1.11	1.00	8.58	8.25	1.00			-
lann blann Tunlag			8.75	1	1.11	8.58	8.25	1.00			8.5
Made Aspelay Made a Salala Pagas			8.75	1:11	1.00	8.58 8.58	25.8	1.00			1.5
Models loans			-51	-	1.00	1.00	1.25				
Marten Congressive Management			1.00	1.00	1	8.58	8.25	1:11			8.7
Ploans Braill Missiparal			8.58	777	7.77	1	1.00	1111			B.2
Place and Constitute - MTM			1.51	-	-	-		-	-	-	-
Con Memperal But Cont Com			2.5		1.00	1.00	1.25	- 5		-	
Mily Cranillo		-	8.58			8.75	1.51	1.51		- 1111	1.5
Bodi Cooley			8.58	777		8.75	8.25	8.58			8.7
Erelon of Borners Proposer			8.25			-		-			-
Boot Erro Propose Bootle Boss			8.25 8.25	-		-		-	-	-	
W. a. B !!		- 1111	1.51	1 111	1.00	8.75	8.25	1.25			- 1
Minima Birill			8.58	1:::	-	8.75	8.25	8.25			-
Erlmer Proc			8.25	-	-	-		-	-	-	-
I			-5	1:::	1:11	1.51	1:11	1:#	-	-	-
Marijaan Barean Para b Parjare Caesan arrawega			1.5	8.58	8.25	1.58	8.25	8.25			- 5
			8.25	-	-	-	•	-	-		- 2
Boost .			8.58	8.58	8.25	8.58	8.25	8.25			-
Freelite			8.25	1.5	8.25	1.51			-	-	-
Erra Britis consess		-	1.51		1.00	1.31	8.25	1.00		-	
		- 1111	1.75	1111		1.51	8.58	****			1.5
Byl Bol Posperson		-	8.25								
Egonos Essos Mongones			8.25						-	-	
			1.51	1.11		4.75	8.25	1.25	-	-	
Books		- 1111	1.51	1.00	1.00	1.51	8.25	1.75			
Tona Malasa Pagasa			8.58	1111		8.58	1.00	1.00			-
T El.			8.25	-	-	-		-	-	-	
England populario			8.75	8.75	1.5	8.58	8.75	1-11	-	-	
entle teste electricado			8.75	8.75	-5	2.5	8.75	1:#			
Marijan Baran				1.75	1.51	1.51	8.75	1.00			
Prefres			8.75	8.75	8.58	8.58	8.75	1.1			
Bandian / Bo			8.75	8.75	8.58	1.51	8.75	1.1	-	-	
Tangan Tagan			8.75	8.75	1.51	2.5	8.75	- 111	-	-	-
lui Bi / CPB lui Buguelu Pugue		- 1111	8.75	1.75	-5	-5	1.75	1:#			
Built coles			8.25	-	-	-		-			
			8.75	8.75	8.58	8.58	8.75	1.11	-	-	
EEE Woodsessess propose			8.75	8.75	8.58	8.58	8.75	1.00	-	-	-
Ecile le Congress CII Con			1.5	1.00	8.25	1.75	8.25	8.25 8.75	-	•	
Ell Enn Built Formis			-5	8.58	1.25	1.25	8.25	1.25			
Bloc Con			8.58	1:11		1.75	8.25	1.25			
Initial an			8.25					-	-	-	
limiti			8.25						-	-	
In mile cons			8.25								
Boop Bogons	1111		1.5			1.51					
		-	1.25	1.11	1.44	1.51	1.11	1.11		100	- 2
Bog Bogon Bog Poor				- 1			1.00		3	3	E,

Vendor Integration

Vendor Integration											
Designated leader of process	0.50	0.50	0.25								
Periodic meetings of vendors	0.50	0.50	0.25								
Able to integrate vendor data	0.50	0.50	0.25								
Perfomance Guarantees	0.50	0.50	0.25								
Don mented afforts of vandors work inclose	0.50	0.50	0.50	1.00	1.00	0.50	0.50	0.25	100	0.75	0.50



COMPANIES THAT HAVE A CULTURE OF HEALTH OUTPERFORM ON THE STOCK MARKET

Marketplace rewards companies who achieve cultures of health:

- **Used the ACOEM Corporate** Health Achievement Award (CHAA) culture of health award winners as a stock portfolio
- A portfolio of approximately twenty publicly traded award winners; over nearly two decades
- **Published September 2013 in the JOEM**
- The portfolio outperformed the market significantly; in all four test scenarios





FAST TRACK ARTICLE

The Link Between Workforce Health and Safety and the Health of the Bottom Line

Tracking Market Performance of Companies That Nurture a "Culture of Health"

Raymond Fabius, MD, R. Dixon Thayer, BA, Doris L. Konicki, MHS, Charles M. Yarborough, MD, Kent W. Peterson, MD, Fikry Isaac, MD, Ronald R. Loeppke, MD, MPH, Barry S. Eisenberg, MA, and Marianne Dreger, MA

Objective: To test the hypothesis that comprehensive efforts to reduce a workforce's health and safety risks can be associated with a company's stock market performance. Methods: Stock market performance of Corporate Health Achievement Award winners was tracked under four different scenarios using simulation and past market performance. Results: A portfolio of companies recognized as award winning for their approach to the health and safety of their workforce outperformed the market. Evidence seems to support that building cultures of health and safety provides a competitive advantage in the marketplace. This research may have also identified an association between companies that focus on health and safety and companies that manage other aspects of their business equally well. Conclusions: Companies that build a culture of health by focusing on the well-being and safety of their workforce vield greater value for their investors.

· Recently, an article by Loeppke and colleagues,4 reported that for every dollar of medical and pharmaceutical costs spent, an employer lost an additional \$2.30 of health-related productivity costs. Health-related presenteeism (health risks and medical conditions impacting work performance) was shown to have a larger impact on lost productivity than absenteeism, with executives and managers suffering higher losses. Comorbidities demonstrated the largest effects on productivity loss.4

These facts led to a hypothesis: Companies that create an environment for their employees and dependents that reinforces both conscious and unconscious safer and healthier lifestyle choices as well as provides more effective accessing of appropriate health care (ie, surround them with a "culture of health") should be more productive and that productivity should drive business performance and be reflected in the price of their stock.

> th proven health, safety, and ferent scenarios. To find such ts of the American College 's) Corporate Health Achieveon and past market perforvestment in publicly traded 7 to 2012 under one scenario

ompanies are recognized for althy workforce, and a healthy sts and improved productivity, portfolio of these companies

as the American College of licine began in 1916 as the sicians and Surgeons. As the

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