Complexity and the Will to Transform
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For more than 50 years, the health informatics community has been systematically publishing quality papers in *Methods of Information in Medicine* and other journals. Along the decades, the world has accumulated an enormous amount of knowledge in the several fields covered by health informatics. We have emerged from a beginning in which most research was done in very specific technical topics – such as expert systems, data compression, pattern recognition or even computer languages for medical purposes – to embrace a broad range of subjects and disciplines, including strategic issues such as change management and enterprise architecture. Many of us will recall that AMIA’s meetings used to be called “Symposium on Computer Applications in Medical Care – SCAMC”. The single fact that the “M” in IMIA stands for “Medical” bears witness to its origins and to the changes that health informatics has undergone.

One way to look at the foundations of health information systems is to consider four pillars: a) infrastructure (equipment, telecommunications and devices); b) IT Architecture (systems, methods, models, standards and processes); c) Human Resources (IT personnel, health managers and end-users); and d) Organizational Resources (governance, ownership, bylaws, policies, processes, culture, and consensus forums) [1].

Of course, infrastructure issues are not a huge barrier any longer, or in other words infrastructure, and especially devices have evolved so much they are not in the critical path except in resource-deprived settings. The advances in computer technology have allowed the other pillars to be better studied and explored, as reflected by the contents of this issue of *Methods*. It contains specific as well as wider research topics, which, combined, give us the perspective that we are moving towards more clinically-oriented, multi-source, interoperable, more usable, secure and safer health information systems that can integrate in- and outpatient data, as well as provide support to special clinical programs and their related processes in a flexible and reusable manner.

Tanaka and co-workers [2] address important security issues regarding intrusions with the currently wireless networks that are the technology of choice for the deployment of HIS in health care units. As Wi-Fi networks have become ubiquitous, monitoring for security and performance is paramount.

Extracting clinical coded data from free-text has always been a challenging research area, as still many health information systems rely on free forms for collecting clinical data. Jouhet and colleagues [3] presented an automated classification method that allows for pathology reports to be adherent with International Agency for Research on Cancer (IARC) rules, thus allowing for interoperability and semantic integration with other IARC-compliant information systems. Dugas and Dugas-Breit [4] approach in a very consistent manner methods for measuring completeness and speed of medical records, undoubtedly and important matter, as data quality and systems usability need to be assessed. De-identification of clinical data is discussed in great depth by Erdal and co-workers [5], who also present a framework for de-identifying patient data in such a way that they can be treated as non-human, thus allowing wider and safer use of clinical data, thus contributing to the development of better clinical knowledge-extraction methods. Bettencourt-Silva and colleagues [6] developed a clinical data collection exercise in a multi-centric environment with
a patient-centric focus, within the domain of prostate-cancer. Although their work was centered in a specific domain, their conclusion is that collecting and collating patient-centric, multi-source data is not a trivial task and deserves more research. Here, it is important to notice that any real patient-centric system needs to be multi-source, as patients typically do visit several health care providers, even within one given treatment.

Finally, Gusew and co-workers [7] address the complexity of approaching health information exchange in a regional setting in Germany. The authors drive us through domain fields, requirements and the architectural challenges they faced in the search for interoperability in that region. Their work has several layers of complexity, including organizational and methodological aspects. Health informatics standards play an essential role in this project, as expected. Apart from technical difficulties there is a clear need for collaboration and governance. The project itself has been developed under the national German eHealth policy. The advances in quality and quantity of national policies is also a clear indicator that health information system have own recognition as instruments for improving health.

The collection of excellent papers in the current issue of Methods highlights and cast light on some of the most important and typical issues we face when building long-lasting, patient-centric, usable and useful health information systems.

The key concept that leads people to work in our field is the belief that health informatics (or eHealth) is capable not only to improve but also to transform for better the way health systems work and health services are delivered, ultimately transforming Health itself. We haven’t got there as yet, as we are still gathering evidence on the benefits of eHealth [8], but we are on our way.

The notion that congregates people around IMIA and its member organizations is that we feel that working together we are stronger and more likely to succeed in helping that transformation to come true. IMIA has the mission to “provide leadership and expertise to the multidisciplinary, health focused community and to policy makers, to enable the transformation of healthcare in accord with the world-wide vision of improving the health of the world population,” from www.imia.org. We believe health information systems are among the most powerful tools for changing health for better. This issue of Methods of Information in Medicine supports this notion, but also shows there is still much to be done.

Therefore, as part of IMIA’s effort for realizing the goals in its Strategic Plan and following the path cleared by the former and current IMIA leadership, it is important that IMIA be more involved in promoting health informatics standards and architectures, as well as providing reference implementations, in collaboration with other organizations. Again, this is not an easy task, but one that deserves to be pursued.

References