



Value-based healthcare as a model of effective  
development. Pilot projects in Russia

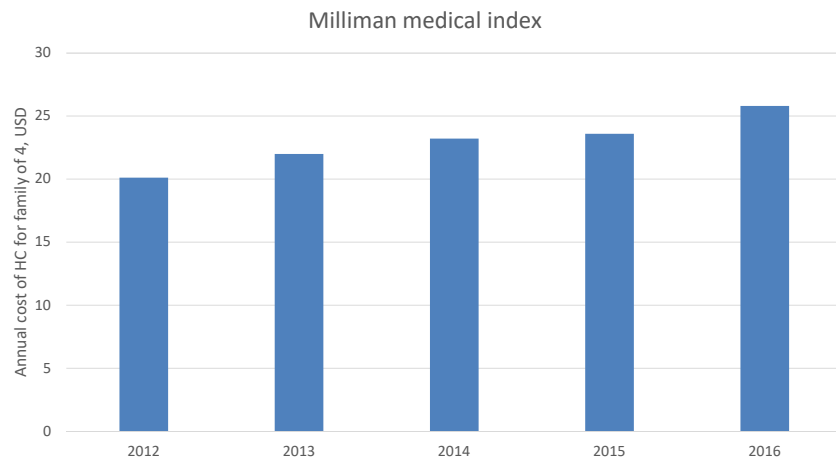
Konradi A.O.

1.06.2017 Hamburg

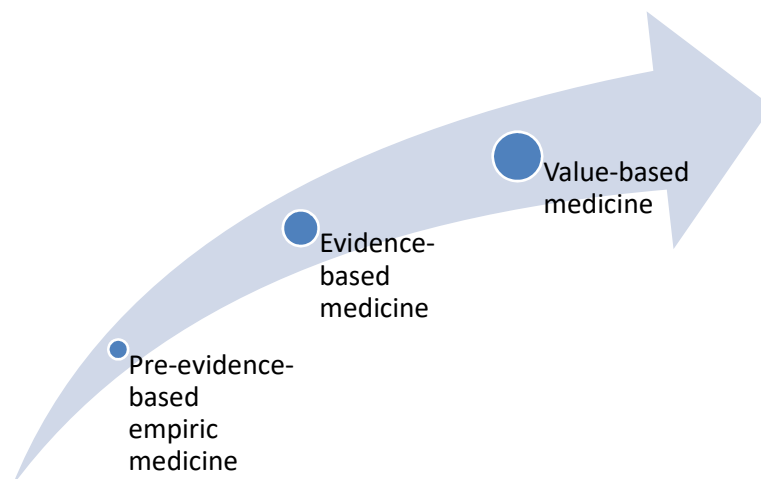
## Challenges for the healthcare of the future

- The resources are limited, the technologies are expensive – **lack of money**
- The technologies are developing faster than skills of professionals – **lack of specialists**
- The implementation of technologies is driven by business and providers – **lack of patients' perception**
- The analytics is insufficient – **lack of outcome and value measurement**

## Medical inflation



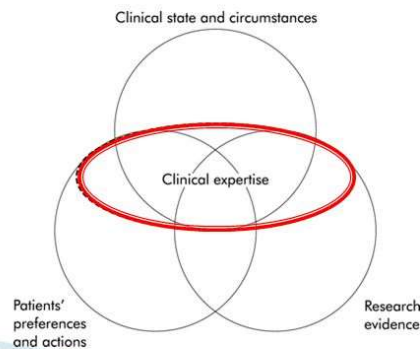
## Paradigm of medicine



## What is Evidence-Based Medicine?

“Evidence-based medicine is the integration of **best research evidence** with **clinical expertise** and **patient values**”

– *Sackett & Straus 1996*



“Value-based” medicine - the practice of medicine incorporating the highest level of evidence-based data with the patient perceived value conferred by health care interventions for the resources expended.

Brown MM, Brown GC, Sharma S. Evidence-Based Medicine to Value Based Medicine. Chicago, IL: AMA Press; 2005. pp. 5–7.pp. 125–149.pp. 151–181.pp. 193–217.pp. 267pp. 279pp. 319–324

## Principles of Value-Based Health Care Delivery

- The overarching goal in health care must be **value for patients**, not access, cost containment, convenience, or customer service

$$\text{Value} = \frac{\text{Health outcomes}}{\text{Costs of delivering the outcomes}}$$

- Outcomes are the **full set of health results for a patient's condition** over the care cycle
- Costs are the **total costs of care for a patient's condition** over the care cycle



## 5 basic types of healthcare systems

Type	Country	General description
Free market	USA	Offers service and insurance through private sector Maintains safety net through public payment of premium
Bismarck	Germany and France	Provides insurance through competing social funds Offers multiple sources of provision
Hybrid	Netherlands, Japan	Private insurance for high earners and social for others Service both from public and private sector
Beveridge	UK, Spain, Italy, Portugal, Scandinavia	Funds system from general taxation Provides service through public sector, at point of care treatment is free, combination with private sector
Ex-Semashko	Russia, former USSR	Now is restructuring to Bismarck or Beveridge models, or mixed

## Hurricane Mitch Honduras Bridge modern healthcare system



## Continuously learning healthcare system



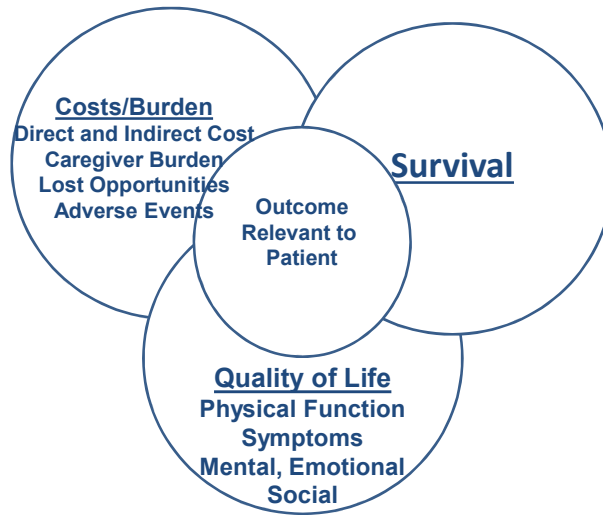
$$\text{Value} = \frac{\text{Patient outcome}}{\text{Healthcare cost}}$$

C. Lee, H. Yoon. Kidney Res Clin Pract . 2017; 36:3-11.

## Examples of different approaches to create VBM



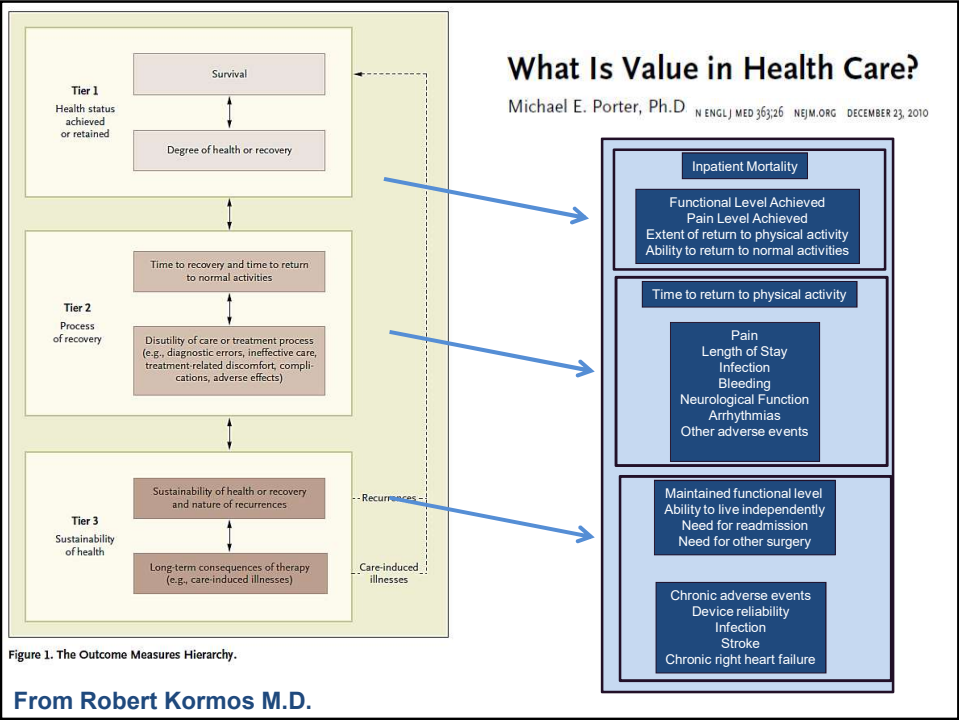
## Multifaceted Outcome of Care



From Robert Kormos M.D.

## The Six “D’s” of Outcomes Research

- Death
- Disease
- Disability
- Discomfort
- Dissatisfaction
- Dollars



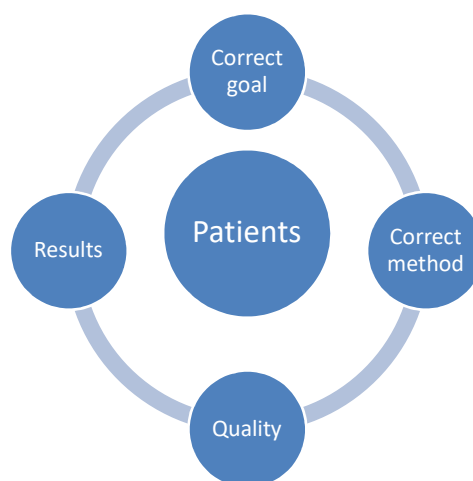


## Treatment outcomes from different points of view

- Physicians
  - Clinical outcomes
- Patients
  - Subjective goals
  - QL
  - Treatment satisfaction
- Stakeholders and State
  - Value
  - Cost



## Patient-oriented Value



## Major principles

- “nothing about me without me”

Ничего обо мне без моего участия!

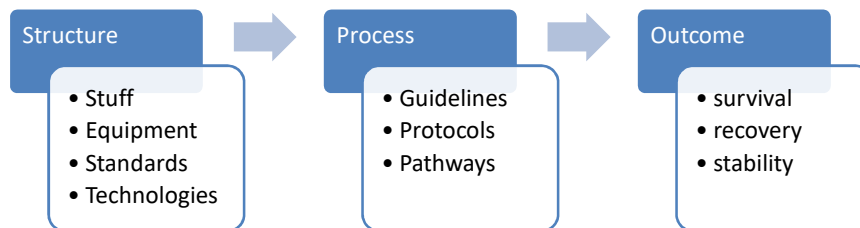
“one size does not fit all”



## Delivering Value Disease Management Continuum

- Hospice/Palliative Care
- Advanced Medical Team
- Home Health
- Integrated Care Management
- Primary Care/Specialists
- Screening/Prevention
- Disease Management System
- Risk Stratification Tool
- Quality Indicators and Metrics

## Integrated quality assessment (Donabedian, 2005)



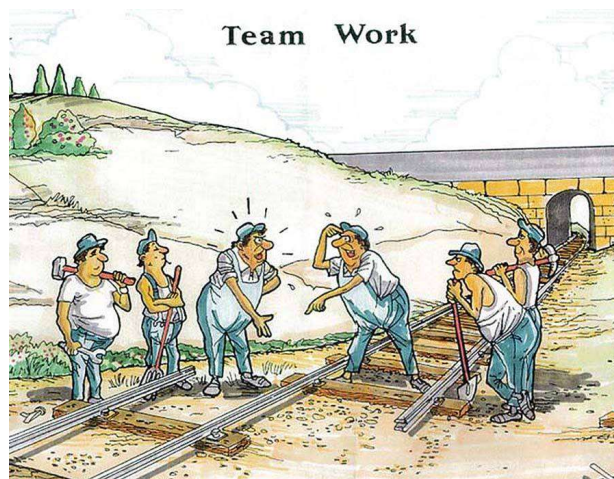
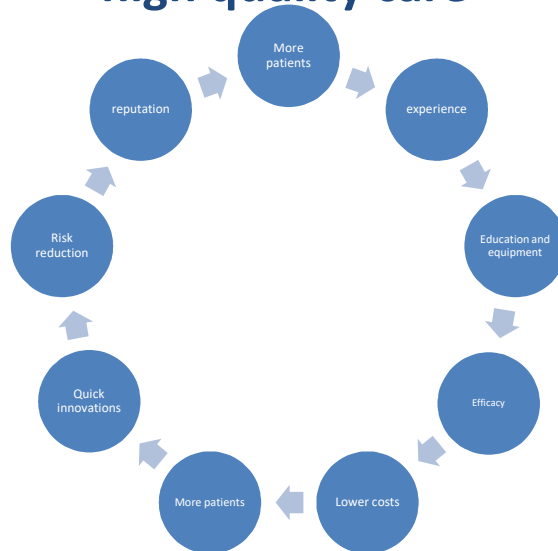
## WE MUST TRANSFORM HOW CARE IS DELIVERED...

*“Our system of uncoordinated, sequential visits to multiple providers, physicians, departments and specialties works against value. Instead we need to move to integrated practice units that encompass all the skills and services required over the full cycle of care for each medical condition.....”*

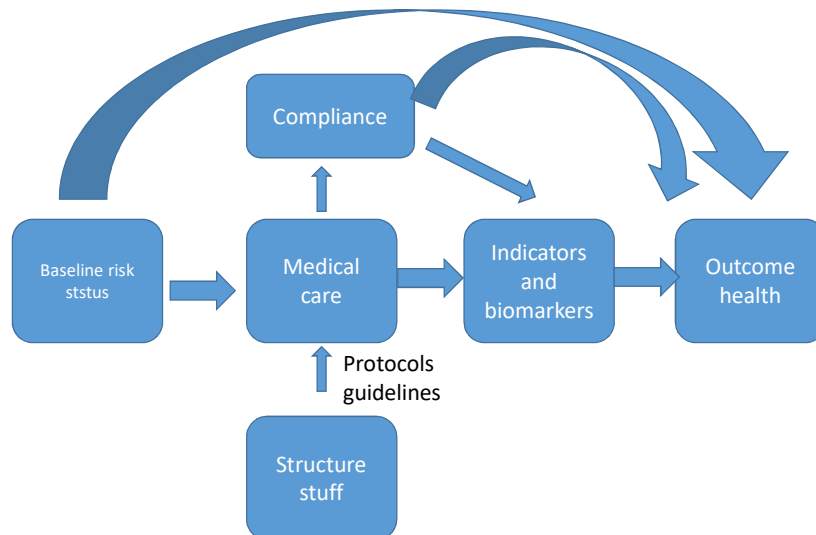
- Michael Porter NEJM 2009;361(2):109-112

A strategy for health care reform –  
Toward a value based system

## Integrated teams for effective and high quality care



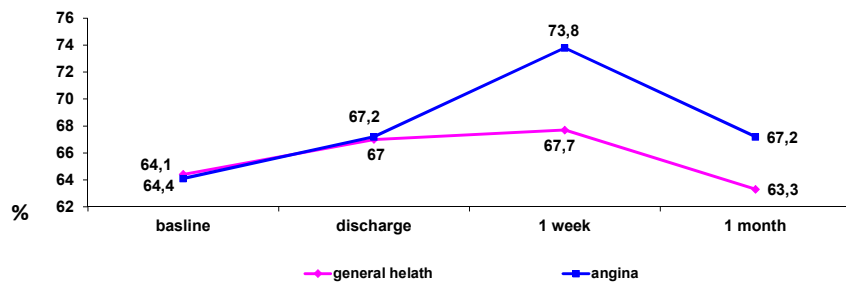
## Proposed system for outcome and performance assessment



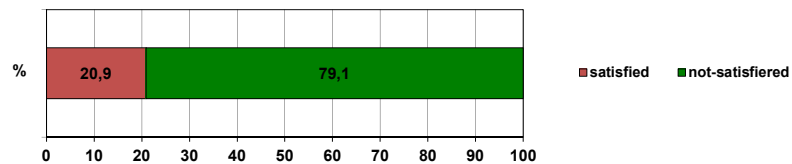
## Patient Reported Outcomes Measurement (PROM)



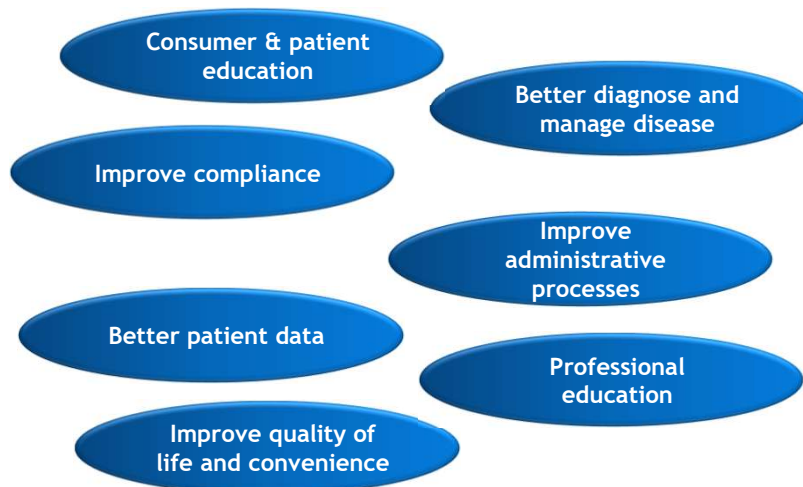
### Patients after PCI. PROM analysis results. General health. Visual analog scale



Patients satisfaction with treatment results. Are personal goals and expectations achieved

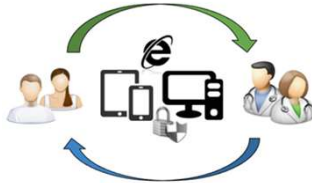


## The Mobile Health Promise

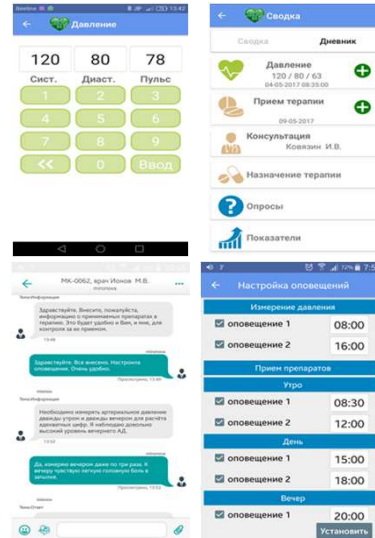


## TELEMEDICINE

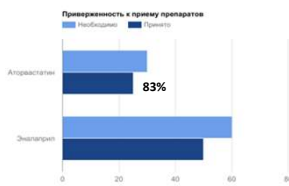
Complex unit consisting of web-interface + mobile apps (both for a doctor and a patient) on vital sign monitoring (BP, HR, SpO2 etc.) with a distant counseling option by medical specialist



- Biomedical recording
- Online counseling by care provider. Notifications on vital signs checking and on medication intake

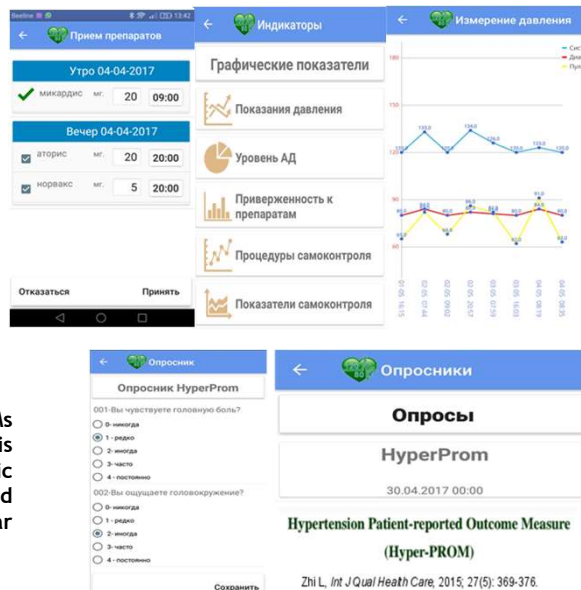


- Treatment adherence control and improvement. Data visualization with figures and diagrams



- An automated PROMs collection and analysis towards further economic effectiveness (CUA, QALY) and PREMs evaluation of particular interventions

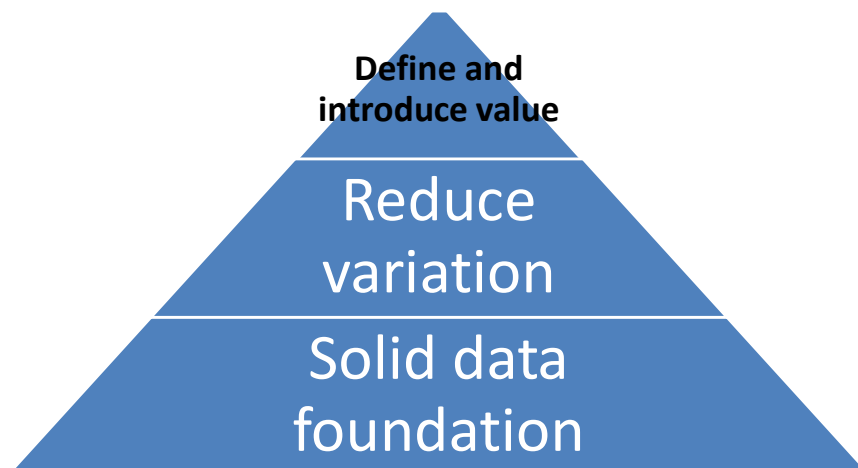
## TELEMEDICINE



**Strapping new technologies on old processes will not be enough**



**The steps to create VB care**





## **Solid data foundation**

### **Having the right data you can**

- Assess the current situation
- Identify opportunities to improve performance
- Design an appropriate programme
- Track your progress

## **Issues to effectively use multiple sources of data**

- Extraction of appropriate information from internal and external sources (medical electronic data, patients records, health risk assessments, lap data, imaging, public health data, patients flow, registers)
- Creating infrastructure to house the data
- Checking the integrity
- Clearance
- Harmonizing
- Apply risk adjustment
- Testing accuracy and completeness

## Variation and risk stratification

- Variation in price for the same procedure from one physician or facility to the next is a huge concern and for one patients to another.
- F way to do this is to measure services by patient using a severity and riskadjusted methodology,
- A risk-adjusted classifications also let us compare performance between facilities and physicians.

## Set up of value

- Although regulations require our organization to track and report redundant or weak measures, we a going to try not to use them to manage our own internal programs.
- For each type of care we choose a limited number of key performance indicators suitable for every project.
- This can be done by selecting a core set of metrics that represent critical aspects of quality, such as health or functional status, changes in health risk, mortality, access to preventative care, continuity of care, chronic and follow-up visits, readmission and complication rates, imaging and ED utilization rates, and composite measures.

## It- technology – creating novel type of hospital

### Smart hospital

- MIS with DSS
- Personalized case calculation
- Automatic management – pharmacy, devices, etc
- Data storage
- Patient flow, staff flow, patient-stuff interaction

### Medical care– value-based hospital

- Quality assessment
- Integrated care and feedback
- Checklists and other reminding systems
- Predictive modeling

## The gap between “efficacy” and “effectiveness” – ideal or real patient?

**Efficacy** (capacity to produce an effect ) -  
the ability of drug or intervention to  
produce a desired effect in expert hands  
under ideal circumstances

**Effectiveness** (capability to produce a desired  
result)– how well a treatment works in practice

**Population** with single disease , no complexity  
**+ Adherence/retention**  
**-Generalizability**

**Real-life population** (comorbidity, behavioral and  
physical conditions, different settings)  
**+Generalizability**  
**-Heterogeneity, adherence/retention**

**Intervention**  
**-Limited information**

**Intervention**  
**+Informative for users** (testing interventions that can  
affect simultaneously multiple conditions; combination  
of pharmacological and nonpharmacological  
treatments; comparison of models of care)  
**-Blindness**

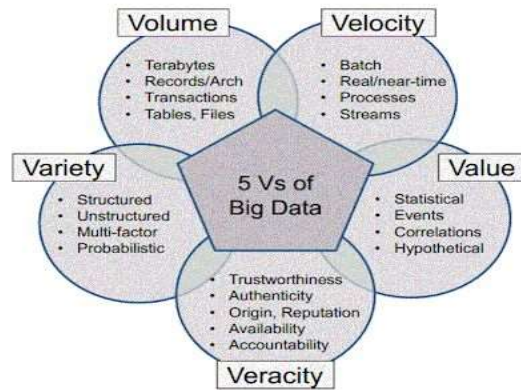
**Disease oriented outcomes** (occurrence of a  
single disease or exacerbation of  
a single chronic condition). Rating scales/test  
measures

**Universal health outcomes** (symptoms  
burden, function, health related quality of life, etc.).  
Real-world measure of clinical practice.  
**Limitations: balance between internal validity and  
generalizability**

Tinetti M. et al. NEJM.2011; 364(26):2478-2480; Sherman R. et al. NEJM.2016;375(23):2293-2297.

## Big data

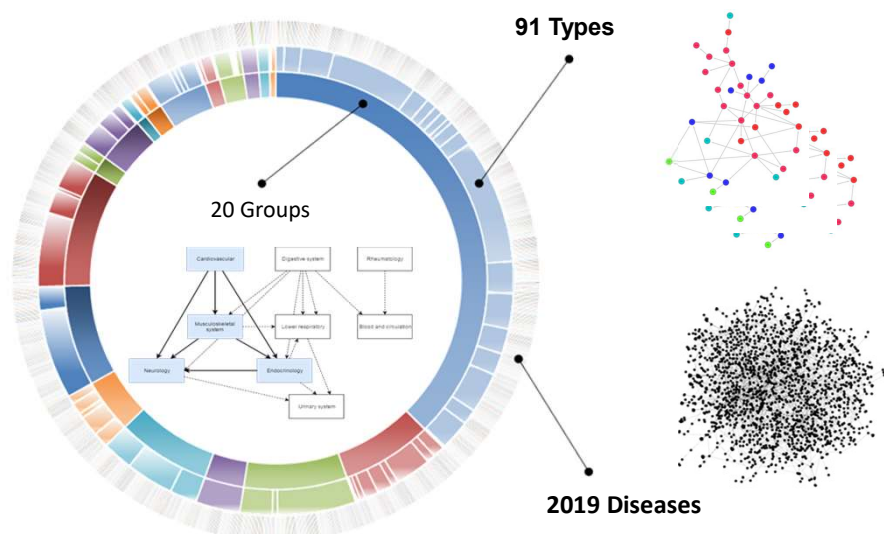
Big data=umbrella term describing large data sets from any source



Real-world data =healthcare related data collected outside RCT

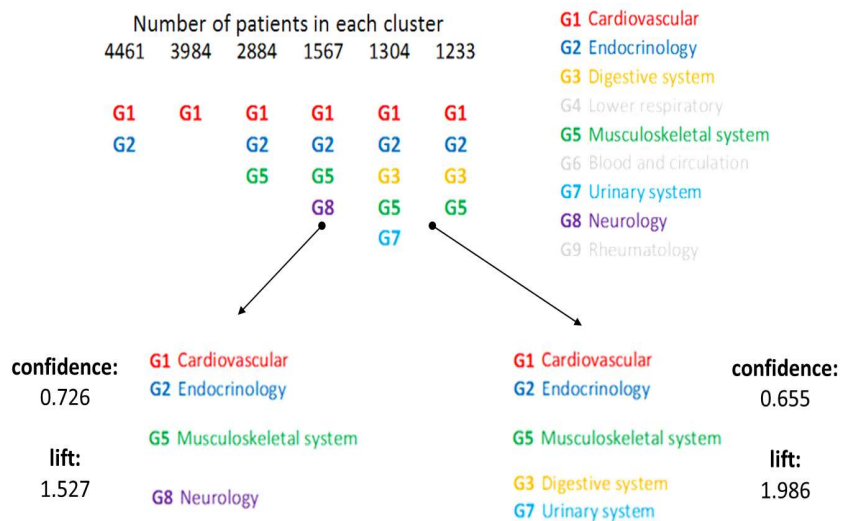
Real-world evidence =evidence from registries, electronic health records, insurance data etc.

## Clustering of patients (n=89653 HTN patients)



Bukhanov N. et al. 2017 in press

## Clustering according to frequencies

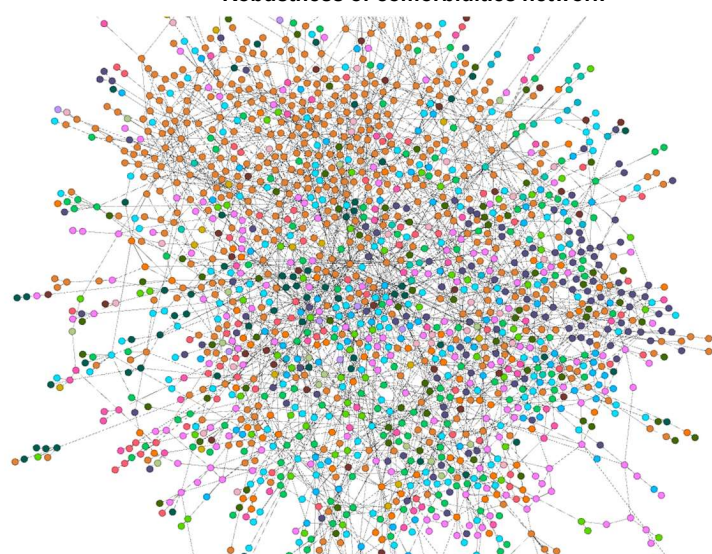
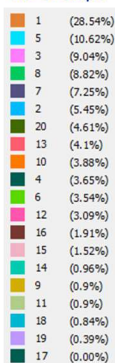


Bukhanov N. et al. 2017 in press

## Bayesian network

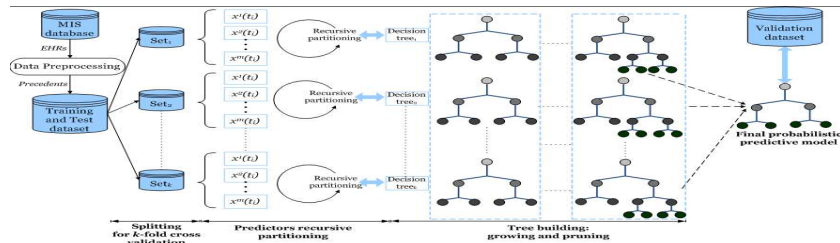
### Robustness of comorbidities network

#### 20 Groups



Bukhanov N. et al. 2017 in press

## Predictive modelling of treatment effectiveness



- 13691 monotherapy data from 68276 hypertensive patients
- Patients profile according to risk factors and target organ damage (15 characteristics)

Beta-blockers

Diuretics

ACE inhibitors

ARB

CaCB

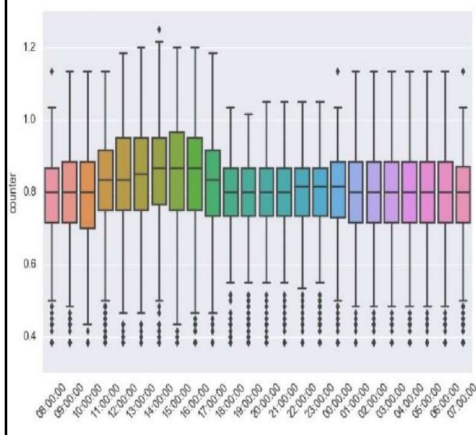
Response rate with responders/non-responders profile

Main predictors of response to specific antihypertensive drug class

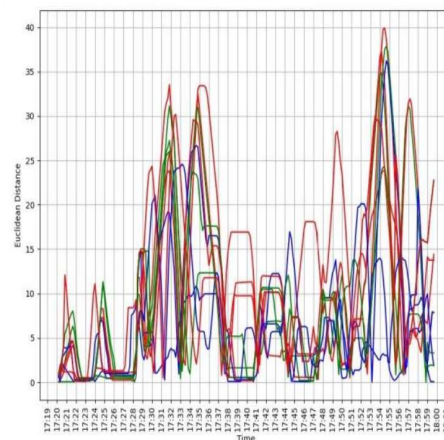
Semakova A. et al. 2017 in press

## Simulation framework for healthcare quality assessment for medical management decision support

Cardio department workload based on patients load (per hour)

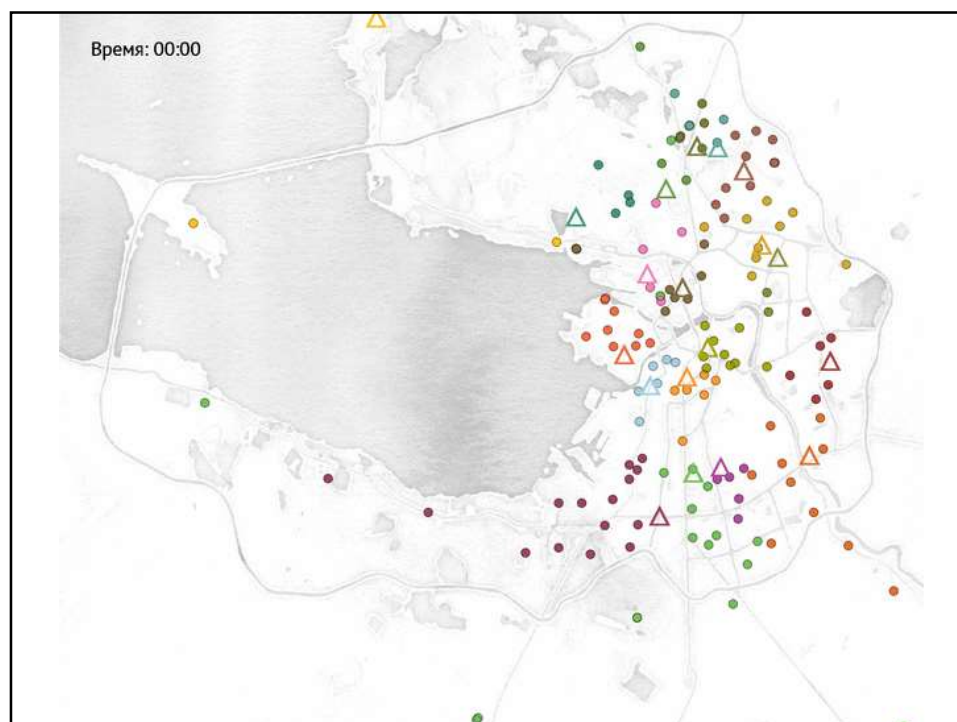
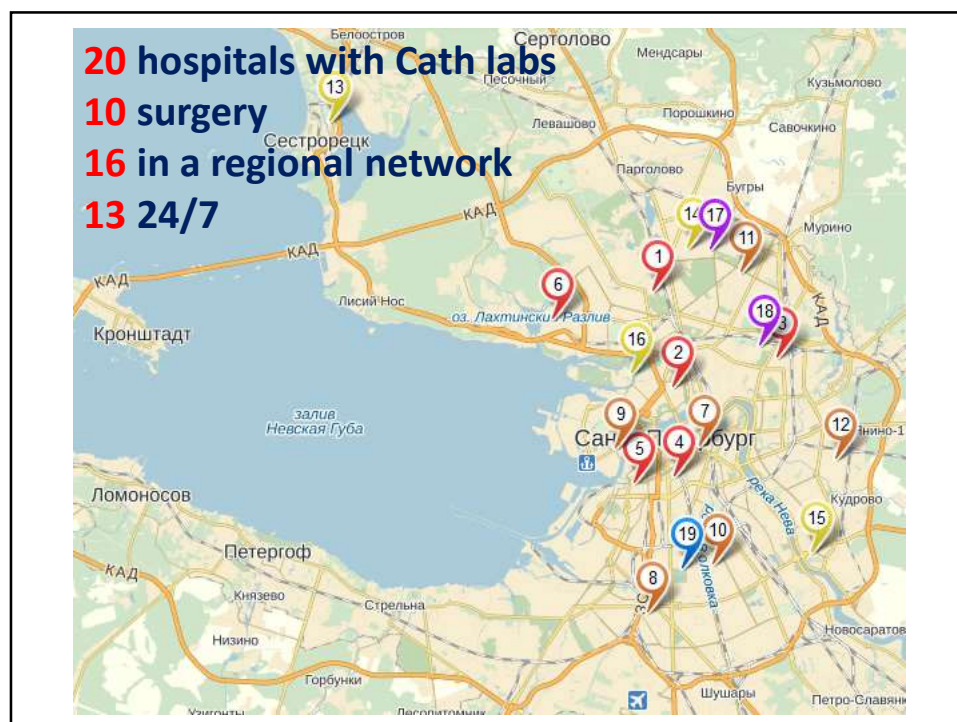


Nurses movement track proximity metrics received through agent-based modelling



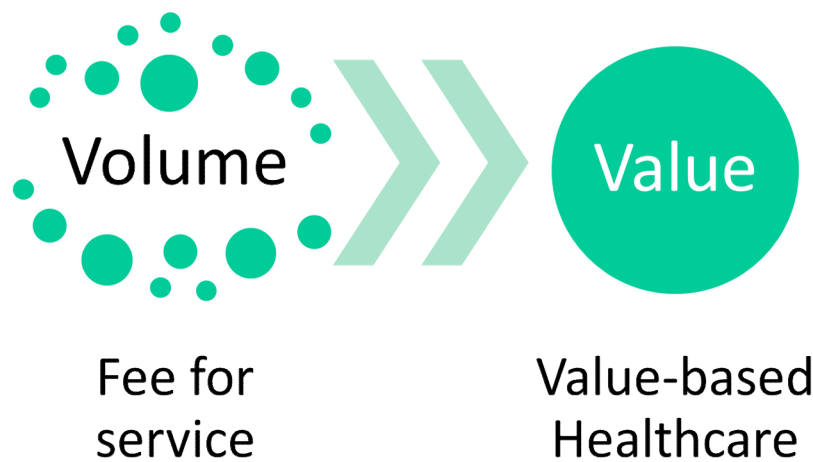
Balakhontseva M. et al., in press, 2017





## DSS for hospitalization

- Web-service on Almazov.centre
- Open service (API) **Yandex**
- Mobile version

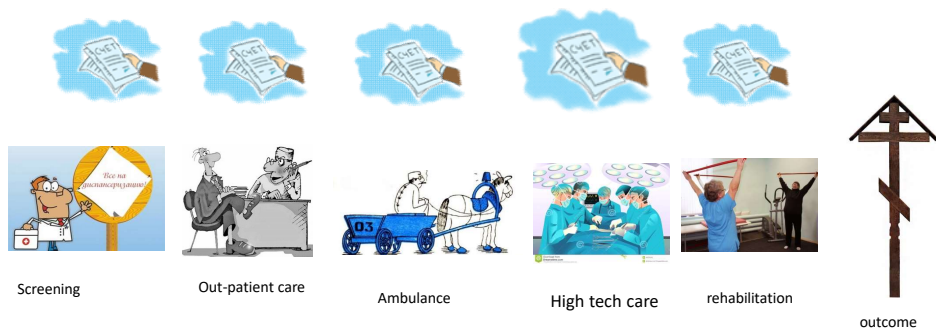




## 4 models in action for value-based care

- **Accountable care organization (ACO).** Accountable care organizations are transforming care delivery by paying health systems and doctors based on their success at improving overall quality, cost and patient satisfaction with their health care experience. ACOs are alliances of doctors, hospitals and other health care providers that deliver and coordinate care for their patients. In an ACO, providers are responsible for improving the quality of patient care and health outcomes, at equal or lower costs, through better coordination and preventive care.
- **Patient-centered medical home (PCMH).** A PCMH is a care model led by a primary care doctor that is focused on providing enhanced care coordination across the health care system. In a PCMH, a primary care doctor leads a clinical team that oversees the care of each patient in a practice. The medical practice receives data about their patients' quality and costs of care in order to improve care delivery.
- **Pay for performance (P4P).** This model rewards doctors and hospitals that improve or maintain quality, while keeping across-the-board rate increases lower. Doctors, hospitals and health plans together develop and agree to a set of quality and efficiency measures.
- **Bundled payments.** In a bundled payment model, a single payment is made to doctors or health care facilities (or jointly to both) for all services associated with an episode-of-care, such as a hip or knee replacement, or MI. **"Bundled payment rates"** are determined based on the costs expected for a particular treatment, as well as costs for any preventable complications that may arise. These payment models promote a coordinated, efficient and cost-conscious effort for specific treatments or conditions. Fewer tests are repeated, "overtreatment" declines, and readmissions and length of hospital stays go down.

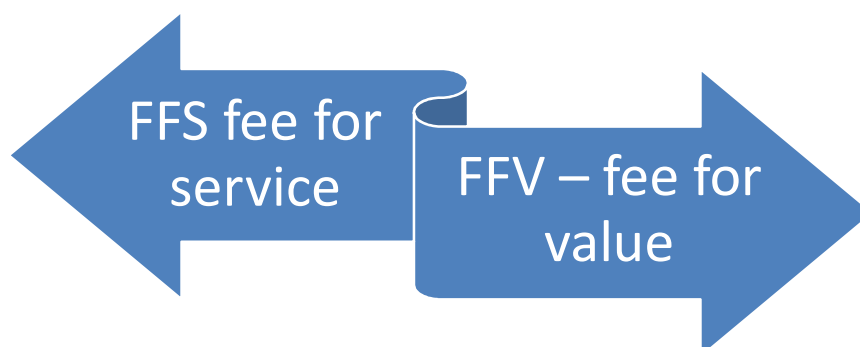
## Current system of payment on ACS



## From volume-based to value based

	Volume-based	Value-based
Payment	For service	For outcome
KPI	volumes	Patients' value
Focus on	Acute cases Intensive care	Population health
Role of institution	episode	Disease continuum
Information	retrospective	Predictive modeling

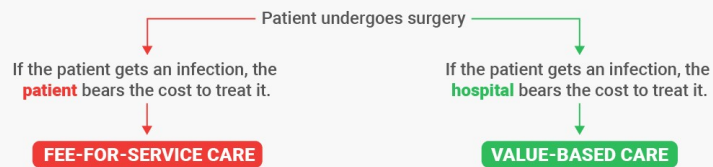
## Changing the payment paradigm



## HOW VALUE-BASED CARE WORKS

Value-based care ties reimbursement to quality, not quantity, of care.  
The goal is to incentivize better care and lower costs.

This example shows its use in a hospital, but it can apply to any healthcare provider:

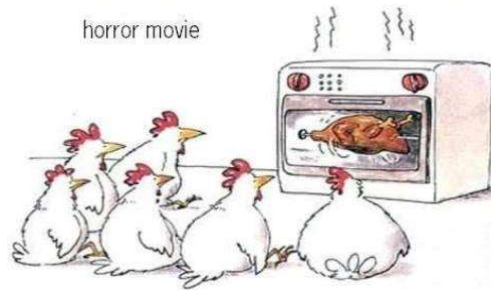


## Planned payment system according to VBM

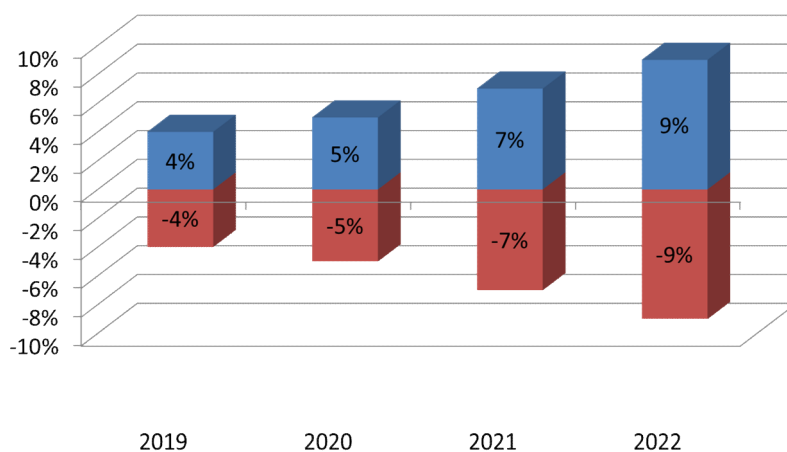
	Low cost	Medium cost	high cost
High quality	Maximum bonus	Medium bonus	unchanged
Medium quality	Medium bonus	unchanged	penalties
Low quality	unchanged	penalties	Maximal penalties

«red» pay for «green»

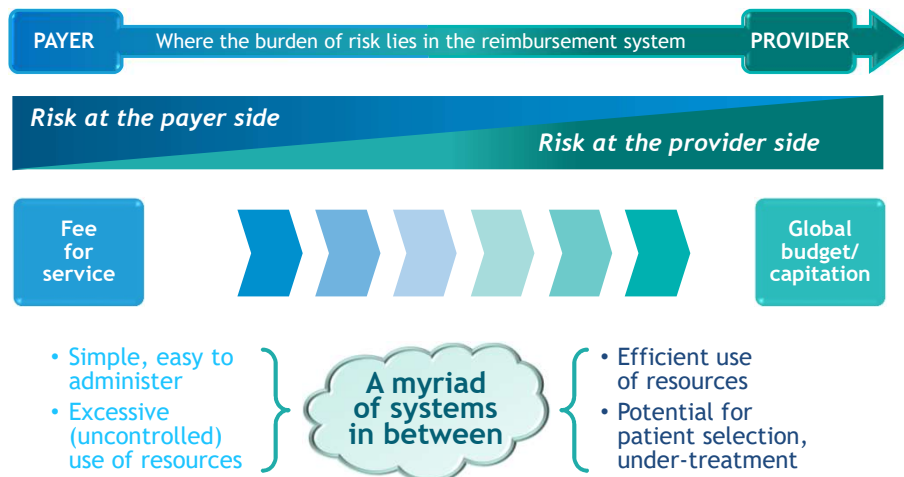
## The stuff and the VB payment



## Bonuses and penalties in MACRA



## Where the value appears depends on the reimbursement system



## A Prescription to Help ...

Pharmacy Stamp	Age	Title, Forename, Surname & Address
	D.O.B	
Please don't stamp over age box		
Number of days' treatment	NHS Number:	1234567890
N.B. Ensure dose is stated		
Endorsements		
<ul style="list-style-type: none"> <li>• Focus on the service, not the technology. Simple is good</li> <li>• Define a clear case, and get the stakeholders to buy into it</li> <li>• Start with projects that don't require large scale service integration to be successful</li> <li>• Create a plan to build strong evidence that it works</li> </ul>		
Signature of Prescriber		Date
The World		Today

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