

La frase più pericolosa in assoluto è:

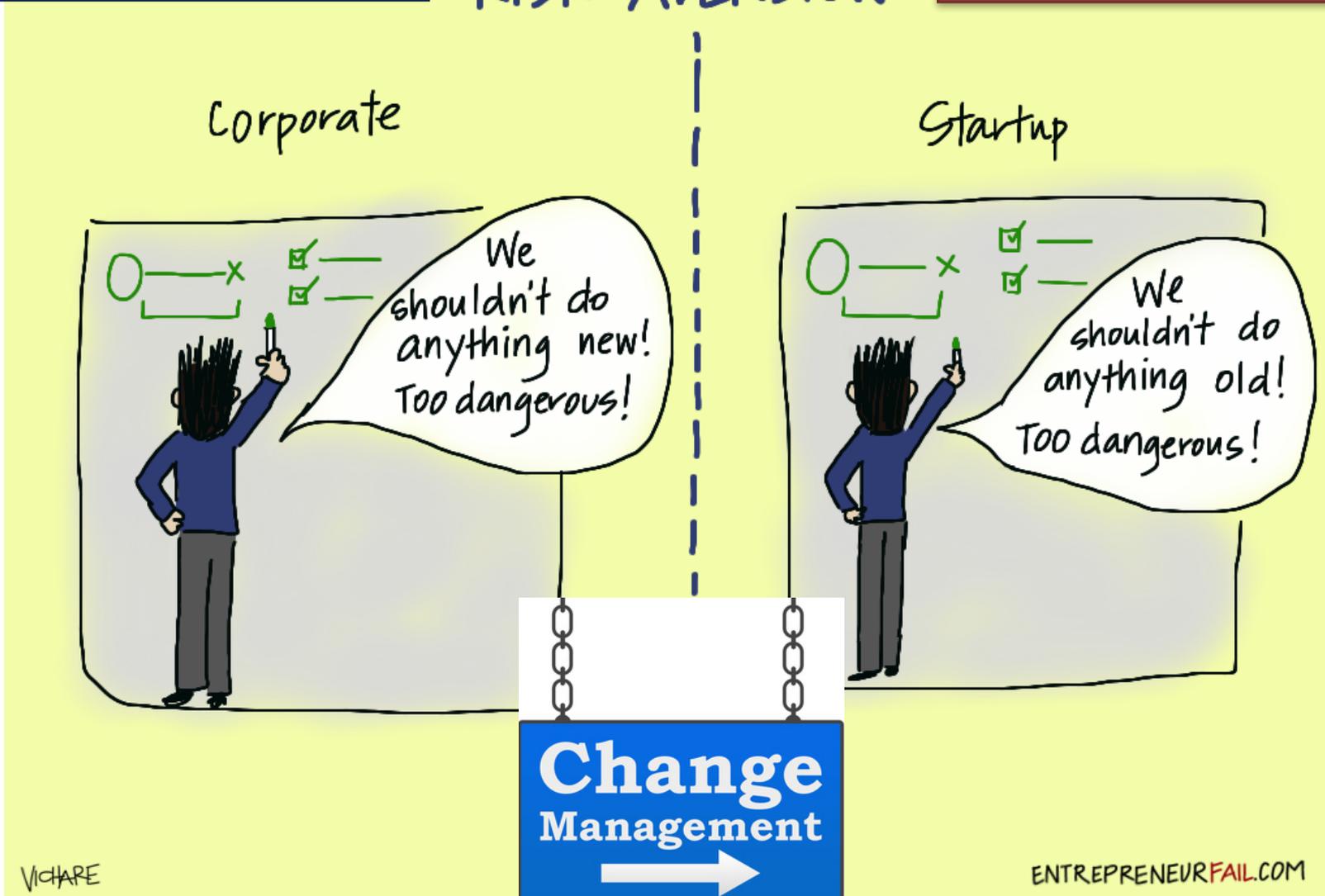
"Abbiamo sempre fatto così".

Grace Murray Hopper

INSANITY:

Doing the same thing over and over again and expecting different results

RISK AVERSION



Cost of disorders of the brain in Europe 2010

European Neuropsychopharmacology (2011) 21, 718–779

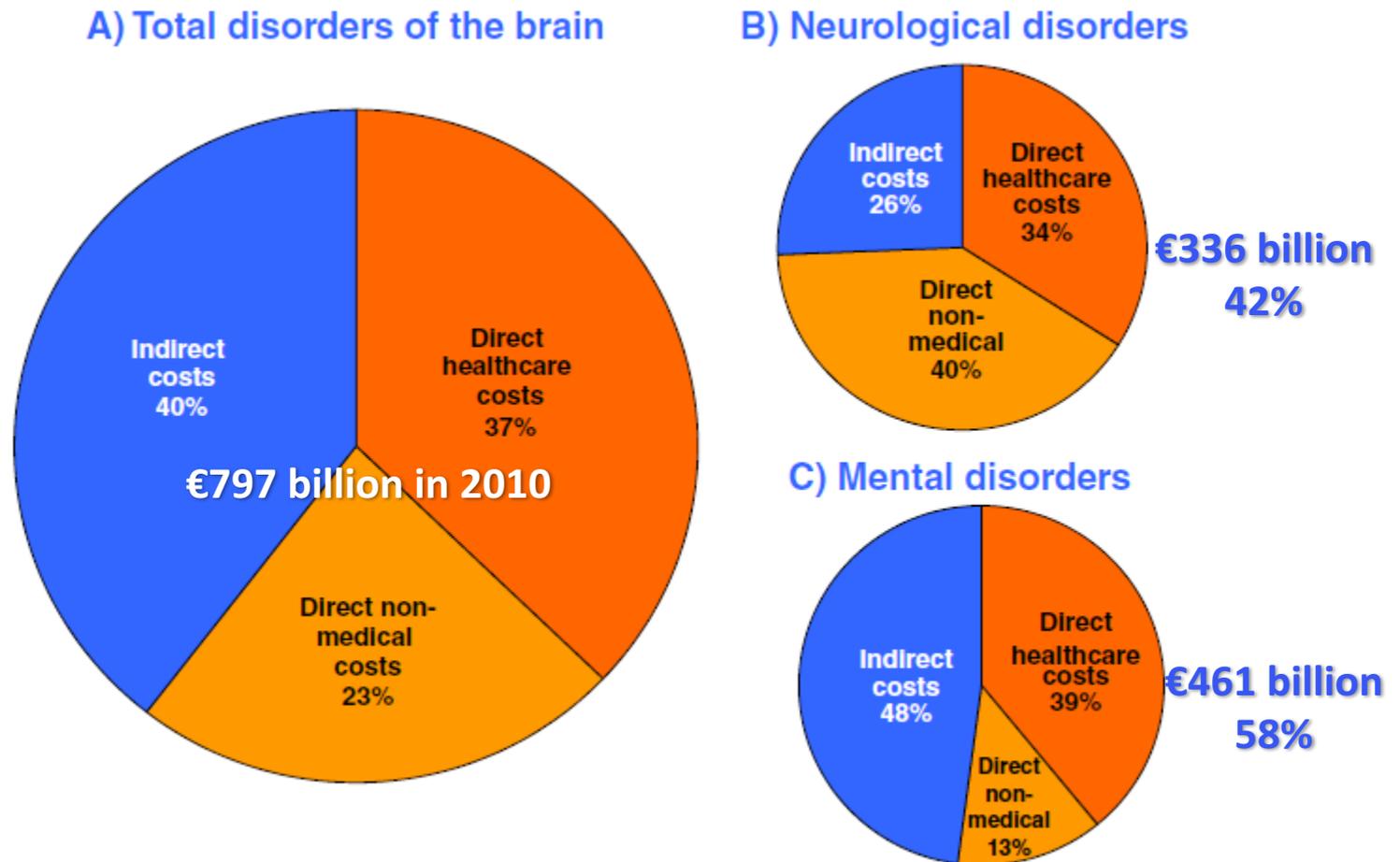


Figure 5 Distribution of costs.

Cost of disorders of the brain in Europe 2010

European Neuropsychopharmacology (2011) 21, 718–779

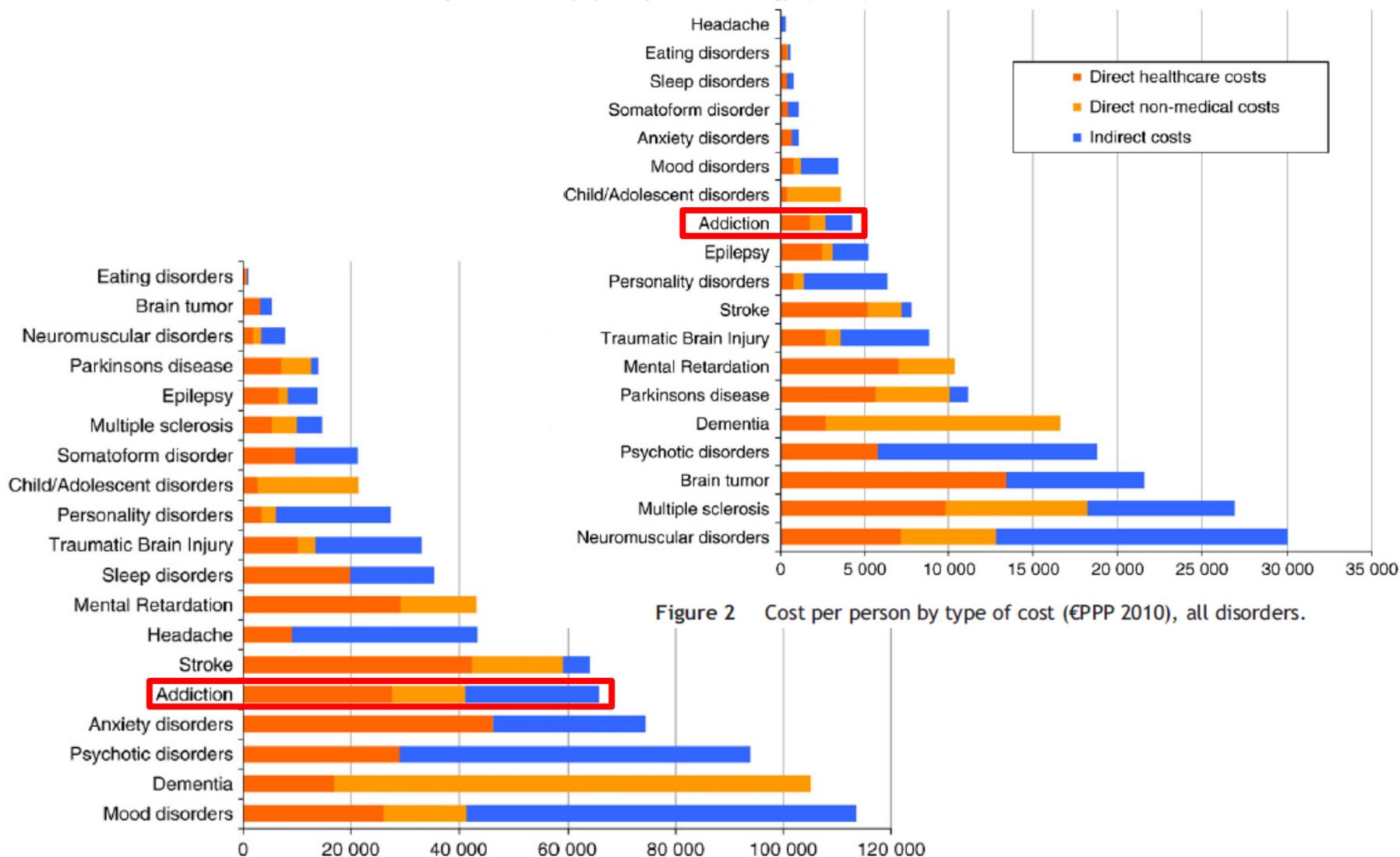
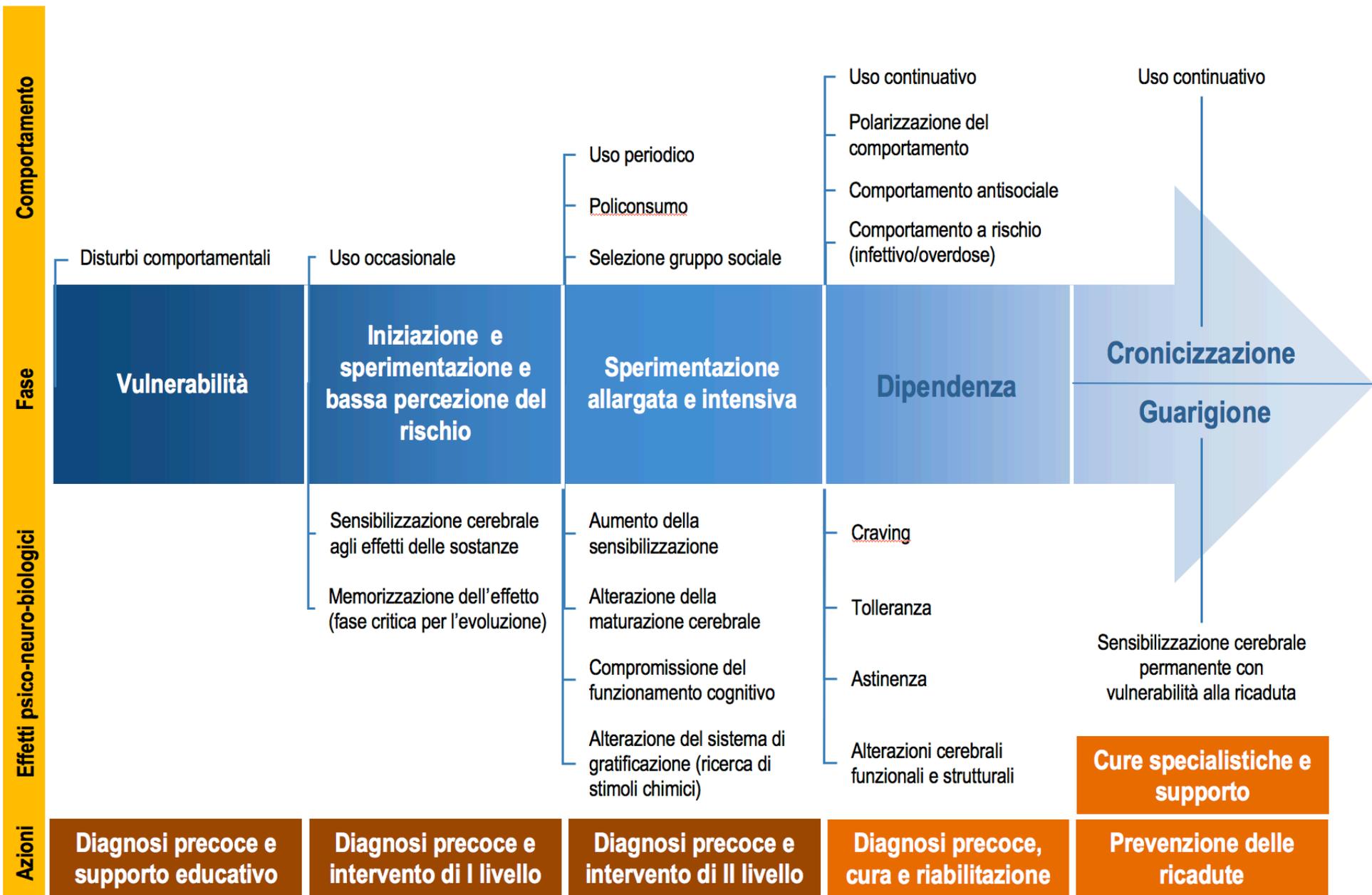


Figure 3 Total cost by disorder and type of cost (€PPP million, 2010), all disorders.



Population Health Management

A Roadmap for Provider-Based Automation In a New Era of Healthcare



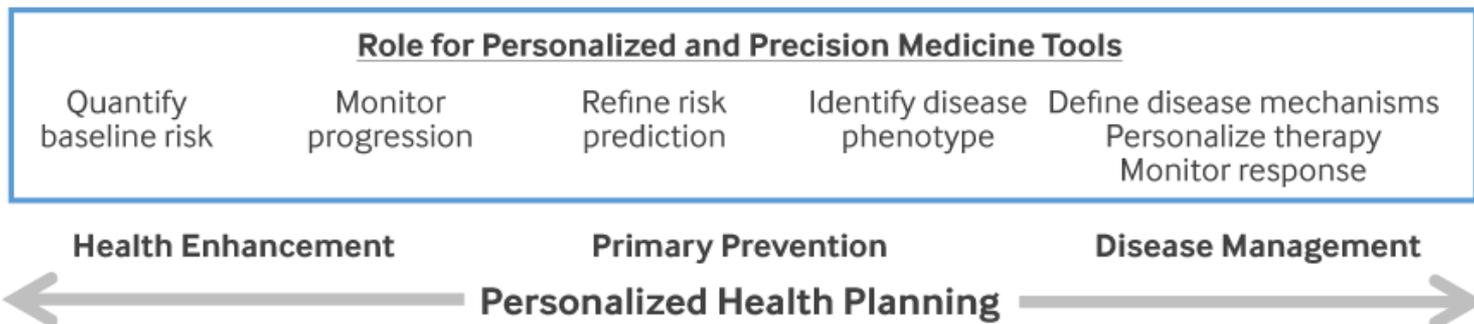
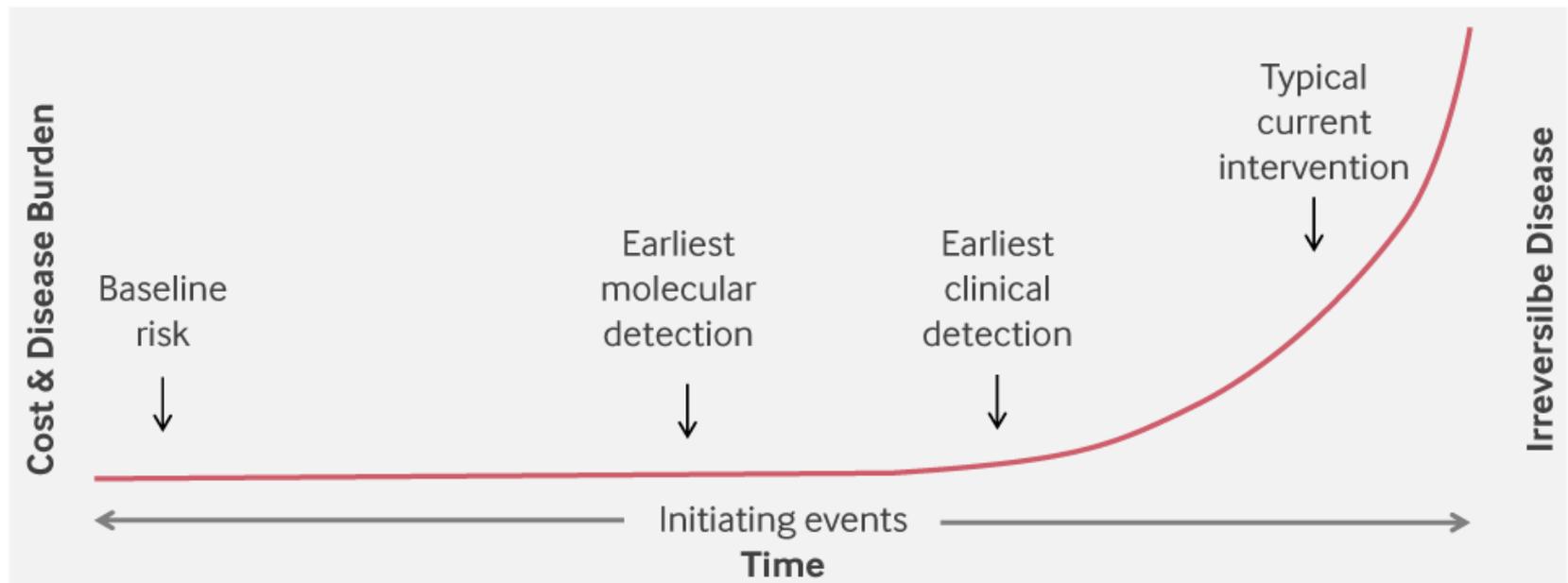
Life365

Targets Healthcare Population with Potential for Greatest Impact

© 2017 LIFE365, Inc.



Inflection Curve of Disease Development

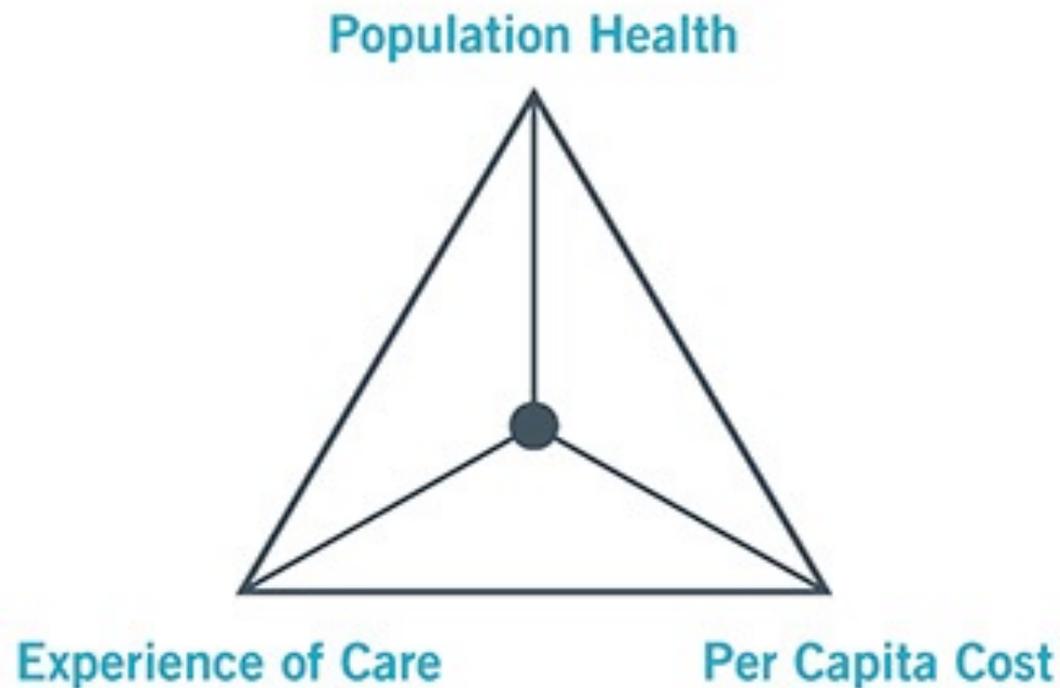


Source: Duke Center for Research on Personalized Health Care
 NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

THE TRIPLE AIM FRAMEWORK FOR POPULATION HEALTH MANAGEMENT

(source: Institute for Healthcare Improvement - IHI)

The IHI Triple Aim



Modello VBHC

PATIENT CARE

Provide patients clinical-grade feedback on their condition, and instructions on what to do next

DATA THAT IS MEASURABLE

Patient outcomes, engagement and improvements

VALUE-BASED HEALTHCARE

COORDINATION OF SERVICE + CARE

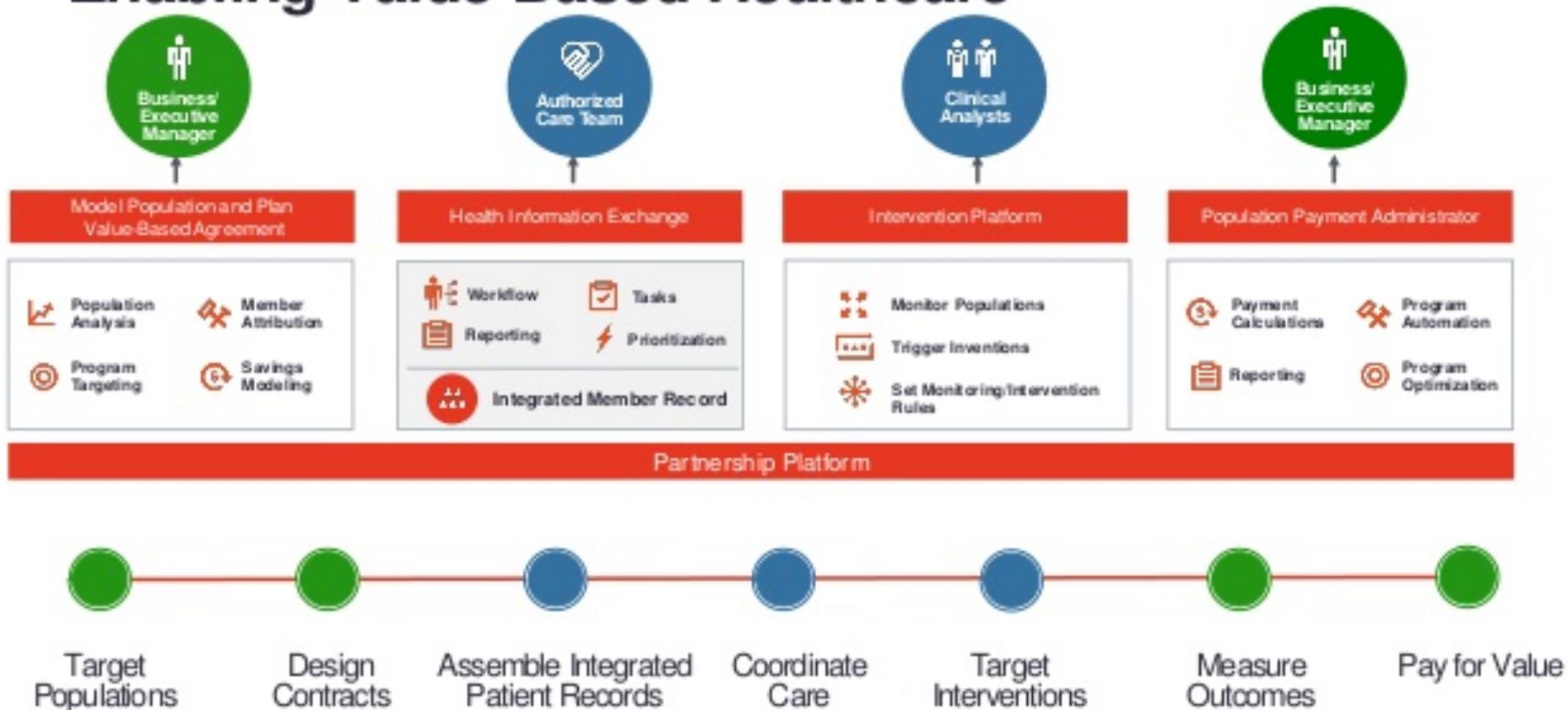
Provides close coordination of services, based on 24/7 real-time data

COMMUNICATION + COLLABORATION

Foster proactive collaboration between healthcare providers and patients

Outcome, Not Output

Enabling Value Based Healthcare



Digital Healthcare Solutions



10 Ways Technology Is Changing Healthcare

Artificial intelligence
has the potential to
redesign healthcare
completely

3D-printing
tissues with blood
vessels until bones and
synthetic skin.

Medical tricorder
in Star Trek, Dr McCoy

Genome sequencing
a cheaper genetic test
(\$10-150)

Virtual reality
is changing the lives of
patients and physicians

**Healthcare trackers,
wearables and sensors**
to manage your weight,
your stress level, your
cognitive capabilities
better

Nanotechnology
precise drug delivery
systems, cancer
treatment tools or tiny
surgeons.

Augmented reality
to become a driving
force in the future of
medicine (3-dimensional
reconstructions of ...)

**Revolutionizing drug
development**
in silico trials.

Robotics
surgical robots until
pharmabotics,
disinfectant robots or
exoskeletons



Dr. Bertalan Mesko

the Medical FuturistSM

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FDA permits marketing of mobile medical application for substance use disorder

<https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm576087.htm>

The Reset device is a mobile medical application system containing a patient application and clinician dashboard. **The device delivers cognitive behavioral therapy** to patients to teach the user skills that aid in the treatment of SUD and are intended to increase abstinence from substance abuse and increase retention in outpatient therapy programs. The system is intended to be used in conjunction with outpatient therapy and in addition to a **contingency management system**, a widely-used program for treating SUD that uses a series of incentives to reward patients for adherence to their treatment program.



**U.S. FOOD & DRUG
ADMINISTRATION**

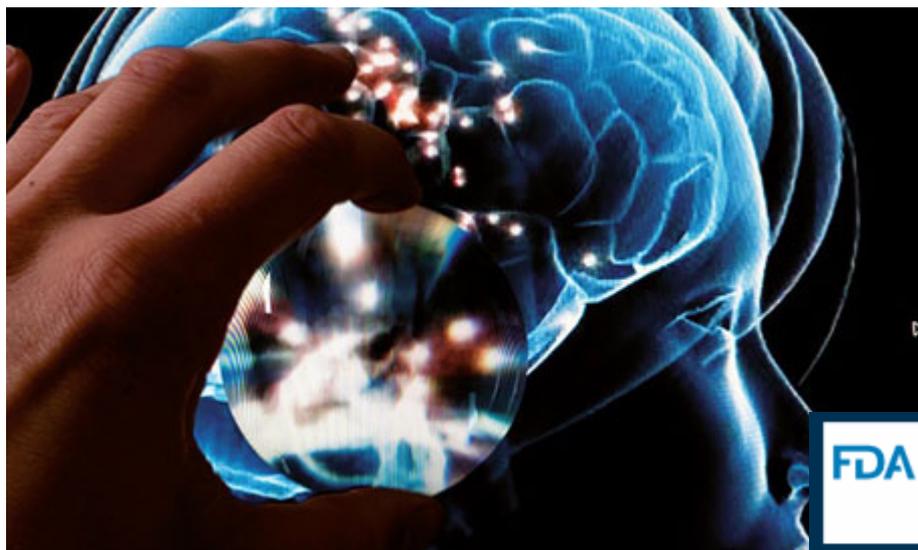
FDA grants marketing authorization of the first device for use in helping to reduce the symptoms of opioid withdrawal

November 15, 2017

<https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm585271.htm>

The NSS-2 Bridge device is a small electrical nerve stimulator placed behind the patient's ear. It contains a battery-powered chip that emits electrical pulses to stimulate branches of certain cranial nerves. Such stimulations may provide relief from **opioid withdrawal symptoms**.

Prior to using the device, the average COWS score for all patients was 20.1. Study results showed that all patients had a **reduction in COWS of at least 31 percent** within 30 minutes of using the device.



**U.S. FOOD & DRUG
ADMINISTRATION**

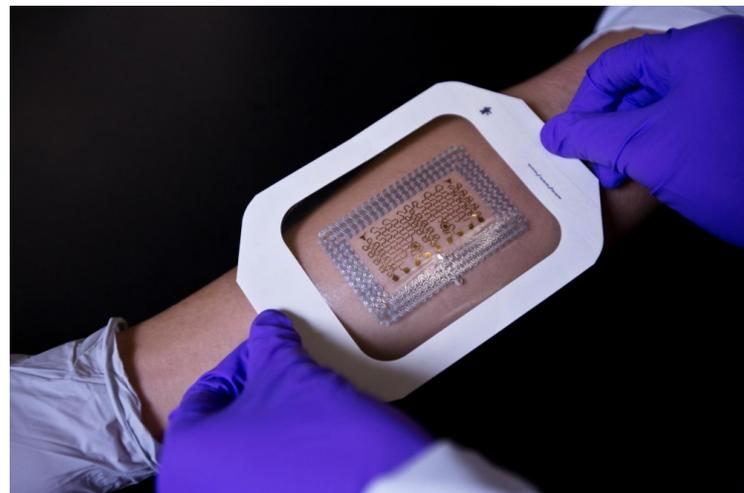
Wearable Biosensors to Detect Physiologic Change During Opioid Use

J. Med. Toxicol. (2016) 12:255–262
DOI 10.1007/s13181-016-0557-5

Stephanie Carreiro¹ • Kelley Wittbold¹ • Premananda Indic² • Hua Fang³ •
Jianying Zhang³ • Edward W. Boyer¹

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4996791/pdf/13181_2016_Article_557.pdf

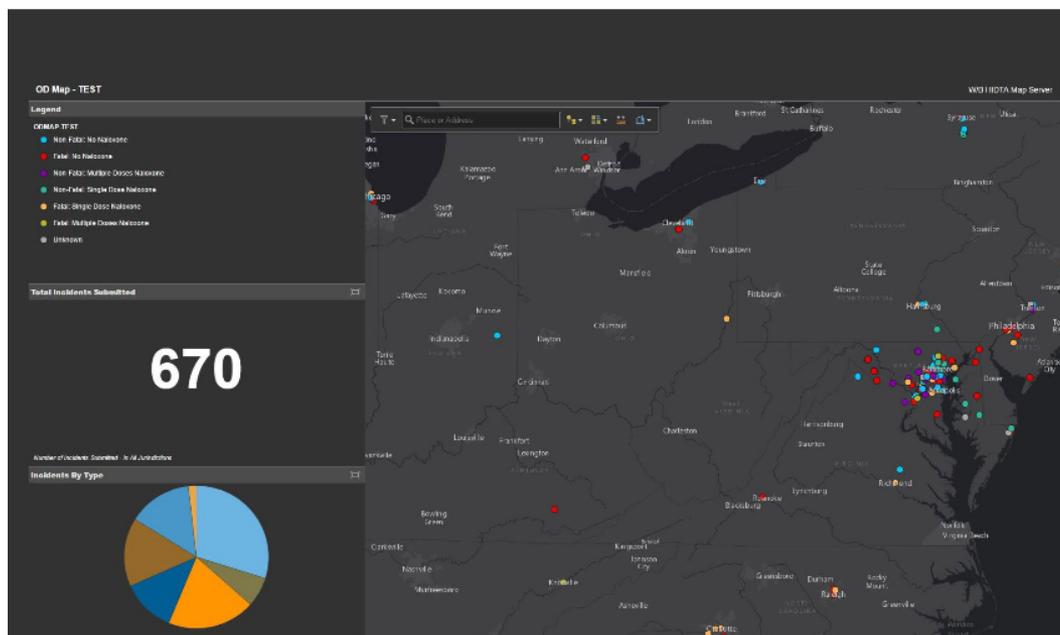
Conclusion. Wearable biosensors show a consistent physiologic pattern after opioid administration in an ED population. This biometric response shows some **distinguishing features between heavy and non-heavy opioid users** in a controlled ED setting. This pattern may be useful **to detect episodes of opioid use in real time.** Further study is needed to evaluate the potential diagnostic and interventional applications of these devices **in drug abuse treatment and pain management.**



THIS APP MAPS OPIOID OVERDOSES IN REAL TIME

<https://www.wired.com/story/baltimore-built-an-app-to-map-opioid-overdoses-in-real-time/>

The Washington/Baltimore HIDTA set out to create a tool that would give law enforcement and health officials the data they need to respond to the public health crisis as swiftly as possible. The result was a **web app called ODMAP** that combines street-level data with tools from Esri, the digital mapping company, **to help public health officials, police departments, and first responders track and respond to overdoses in real time.**



WIRED

OPIOIDS HAVEN'T SOLVED CHRONIC PAIN. MAYBE VIRTUAL REALITY CAN

<https://www.wired.com/story/opioids-havent-solved-chronic-pain-maybe-virtual-reality-can/>

“We know that **positive thinking can actually work on a molecular level**, by stopping ions from jumping the gate and causing pain signals to reach the brain,” says William Clark Becker, an internist at the Yale School of Medicine, where he researches pain management and addiction.

He’s found that his patients actually **respond really well to mindfulness and CBT**, and delivering those treatments in immersive VR is a tantalizing idea.





SCIENCE

CAN VIRTUAL REALITY TREAT ADDICTION?

RESEARCHERS ARE PLUGGING IN SMOKERS, ALCOHOLICS, AND EVEN CRACK ADDICTS TO EXPOSE THEM TO A RELAPSE ENVIRONMENT--AND TEACH THEM HOW TO DEAL WITH IT. WILL IT WORK?

By Colin Lecher April 19, 2013



Addictive Behaviors

Volume 41, February 2015, Pages 61–64



Short Communication

The effect of repeated exposure to virtual gambling cues on the urge to gamble

Chan-Bin Park^{a, e}, Su Mi Park^a, Ah Reum Gwak^a, Bo Kyung Sohn^{a, b}, Jun-Young Lee^{a, b}, Hee Yeon Jung^{a, b}, Sam-Wook Choi^c, Dai Jin Kim^d, Jung-Seok Choi^{a, b},  

2011-06-22, English, Article, Report edition:

Validation of two virtual environments for the prevention and treatment of pathological gambling.(ADDICTIONS, URGES AND CRAVINGS: TOWARDS BETTER UNDERSTANDING AND TREATMENTS)(Report)

Loranger, Claudie; Bouchard, Stephane; Boulanger, Julie; ...

Bookmark: <http://trove.nla.gov.au/version/166722151>

Cyberpsychol Behav Soc Netw. 2013 Mar;16(3):224-31. doi: 10.1089/cyber.2012.1573.

Gambling exposure in virtual reality and modification of urge to gamble.

Giroux I¹, Faucher-Gravel A, St-Hilaire A, Boudreault C, Jacques C, Bouchard S.



Computer Methods and Programs in Biomedicine

Volume 129, June 2016, Pages 99–108



Exposure Therapy

The effects of a virtual reality treatment program for online gaming addiction

Sung Yong Park^a  , Sun Mi Kim^a  , Sungwon Roh^b  , Min-Ah Soh^c  , Sang Hoon Lee^d  ,
Hyungjin Kim^a  , Young Sik Lee^a  , Doug Hyun Han^a  

 Show more

Transcranial magnetic stimulation of the brain: guidelines for pain treatment research

Comprehensive Review

PAIN

Max M. Klein^{a,*}, Roi Treister^a, Tommi Raij^b, Alvaro Pascual-Leone^c, Lawrence Park^{d,e}, Turo Nurmi^f, Fred Lenz^g, Jean-Pascal Lefaucheur^{h,i}, Magdalena Lang^a, Mark Hallett^j, Michael Fox^{a,b,c}, Merit Cudkovic^a, Ann Costello^d, Daniel B. Carr^k, Samar S. Ayache^{h,i}, Anne Louise Oaklander^{a,l}

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4545735/pdf/jop-156-1601.pdf>

Table 1

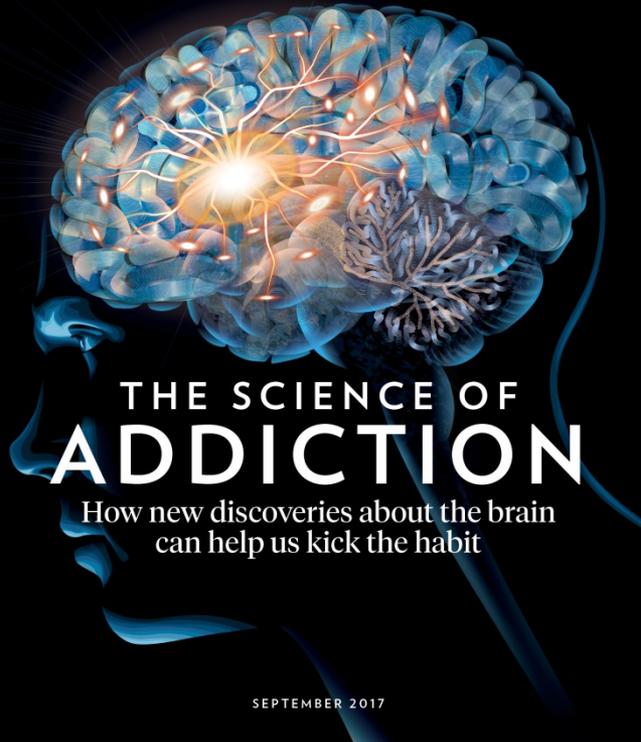
Minimum technical parameters to describe a transcranial magnetic stimulation study.

Category	Parameters
Coil design	Shape
	Size
Coil placement	Coil orientation
	Stimulation site
	Method for locating stimulation site
Stimulation parameters	Pulse intensity (as % resting motor threshold)
	Pulse frequency
	Train length
	Train duration
	Number of trains
	Intertrain interval
	Session parameters
	Total number of sessions
	Between session intervals (eg, weekday, every consecutive day)
	Maintenance session parameters
Sham conditions	Strategies for allocation concealment
	Extent of blinding of subjects and administrators
	Control of auditory, visual, tactile, electrical effects
	Were subjects asked to identify real vs sham?
	Were subjects asked to rate sensory and/or auditory and visual sensations?



EXPLORE: YOUR HEALTH
FOODS TO FAVOR | PROSTHETIC HANDS THAT FEEL | WHY EMOTIONS MATTER

NATIONAL
GEOGRAPHIC



THE SCIENCE OF
ADDICTION

How new discoveries about the brain
can help us kick the habit

SEPTEMBER 2017

Brain-altering magnetic pulses could zap cocaine addiction

By Meredith Wadman | Aug. 29, 2017, 3:30 PM



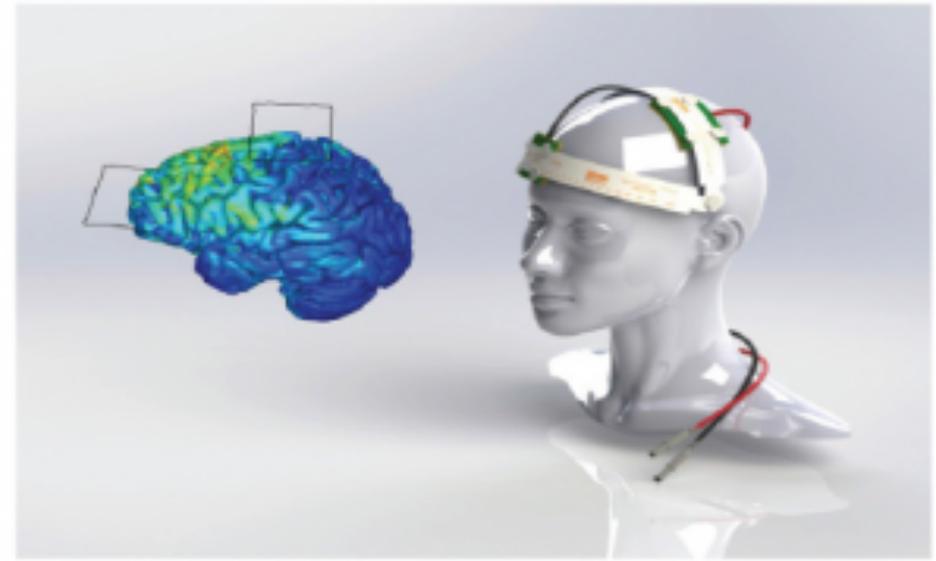
sciencemag.org

Transcranial Direct Current Stimulation (tDCS): What Pain Practitioners Need to Know

<https://www.practicalpainmanagement.com/treatments/interventional/stimulators/transcranial-direct-current-stimulation-tDCS-what-pain>

Non-invasive brain stimulation with tDCS is an emerging tool for adjunctive treatment of pain syndromes. Its long-lasting analgesic effects are probably caused by alterations of activity in cerebral pain-processing networks.

The primary mechanism of tDCS is a subthreshold modulation of neuronal resting membrane potential. In other words, the electrodes provide stimulation to specific areas of the brain for a few minutes, which results in neuroplasticity of glutamatergic synapses, and, thus, alterations of cortical excitability that last for 1 hour or more.

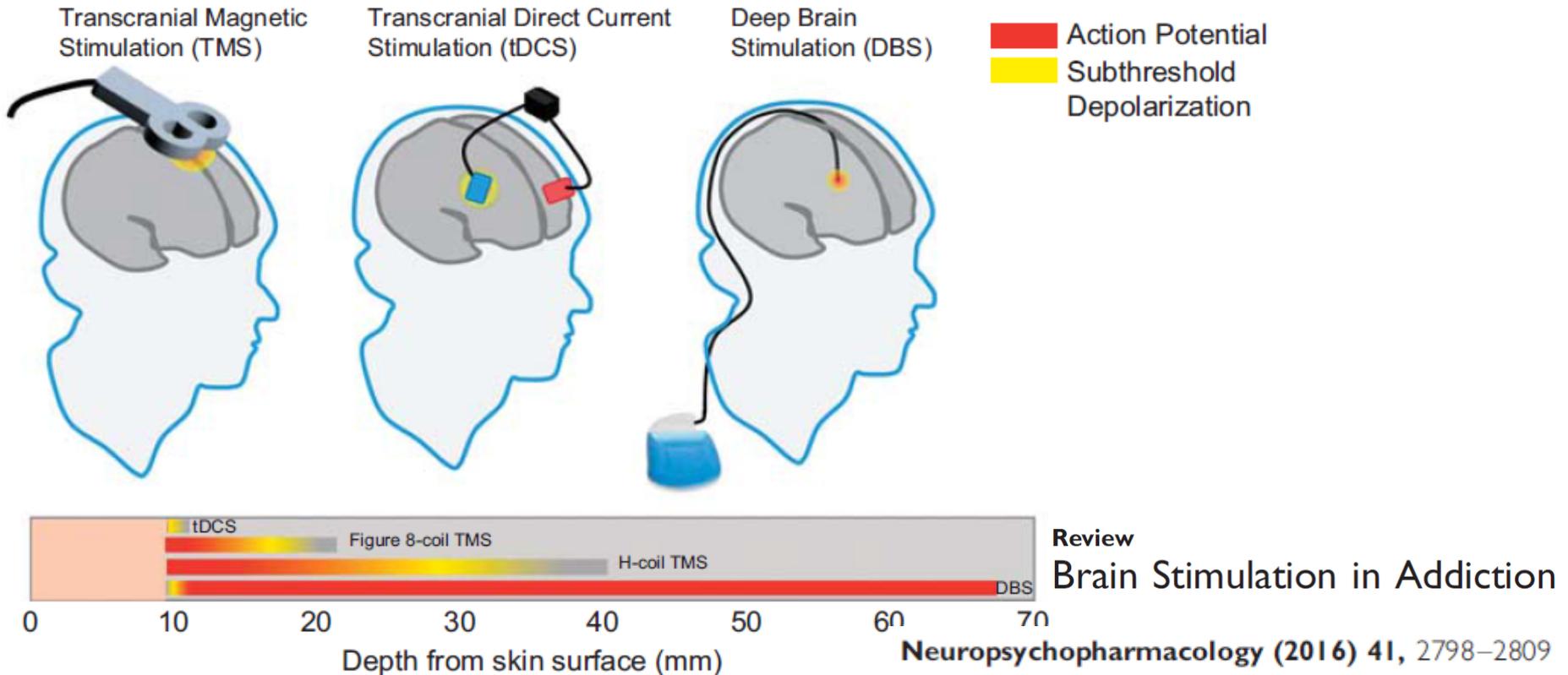


Neuromodulation for Addiction by Transcranial Direct Current Stimulation: Opportunities and Challenges

Shahid Bashir^{a,b} Woo-Kyoung Yoo^{c,d}

tDCS have gained immense popularity due to their effects on modulating cortical activity and, consequently cognitive performance. However, the neurophysiology underlying such neuroplastic changes is less understood.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5075739/>



EEG Neurofeedback in the Treatment of Chronic Pain: A Case Series

Edward H. Jacobs^{1*} and Mark P. Jensen²

doi:10.15540/nr.2.2.86

Neurofeedback Training for Opiate Addiction: Improvement of Mental Health and Craving

Fateme Dehghani-Arani · Reza Rostami ·
Hosein Nadali

Appl Psychophysiol Biofeedback (2013) 38:133–141
DOI 10.1007/s10484-013-9218-5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3650238/pdf/10484_2013_Article_9218.pdf

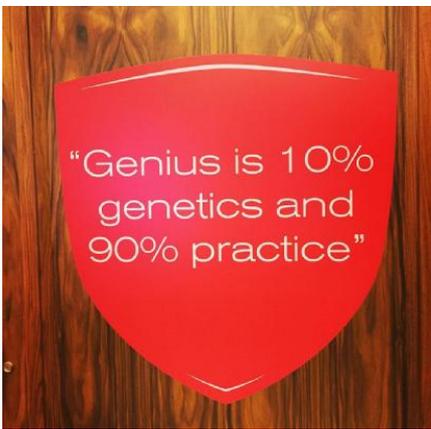
Data from the general health questionnaire and a heroin craving questionnaire were collected before and after treatment. Multivariate analysis of covariance showed that the experimental group achieved **improvement in somatic symptoms, depression, and total score in general mental health**; and in anticipation of positive outcome, desire to use opioid, and relief from withdrawal of craving in comparison with the control group. The study supports the **effectiveness of neurofeedback** training as a therapeutic method in opiate dependence disorder, **in supplement to pharmacotherapy**.

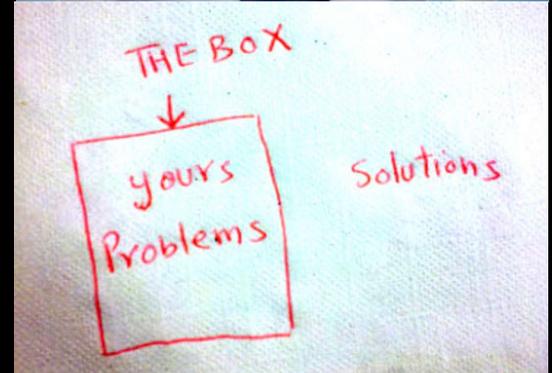
Che si può fare?





Strokes of genius





*“Oggi è necessario produrre ciò che si vende,
non vendere ciò che si produce”*

Arlen Meyers, MD, MBA
Co-Founder, President and CEO, Society of
Physician Entrepreneurs at ceo@sopenet.net

Già segui



Will digital natives transform care?

4 mag 2015



125



27



0



Digital natives are those born after 1980. They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age. This demographic has the potential to transform sick care in many ways.

No Downgrade!



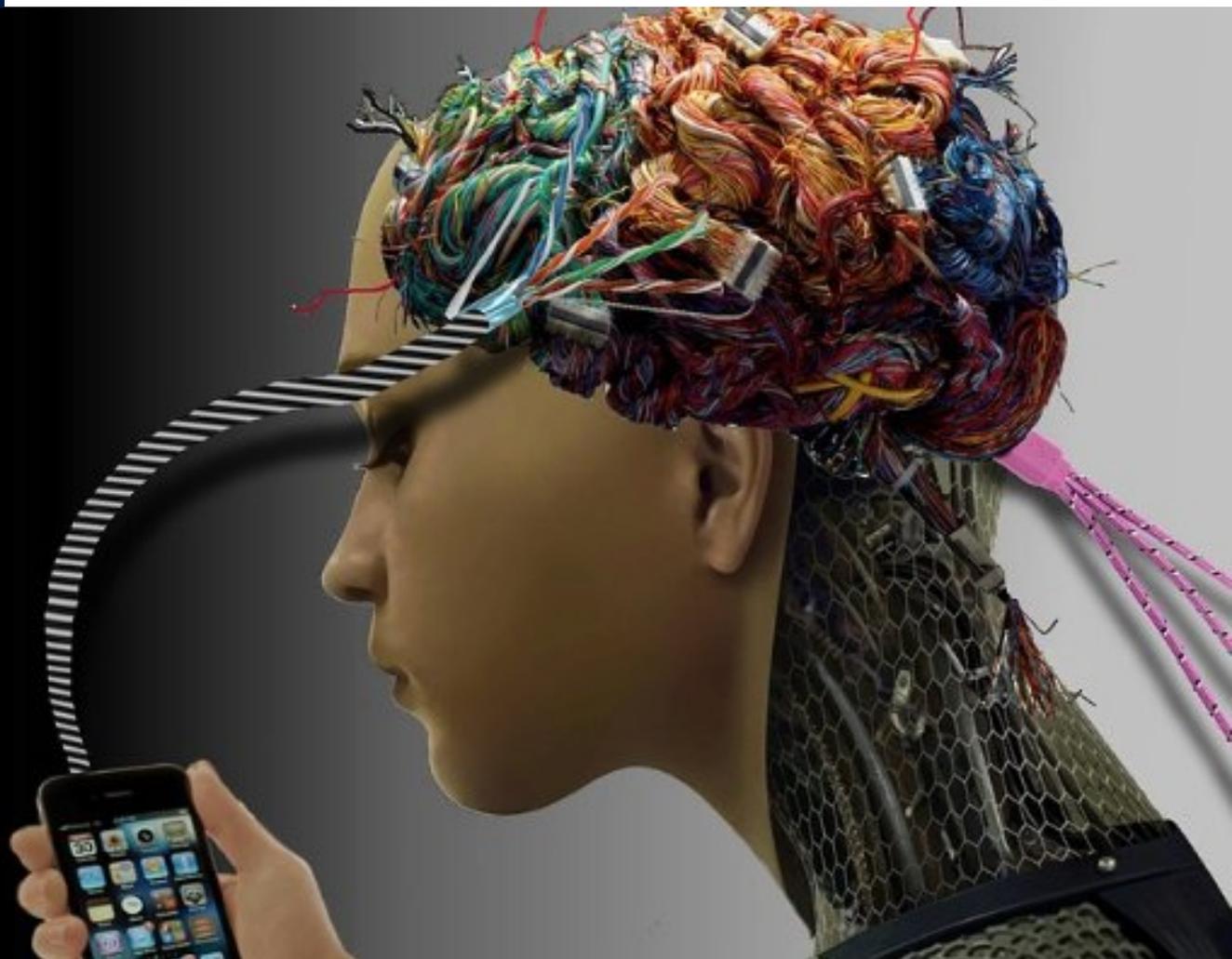
We couldn't uninstall these apps



UPGRADE



Riqualificazione dei professionisti



Participation: Power to the patients

Katherine Bourzac

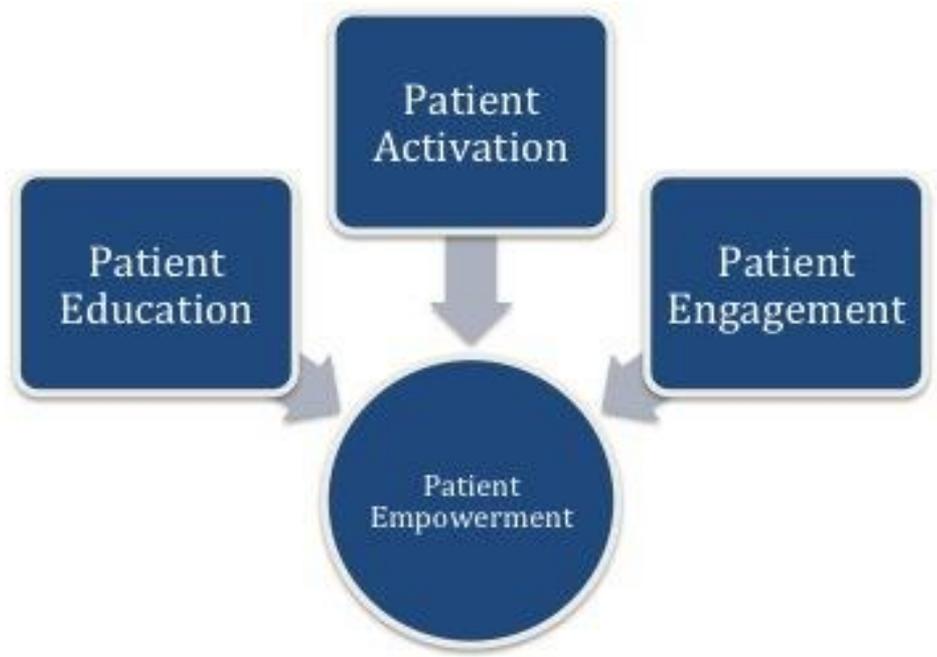
Nature **537**, S66–S68 (08 September 2016) | doi:10.1038/537S66a

Published online 07 September 2016

Literacy

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- Article metrics

When data-gathering precision-medicine projects build trust with their users, patients and researchers both benefit.

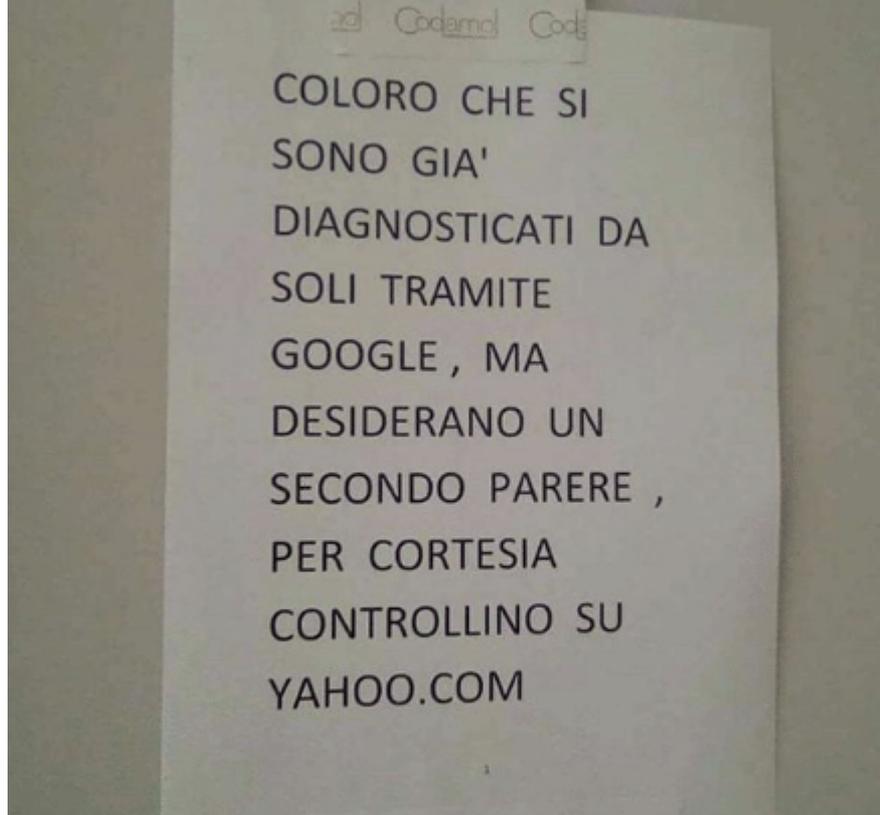


PATIENTS RELATIONSHIP MANAGEMENT

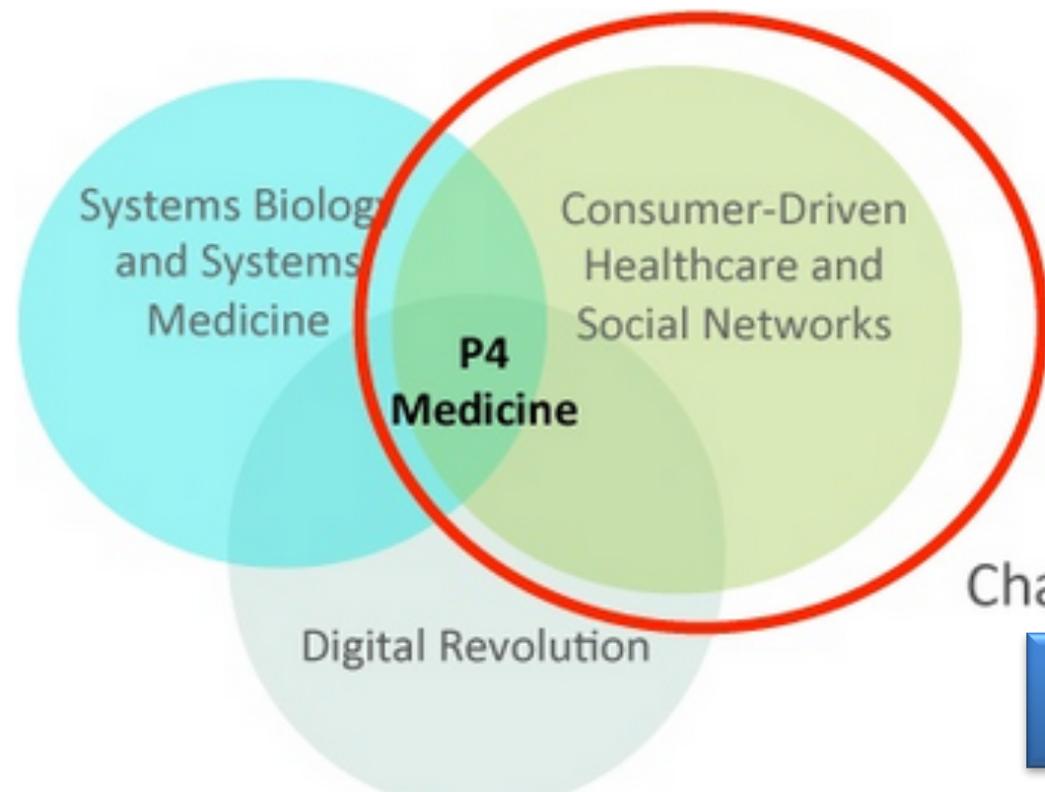


Second Opinion

"I already diagnosed myself on the Internet. I'm only here for a second opinion."



PATIENTS RELATIONSHIP MANAGEMENT



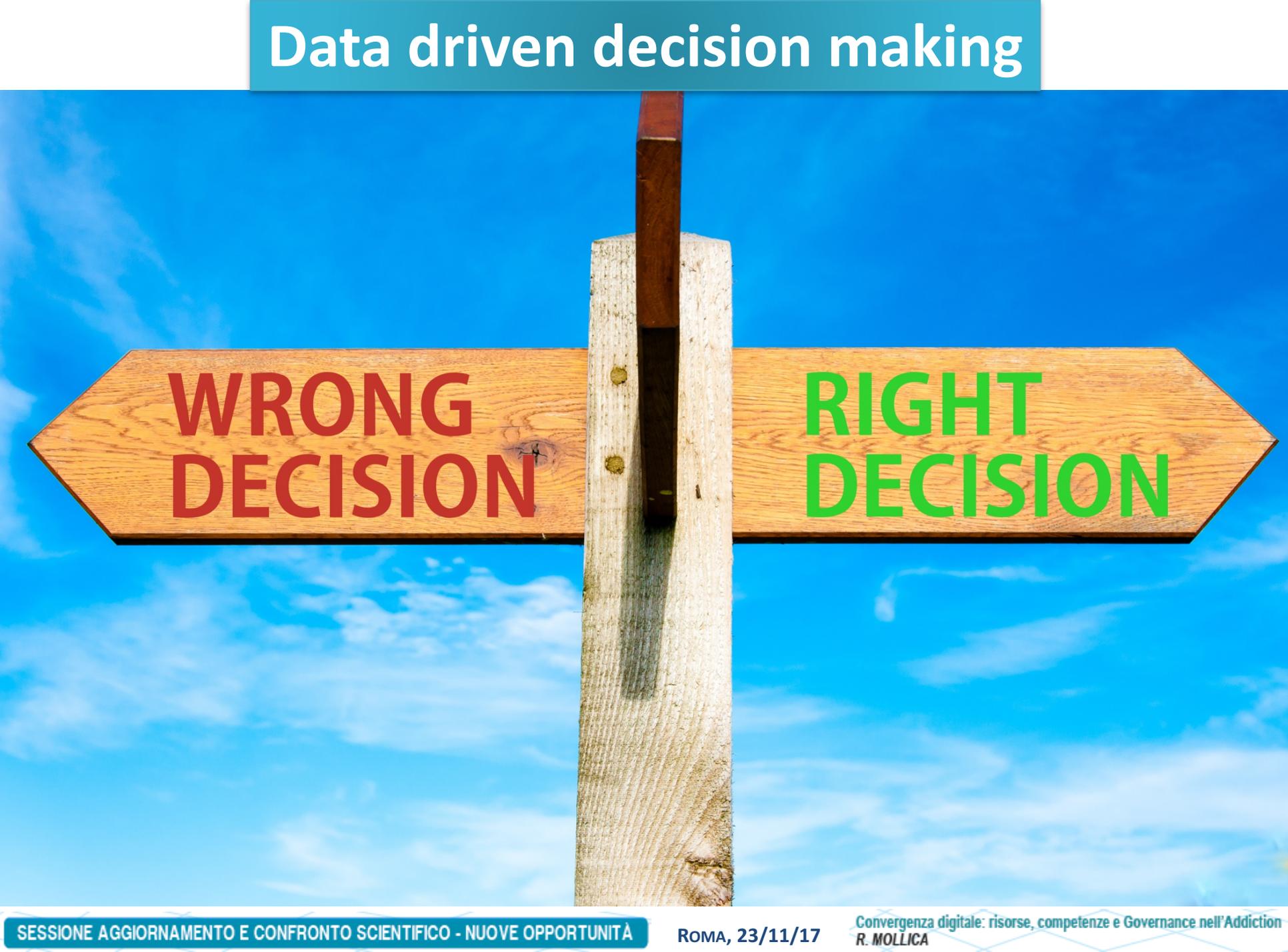
Self

Change agent

Social

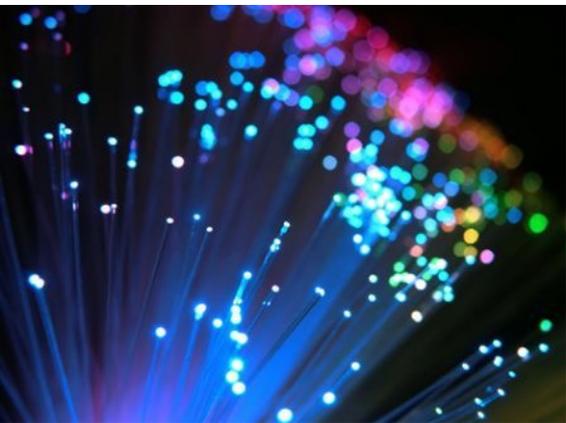
Smart

Data driven decision making



**WRONG
DECISION**

**RIGHT
DECISION**



Volume

Data Size



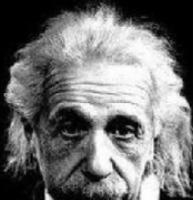
Data Complexity

Speed of Change
Velocity

Data Sources
Variety



"WE CANNOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE CREATED THEM"



INDUSTRIA



DIGITALIZZAZIONE DEI PROCESSI PER CONNETTERE SISTEMI INTELLIGENTI

CHANGE MANAGEMENT FOR THE IMPLEMENTATION OF A DIGITAL HEALTHCARE SYSTEM

TREATMENTS AS USUAL

APPLIED DIGITAL CLINICAL SOLUTIONS

CONNECTED HEALTH

AI - COGNITIVE COMPUTING

INFO SYSTEM(S)

DATA DRIVEN DECISION MAKING

Enhanced Learning through Multimodal Training: Evidence from a Comprehensive Cognitive, Physical Fitness, and Neuroscience Intervention

SCIENTIFIC REPORTS

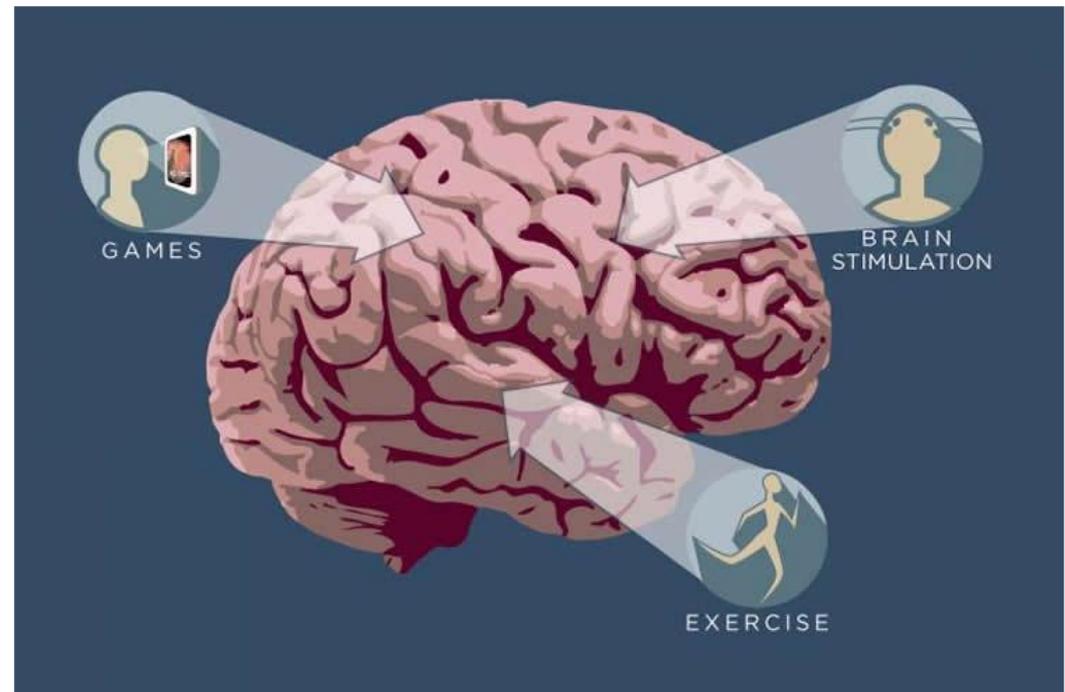
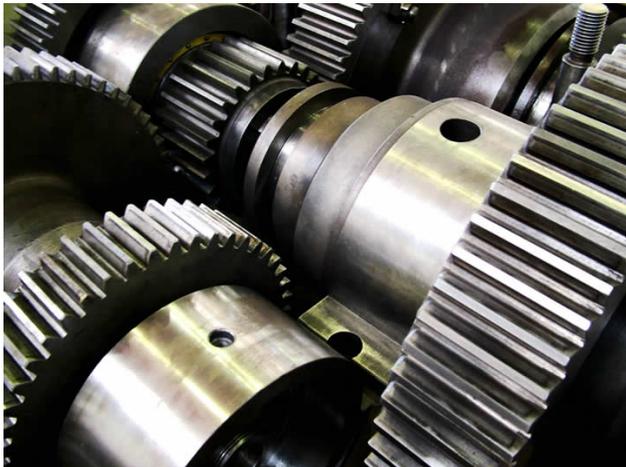
Received: 12 October 2016

Accepted: 12 June 2017

Published online: 19 July 2017

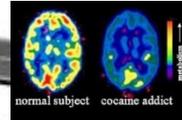
N. Ward^{1,2}, E. Paul¹, P. Watson¹, G. E. Cooke¹, C. H. Hillman^{1,3,4,5,6,10}, N. J. Cohen^{1,4,5}, A. F. Kramer^{1,4,5} & A. K. Barbey^{1,4,5,6,7,8,9}

<http://www.nature.com/articles/s41598-017-06237-5.pdf>



Illinois professor Aron Barbey led a study that examined how cognitive cross-training affects skill learning. NeuroscienceNews.com image is credited to Julie McMahon.

Governare il cambiamento!!



A SMOOTH SEA
NEVER MADE A SKILLED SAILOR.



La Digital Revolution non sostituisce i clinici!

Semplicemente, i clinici che la adottano sostituiranno quelli che non lo fanno, anche a livello manageriale!

IL PASSATO
INSEGNA
AL PRESENTE
COME COMPORTARSI
PER IL FUTURO



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