

Improving Patient Safety through IT: experiences and developments at Geneva University Hospitals

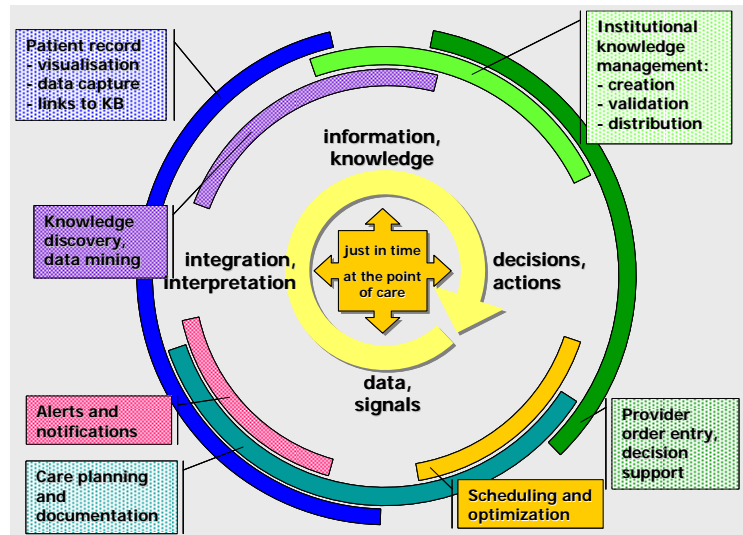
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There is a growing conviction that in all hospitals, even in those which are best conducted, there is a great an unnecessary waste of life... (Florence Nightingale, Notes on Hospitals, 1863)

The vision

- Just-in-time information and knowledge can positively influence clinical decision-making towards improved safety, quality and efficiency of care processes.
- A solid, longitudinal healthcare information chain is necessary to mitigate the many dangerous discontinuities of care processes.
- A virtuous circle (cf. figure) of learning and improvement can be enabled if the two above conditions are met.



The challenges

- Build semantically consistent information networks spanning the wide spectrum of stakeholders and healthcare situations:
 - From the hospital to the patient's home (remote monitoring, intelligent drug-delivery devices, personalized health/healthcare and advice).
 - From individuals to populations (share clinical and logistical healthcare information, continuous monitoring of health indicators for decision makers, bio-surveillance).
 - From regions to a global reach (enable large-scale clinical research networks, global trial databanks).
- Connect existing knowledge, create new knowledge, share knowledge
 - With federative, collaborative, privacy-enabled "infostructures".
 - Through "multimedia mining" in structured data, images, and free-text.
 - Across various knowledge domains: from -omics to populations.
- Enable learning systems and organizations

The tools

- Legal and ethical frameworks: privacy of citizens and professionals, secondary use of health data.
- Knowledge: evidence-based healthcare processes, clinical pathways...
- Knowledge-discovery and engineering techniques.
- Clinical information systems: electronic health records, computerized provider order entry, decision-support tools, and healthcare information networks.
- Federative architectures: data grids, components and service oriented architectures.
- Semantic interoperability: standards and ontologies.
- Traceability of materials and processes.