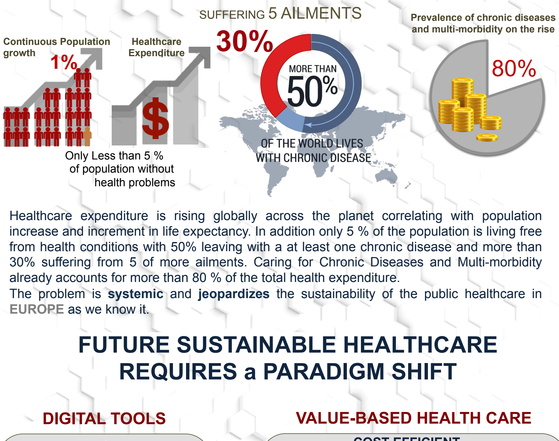
INTERACTIVE PROCESS MINING

- Enabling Digital Healthcare Transformation -

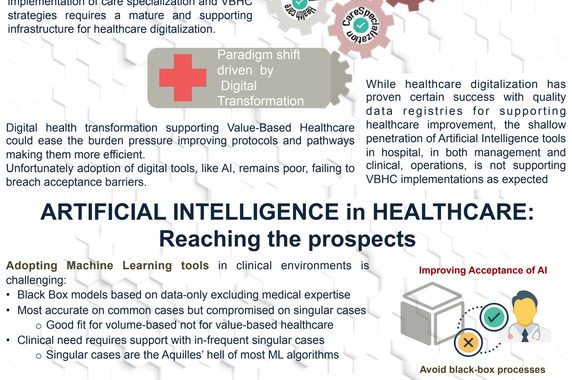
HEALTHCARE TODAY



Healthcare expenditure is rising globally across the planet correlating with population increase and increment in life expectancy. In addition only 5 % of the population is living free from health conditions with 50% leaving with a at least one chronic disease and more than 30% suffering from 5 of more ailments. Caring for Chronic Diseases and Multi-morbidity already accounts for more than 80 % of the total health expenditure.

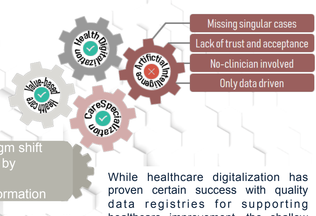
The problem is **systemic** and **jeopardizes** the sustainability of the public healthcare in **EUROPE** as we know it.

FUTURE SUSTAINABLE HEALTHCARE REQUIRES a PARADIGM SHIFT



DIGITAL HEALTH TRANSFORMATION

Digital health transformation is the driving force of the paradigm shift being implemented around care specialization and value based care. Providing evidence of success from care specialization and value-based healthcare has been shown to be a slow process. A successful implementation of care specialization and VBHC strategies requires a mature and supporting infrastructure for healthcare digitalization.



Paradigm shift driven by Digital Transformation

Digital health transformation supporting Value-Based Healthcare could ease the burden pressure improving protocols and pathways making them more efficient.

Unfortunately adoption of digital tools, like AI, remains poor, failing to breach acceptance barriers.

While healthcare digitalization has proven certain success with quality data registries for supporting healthcare improvement, the shallow penetration of Artificial Intelligence tools in hospital, in both management and clinical, operations, is not supporting VBHC implementations as expected

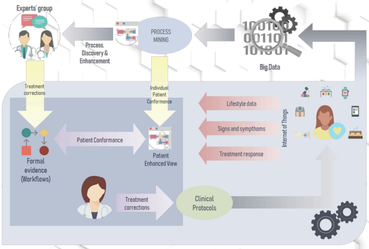
ARTIFICIAL INTELLIGENCE in HEALTHCARE: Reaching the prospects

Adopting Machine Learning tools in clinical environments is challenging:

- Black Box models based on data-only excluding medical expertise
- Most accurate on common cases but compromised on singular cases
  - Good fit for volume-based not for value-based healthcare
- Clinical need requires support with in-frequent singular cases
  - Singular cases are the Aquilles' hell of most ML algorithms

Improving Acceptance of AI

Avoid black-box processes
Include medical expert in process



Interactive Process Mining

- breaks the Black box concept allowing the involvement of the domain expert in the learning process, incorporating the medical expertise into the model
- produces a longitudinal understandable view providing not only answers but roads to new questions
- model general but accounting for individual, capable of identifying singular processes

Interactive Process Mining in Practice

Operation Room Performance

- ❑ Increase operational capacity
  - Up to 49 cases more per month
- ❑ Improve OR turnaround time
  - Pre/post implementation down by 23%
- ❑ Reduced inter-department phone calls by 82%
  - Saving 1125 hours of work per year

Not only prospects but measurable outcomes

Interactive Process Mining is the best ML approach to study clinical pathways and patient care flows for supporting healthcare improvement, because it is a methodology, specifically conceived to involve the clinical expert in the production of the AI models, incorporating their medical and clinical knowledge in building and interpreting the models

Emergency Care Function

- ❑ Improving Triage
  - Reducing waiting times
  - Improving patient prioritization
- ❑ Improving Quality of Care and Worklife
  - Adapt caring staff to actual needs
- ❑ Reducing re-admission rate
  - Better care outcomes
- ❑ Improving Bed Management

Clinical Pathways and Patient Flows

- ❑ Conformance analysis of functions & flows
  - Evaluation of adherence to treatments
  - Identification of hidden bottle necks
  - Simulate impact of interventions on the flow

Transversal Application Domain

- Hospital Management
- Clinical Operations
- Medical Care

References and Sources

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