Translational Research in Medical Informatics or from Theory to Practice

A Call for an Applied Informatics Journal

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Summary

Objective: To bridge the divide between health informatics 'bench research' and the application of informatics in clinical and health care settings.

Method: Identifying weak points in translational activities, i.e. in the process from health informatics research outcomes to IT system design and information management in clinical practice.

Results and Conclusions: The creation of a new peer-reviewed journal, designed to cultivate broad readership across health care, is suggested in order to communicate on informatics topics of translational interest and on the application of informatics principals. Such an applied informatics journal may appeal to practicing physicians, healthcare administrators and CIOs as well as medical informaticians. In a globalizing world with eHealth initiatives spanning across borders, such a journal should be an international effort. Close ties to the International Medical Informatics Association (IMIA) and to the journal *Methods of Information in Medicine* are suggested.

The National Institute of Health (NIH) is in the process of re-engineering its funding policy focusing on translational research. Translational research describes the two-way communication between basic science researchers and clinicians. Basic science provides clinicians with new understanding and new tools for treatment and diagnosis that were developed 'at the bench'. Clinicians in return offer new insights gained at the bedside in order to birth new ideas for laboratory research.

Why, we may ask, is the NIH so determined to encourage translational research? The NIH (driven by US tax payer and congressional pressures) wants to see a better return on their investment. To date, the NIH's investments have generated many scientific discoveries and publications, but significantly less in new treatments and diagnostic tools. For example, between 2003 and 2006 the NIH spent over 1.5 billion US dollars on gene therapy research [1]. Despite this enormous investment and over 25,000 citations in Pubmed for the MeSH term "Gene Therapy", we still have yet to see gene therapy applied at the bedside, and at last look (based on the funding for gene therapy trials [1]), we are probably still very far away from practical application.

Unfortunately, our field of medical informatics also suffers from a lack of translational research. Progress in the implementation of novel concepts and ideas developed by medical informatics researchers

into bedside clinical information systems has been excruciatingly slow. Reviewing the proceedings from two international working conferences sponsored by the International Medical Informatics Association (IMIA), we discovered truly remarkable ideas, concepts, and visions. The first meeting, on health care information systems, stressed human factors, patient-centeredness, and integration of education and practice – in sum, "not so much the technological capability, but techno-social performance" needed to make health care more effective. The second meeting envisioned "intelligent" professional workstations that would anticipate information needs and put context-relevant information at the clinician's fingertips. The recommendations from both meetings – one in 1979 and the other in 1993 – remain remarkably valid and regrettably unrealized today.

Although one in four doctors in the U.S. use electronic health records (EHRs), less than one in ten uses "a 'fully operational' system that collects patient information, displays texts results, allows providers to enter medical orders and prescriptions, and helps doctors make treatment decisions" [2]. Lack of quality data makes it impossible to quantify hospital adoption of EHRs, but reliable estimates are that 5% of America's 6000 hospitals have computerized physician order entry (CPOE) systems, a component of EHRs.

These findings are alarming. In Goethe's words, so aptly cited by the Institute of Medicine in its series on quality health care, "Knowing is not enough; we must apply. Willing is not enough; we must do".

One has to ask, why has the progress in bringing the great 'bench' discoveries in informatics to the 'bedside' been so slow? Why has there been so little progress, despite NLM funding and the efforts of so many dedicated health informaticians? It is not for lack of trying. Researchers rigorously test their theories and report their findings in the informatics literature, including *Computer Methods and Programs in Biomedicine*, *International Journal of Medical Informatics*, *Journal of Biomedical Informatics*, *Journal of the American Medical Informatics Association*, and *Methods of Information in Medicine*.

However, implementation of health information technologies is not a 'Big Bang' event. One brilliant idea does not generate a giant leap in IT implementation. Progress consists of countless individual applications and implementations, interfaces and clinical tools. Each of these steps is linked to a myriad of technical, organizational, educational, social, and financial issues that must be solved by each organization over and over again even if solved by others before. These challenges result in an estimated 75% failure rate in health information technology-related projects [3].

The lessons learned in the implementation of health informatics must be shared across all of health care, nationally and internationally, so that successes can be replicated and failures avoided. We cannot be allowed to repeat implementation errors that others had made and had to correct at great cost and pain. In order to leap ahead, we must avoid the old mistakes in our implementations to save time, costs, and human resources. In a globalizing world with eHealth initiatives beyond nations [4, 5] sharing of experiences and learning from those must be done on an international stage.

How do we bridge the divide between 'bench research' and applying what we know in our hospitals and clinic? The creation of a new peer-reviewed journal, designed to cultivate readership across health care, is a critical step. *MD Computing*, which ceased publication in 2001 amid a flurry of efforts to save it, provides a model. Glossy, slim, attention seizing and professionally edited for easy readability, it offered peer-reviewed feature articles and standing columns on informatics topics of TRANSLATIONAL interest to a broad readership. In what would be its last issue, for example, *MD Computing* featured articles examining the role of federal innovations in healthcare transformation, computer telephony integration, and implementation of an integrated ambulatory care system in a family practice, as well as a week-long medical informatics course at Woods Hole and highlights of eHealthcareWorld 2000. Columns covered standards, perspectives on data warehousing, practice management, insights on physician-patient relation-

ship, and more. As this brief content analysis makes clear, *MD Computing* appealed to practicing physicians and healthcare administrators and CIOs as well as medical informaticians.

There is no such international journal now, when health care sorely needs one. One option would be to create an international version of the *Journal of Healthcare Information Management*, the peer-reviewed journal published by the Health Information and Management Systems Society (HIMSS). Such a move could build on the growing global activities HIMSS is sponsoring, such as its AsiaPac and Vienna conferences.

A second option would be to launch such an effort now, placing it close to *Methods of Information in Medicine*. This would allow for the quick inception that is so urgently needed. To build on this advantage over time, there must be plans for dissemination beyond the audience reached by *Methods* or for that matter by any of the other international informatics journals mentioned above. In 2005, their editors co-authored and co-published a statement on exemplary scientific conduct in the submission of manuscripts [6]. To achieve sustained momentum, a close link to or endorsement by IMIA would be critical to support these translational efforts.

Today, in 2008, we need yet another unprecedented effort, this one to determine how best to design, edit, and publish an applied international informatics journal that will become a must-read for healthcare executives and clinicians worldwide. They will need all the help the informatics community can provide as they work to integrate HIT into their tasks as the managers and providers of care. It is our challenge to provide that help, and the first step we can take is to enter into a dialogue with them through the pages of a peer-reviewed journal that translates our best work into their environments.

We invite you to send us comments, suggestions, and thoughts on how to best achieve the strengthening of translational research in health informatics. As Marion Ball and others point out so poignantly in this issue, we have failed long enough to provide useful IT systems to our users – it is time for a new approach [7].

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