Data Insights for Better Treatment in Slovenian Public Hospitals

LEVERAGING BUSINESS INTELLIGENCE TOOLS FOR PRECISION COST ANALYSIS AND INTEGRATED DATA INSIGHTS

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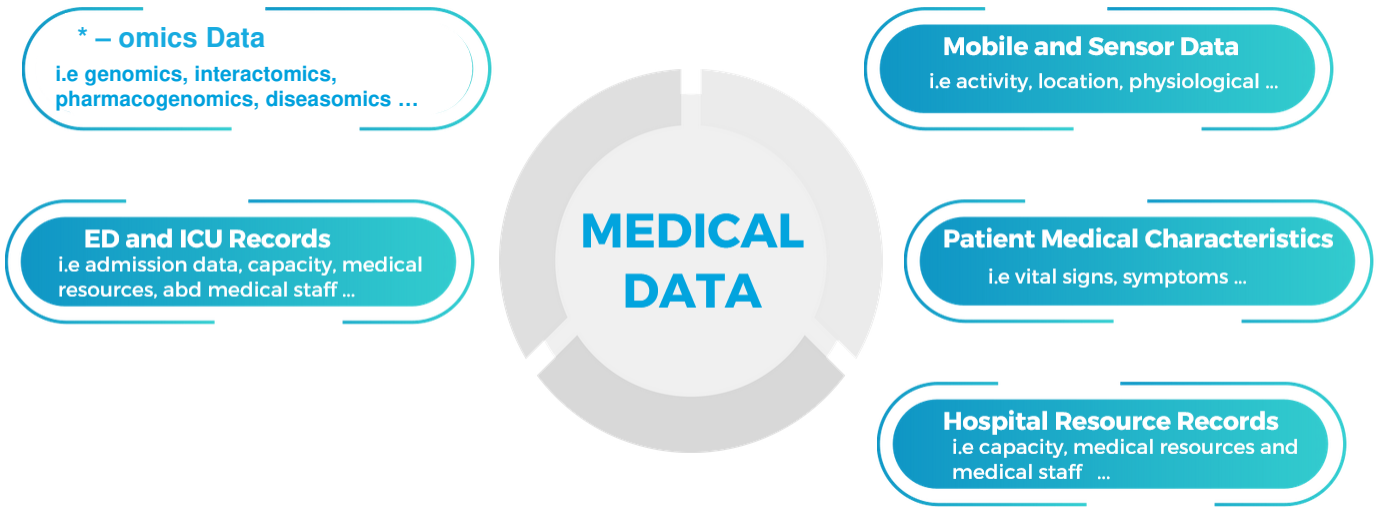
SRC Health

Big Data?

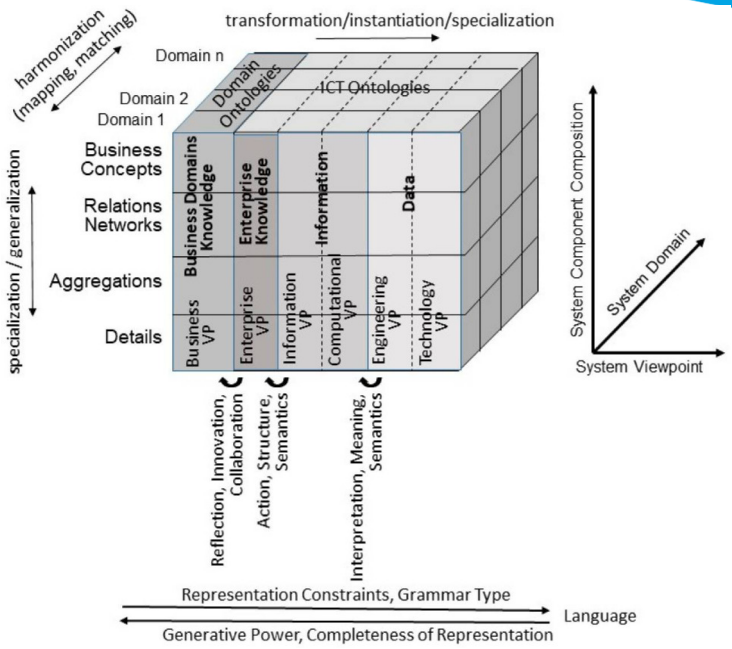
	SIZE	YEARLY INCREASE	SIZE	YEARLY INCREASE
	STRUCTURED		UNSTR.	
24 H	50 TB	5 TB	40 TB	15 TB
35 HC	18 TB	0,5 TB	28 TB	10 TB
100 PRIVATE CLINICS	2 TB	200 GB	5 TB	300 GB
200 S-M PRACTICES	1 TB	100 GB	5 GB	0,7 GB

Focus no longer on how "big" the data is but on how smartly it is managed.

Big Data and Healthcare



Managing Data



- **correct representation of components**
  structure, function, and relations
- **including each disciplines**
  perspectives, principles, and methodologies
- **using international standards**
  guarantee for consistent and conformant processes and outcomes

Blobel B., Ruotsalainen P., Giacomini M.
Standards and Principles to Enable Interoperability and Integration of 5P Medicine Ecosystems.
Stud. Health Technol. Inform. 2022;299:3–19.

30 Years of Development

fundamental **organizational, methodological, and technological** paradigm changes

HEALTHCARE TYPE change:
- empirical or phenomenological medicine
- evidence-based medicine
- person-centered medicine
- personalized medicine
- 5P medicine
- ubiquitous personal health

ORGANIZATIONAL SYSTEM change:
- from organization-centered local services through
- cross-organizational local services and
- distributed local and remote services to
- ubiquitous care

Managing Data for 30 Years

Empirical medicine care

- domain-specific general services (one solution fits all)
- objectivized observations, pattern recognition and experiences
- local data repositories

Evidence-based medicine

- domain-specific services for domain specific groups
- objective evaluations, statistically justified with group-specific treatment outcomes stored in records, registries, etc.
- data from multiple sources stored in central data repositories

Person-centered medicine

- multiple domains' disease-specifically interrelated services for individual
- leading the subject of care through the care process (based on process management and best medical practice guidelines)
- agreed-upon terminologies, cross-organizational business process
- integrated services

Personalized medicine

- multiple domains' services to the individual's personal disposition
- pathology of the individual disease, clinically justified with the individual's status and context
- representation of disciplinary concepts in the situational context in the sense of knowledge representation and management

Systems medicine - 5P medicine

- integrated cross-domain services for each individual (personal, environmental, social, occupational, and behavioral contexts)
- understands the detailed pathology based on multiple domains, justified through individual status and context
- using range of standards (modelling, information, terminology, process, domain ontology) → top-levelont ology standards guiding the management of multiple ontologies

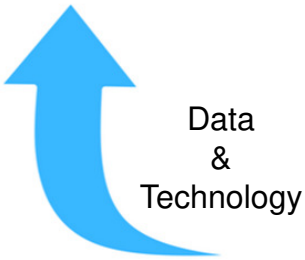
Ubiquitous personal health

- integrated services—consumerism, ubiquitous medicine
- individual under comprehensive focus
- dynamically and scientifically justified individual status

5P and VBHC

- **Personalized**
  - specific for each patient in diagnosis, therapy, and monitoring
- **Predictive**
  - analyzes and calculates the for a disease
- **Preventive**
  - helps make decisions that prevent the appearance of diseases
- **Participatory**
  - putting the patient at the center of the healthcare system - patient can participate in the responsibility for his/her health care.
- **Populational**
  - assuring access to healthcare for the entire population

Data & Technology



Data & Technology

VBHC:

- outcomes over volume
- the right services in the right place at the right time, improving overall patient health
- rewarding healthcare providers for health maintenance instead of sick care – preventive vs. curative

Types Of Healthcare Data Analytics

DESCRIPTIVE ANALYTICS
Understanding historical trends

PREDICTIVE ANALYTICS
Forecasting the future

PRESCRIPTIVE ANALYTICS
Unearthing new strategies

DISCOVERY ANALYTICS
Determining what to explore next

Benchmarking and VBHC - numbers matter

process of comparing one hospital, department, service line, provider group or other dimension with another for the purpose of **identifying practice weaknesses and improving quality**

- **setting cost and quality targets** against which providers are measured - evaluation of performance and the calculation of financial incentives.
- **basis for measuring progress** toward the goals of value-based care
- **creating accountability for performance** among providers

Benchmarking and VBHC - numbers matter

Goals of benchmarking methodologies

Incentivizing providers

- managing healthcare resources efficiently, delivering coordinated, high-quality, patient-centered care while controlling costs

Supporting ongoing investment for innovations

- improving quality, controling cost, promoting sustainability model

Building path to predictable and sustainable long-term health care

HEALTHCARE KPI

Average Hospital Stay
Evaluate the amount of time patients are staying

Bed Occupancy Rate
Monitor the availability of hospital beds

Medical Equipment Utilization
Track the utilization of your equipment

Patient Drug Cost Per Stay
Improve cost management of medications

Treatment Costs
Calculate how much a patient costs to your facility

Operating Cash Flow
Monitor the financial health of your facility

Net Profit Margin
Ensure your facility remains profitable

Patient Room Turnover Rate

Patient Follow-up Rate
Measure the care for your patients over time

Hospital Readmission Rates
Track how many patients are coming back

Patient Wait Time
Monitor waiting times to increase patient satisfaction

Patient Satisfaction
Analyze patient satisfaction in detail

Claims Denial Rate
Ensure medical costs are covered

Patient Mortality Rate
Prevent patient mortality under your care

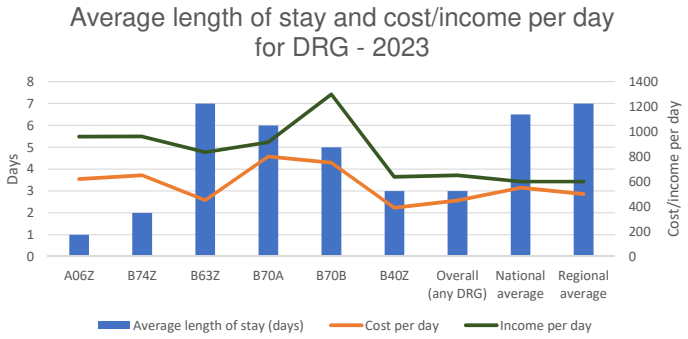
Staff-to-Patient Ratio
Ensure you have enough staff to care for patients

Canceled/missed appointments
Keep track of patients' appointments

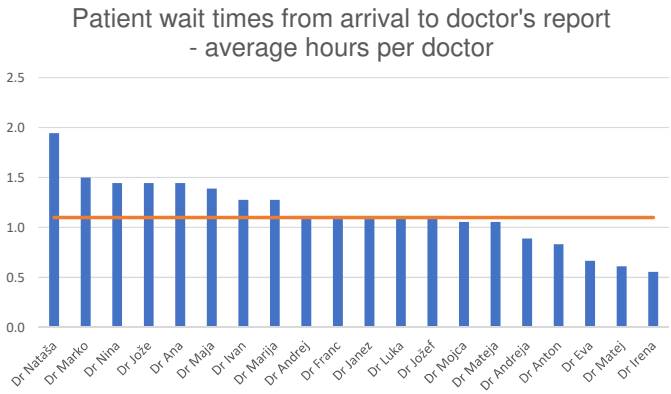
Patient Safety
Prevent incidents happening in your facility

ER Wait Time
Identify rush hours in your emergency room

Importance of benchmarking VBHC

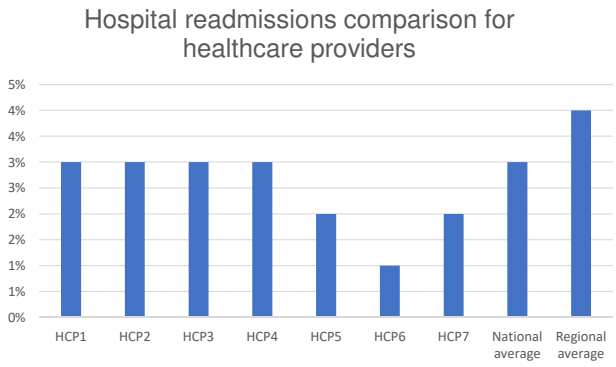


Income and operating expenses for different DRG….. Useful if you want to show ZZZS that some DRG are undervalued

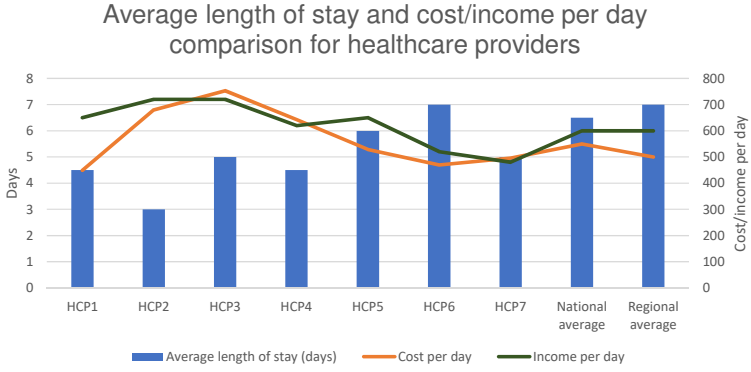


Optimizing wait times for patients is a great way to reduce patient stress and frustration

Importance of benchmarking VBHC



One of the key metrics of healthcare efficiency is certainly low rate of readmissions to the ward.



Hospitals should take grate care that a patient stays at a ward for the optimal amount of time for his condition.

AI in Medical Data Analysis

- **Segmentation**
  - segmenting and identifying specific structures within medical images aiding in treatment planning and diagnosis
- **Data Extraction and Organization**
  - automating the extraction of relevant information from electronic health records
- **Predictive Analytics**
  - predicting patient outcomes, identifying at-risk population, optimizing treatment plans
- **Data Monitoring**
  - real-time monitoring of healthcare related data (identifying trends)
- **Natural Language Processing (NLP)**
  - extracting valuable information from scientific literature, clinical notes (unstructured data) – supporting evidence-based decision making

#DigitalHealth

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Thank you ☺

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with Subject:

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