Dear Editor,

With great interest I read the article by Lehmann and Haux [1] in Methods of Information in Medicine (MIM) and the companion article, published in parallel, by Haux and Lehmann [2] in Applied Clinical Informatics (ACI).

The authors, who are the respective editors-in-chief of MIM and ACI, evaluate whether the objective to “bridge the divide between ‘bench research’ and applying what we know in our hospitals and clinic” [3], which led to the foundation of the journal ACI, has been achieved.

For the two reasons given below, I cannot agree with their conclusion that “it is not apparent that the theoretical work of MIM has influenced the practical research described in ACI in a significant manner yet nor did we observe the reverse” [1].

First, the adopted methodology does not seem appropriate to answer the research question. Lehmann and Haux write in the introduction, “… an opportunity (…) was grasped, to investigate if informatics theory and methods (as reflected in MIM) were developing in parallel to the application of the science (as reflected in ACI)” [1], and consequently they compared the same years of publication of MIM and ACI (i.e., Volumes 51 and 52 of MIM were matched to Volumes 3 and 4 of ACI).

In the editorial of the edition of MIM [3], which initiated the founding of ACI, there are three expressions that assume a chronological succession between theory and practice instead of a temporal or causative parallel between the two: 1) “… we are still far away from practical application (of the many scientific discoveries and publications in gene therapy research)”; 2) “Progress in the implementation of novel concepts and ideas … into bedside information systems has been excruciatingly slow”; and 3) “Why has the progress in bringing the great ‘bench’ discoveries in informatics to the ‘bedside’ been so slow?”

In this editorial, Lehmann and Haux also gave a reason for this temporal gap between theory and practice: “Progress consists of countless implementations, interfaces and clinical tools. Each of these steps is linked to a myriad of technical, organizational, educational, social, and financial issues” [3]; see also [4].

In Section 5 (“Discussion”), the authors also mention the term (research-) “pipeline,” which further implies such a sequential and even causal relation between theory and practice and vice versa: “… we were not able to see the desired pipeline of new insights from bench to bedside” [1].

So, without a doubt, Lehmann and Haux are well aware that there is not a parallel but a sequential relationship between the practical implementation of theoretical insights with respect to theoretical understanding of observations made in practice.

A broad, basic education as a doctor, psychoanalyst, and cell biologist [5], Nobel Prize-level research [6] and decades of teaching [7] and perhaps an equally gifted spouse [8] might be needed to explain the epidemiological finding (“practice”) that young people become involved in drugs in stages and sequences by the neurobiological action of nicotine in the brain (“practice to theory”) and, based on those insights, to predict side effects of electronic cigarettes and their implications for public health [9] (“theory to practice”).

ACI was founded in 2009. Assuming that some five years are required to translate theoretical insights into practice or to gain theoretical understanding of practical observations, the current study should be repeated this year or the next. A new study should compare the 2010 and 2011 editions of MIM with the 2015 and 2016 editions of ACI and vice versa.

Second, medical informatics has one further handicap compared to “classic” medical research: The translation to practice of new theoretical insights (and vice versa) strongly involves commercial software vendors. ACI’s “Instructions to Authors/Journal Contact Information” [10] lists seven topics of interest and their respective subtopics. For two of those main topics (“Clinical Information Systems” and “Health IT Training”), all subtopics can be addressed only in collaboration with software developers. For the remaining five topics, many (if not most) of the subtopics require teaming with vendors.

The software packages used in our offices, laboratories, and hospital wards are not created in academic institutes for medical informatics, but by mainly private commercial companies. Medical informatics is highly interdisciplinary per definitionem, and the mainly small vendors [11] who are acting in medical informatics frequently lack “skills, tools and financial resources” [12]. If the flow of information between researchers and software developers is dysfunctional, we should not be surprised about slow progress. The necessity of such cooperation has already been stressed in ACI. “The authors also recommend that vendors openly participate in collaborative research, working together with informaticians, clinicians and patient safety researchers …” [13], and one of the goals of the International Medical Informatics Association (both MIM and ACI are its official journals) has been described: “IMIA’s mission from the start has had a mission to bring together scientists, researchers, practitioners, vendors …” [14]. Consequently, if the study is to be repeated, it should also gather the institutional affiliations of the authors who publish in MIM and ACI.
Most likely, we will learn that software editors (almost) never publish. (Why?)

Lehmann and Haux do not mention any of those major limitations of their study in the discussion section of their article, and consequently their conclusions are too pessimistic. A new study, with the above-mentioned modifications, could be a basis for truly successful modifications in the editorial policy and perhaps also for modifications of research funding, because in our discipline, clinicians, informaticians, and private companies have to work together.

References


6. Eric R. Kandel received in 2000 the Nobel Prize in Physiology or Medicine for his research on the physiological basis of memory storage in neurons.


