

**Reinhold Haux<sup>1</sup>**  
**Casimir A. Kulikowski<sup>2</sup>**  
*Editors*

<sup>1</sup>Department of Medical Informatics  
University of Heidelberg  
Heidelberg, Germany

<sup>2</sup>Department of Computer Science  
Rutgers - The State University of New  
Jersey,  
New Brunswick, New Jersey, USA

---

## Editorial

---

### *Digital Libraries and Medicine*

The theme of the 2001 Yearbook of Medical Informatics is Digital Libraries and Medicine. This is an especially appropriate topic for the 10th issue of the Yearbook, in that it focuses on one of the most critical current concerns of medical informatics. The explosive growth of web-based medical literature, databases, and web-pages and documents addressing an ever widening array of health related information presents our field with a key challenge: how to help both health professionals and consumers efficiently find well-focused, quality material to answer their queries in a way that will improve their understanding and decision-making, and advance their health care goals.

Approximately 10,000 copies of the Yearbook are distributed worldwide each year through IMIA's more than 40 Member and 16 Corresponding Member Societies. This year the editors were helped by 14 authors who prepared three invited Review Papers and four Research and Education papers, by seven Guest Editors who wrote Synopses of the papers included in the Yearbook, and by 45 referees who assisted in the selection of the papers.

As has been the practice over the years, the papers were selected from the recent refereed literature. For the present volume papers published between January 1999 and March,

2000 have been included. We continue the annual practice of inviting several centers to describe their educational activities in medical and health informatics so as to gradually provide world-wide coverage. This year four centers are included: two in the Netherlands, one in the United States, and one in Canada.

This year's preface to the Yearbook has been prepared by Dr. Donald A.B. Lindberg, Director of the National Library of Medicine of the United States.

---

#### **Medical Digital Libraries and the Web**

The quantity and scope of medical information available on digital media has increased dramatically over the past few years, and its dissemination over the web has become commonplace. Digital Libraries are critical vehicles for organizing and providing access to structured repositories of medical information, which increasingly includes image, signal, and audio data from large, annotated databases, as well as digitally stored literature and reference materials.

Of all professionals, physicians and other health care workers require up to date information most urgently to provide quality patient care. Researchers

developing new understanding of disease and new treatments, have, over the past 5 years, come to largely rely on on-line access to the latest results of their professional colleagues, rather than waiting for journal publications in order to stay competitively current. And, education for health care professionals is increasingly supplemented by vast amounts of material stored digitally and accessed over the web. For consumer health, the quantity of information the public can search for easily over the web from national digital library repositories, professional society and other traditional scholarly sources has increased by leaps and bounds. Meanwhile, rapidly proliferating commercial web-sites provide health consumers with even more alternatives and the advertising to go along with them. Determining the relevance and validity of material retrieved is frequently a problem, especially from sources with varying degrees of editorial quality control.

Collating, organizing, and interpreting all the information that one can accumulate from even fairly simple queries can be quite frustrating for health professionals and well-informed lay-persons. For those without the right vocabulary and medical experience, it can present a major obstacle to using web-based and digital library materials. The present situation then, presents great opportunities as well as major challenges to practitioners of medical informatics. It is certainly necessary to continue improving information retrieval techniques so that medical and health related literature can be more efficiently structured, annotated, stored, indexed, filtered, and retrieved. Systems of vocabulary, nomenclature, and computer-based knowledge representation will have to become much more sophisticated in order to help people retrieve information from our distributed digital libraries with as much ease as they might with the assistance of a professional at their shoulder. Better

understanding of how people with various degrees of knowledge and expertise navigate (perceptually and cognitively) through the vast, brambly thickets of digital medical information is badly needed. All these issues are central to the main emerging and qualitatively new challenge for the 21st Century: knowledge management over increasingly heterogeneous digital information sources. These include: biomedical imaging, sensors, graphical models of human anatomy, biophysical models of human physiology (at the system, organ, tissue, cellular and molecular levels), all integrated with the appropriate genomics and proteomics information. There is no question that there is a wealth of problems for informatics research in medical digital libraries for the foreseeable future!

In reviewing the past literature for 1999, the scope of problems covered by the articles selected for the Yearbook is already impressive. Included are analyses of web-based journals, tools for datamining of distributed textual material, methods for labelling and filtering information over the web, the use of mark-up techniques to prepare digital libraries materials, and the evaluation of consumer-oriented databases of drug information. In the section on computer-based records and terminology, a number of studies related to digital libraries have also been included, related to the use of UMLS, knowledge representation, mark-up languages, and clinical terminology. Other sections of the Yearbook, but particularly those on Knowledge Processing and Decision Support Systems and Information Systems also include articles which have a strong bearing on digital library issues.

## Review Sections

The 2001 Yearbook of Medical Informatics includes a number of original review articles, which focus

on several major topics in medical informatics. They include: „From Hospital Information Systems to Health Information Systems. Problems, Challenges, Perspectives“ by Klaus A. Kuhn, Dario A. Giuse from the Institute of Medical Informatics, Philipps-University Marburg, Germany, and Informatics Center of Vanderbilt University Medical Center, Nashville, TN, USA; „Bioinformatics“ by Mark Gerstein and Nick Luscombe from Yale University, and „Digital Electronic Libraries in Medicine“ by Yu-Chuan Li from Taipei Medical University.

## Education and Research in Medical Informatics

This Yearbook includes papers on education, training, and research in medical informatics from several major medical informatics programs. From The Netherlands, Professors Jan A. Koors, Johann van der Lei and Jan van Bommel describe the program at the Erasmus University in Rotterdam. Professors M.W.M Jaspers, M. Limburg from the Department of Medical Informatics at the University of Amsterdam, together with Professor J.J. Ravesloot from the Educational Institute for Medical Information Science at the Academic Medical Center of the same university describe their programs. From the United States, Professor Reed Gardner from the University of Utah describes their Medical Informatics Program, as does Professor Andrew Grant of the Centre for Research and Evaluation in Diagnostics (CRED), Centre hospitalier universitaire de Sherbrooke.

## Guest Editors

After the selection of papers to be included in the Yearbook was carried out, guest editors were asked to write a Synopsis and review of the papers in the different sections. They include:

Lyn Hanmer (Medical Research Council, Tygerberg, South Africa); Ove Wigertz (University of Linköping, Sweden); Paul Clayton (Intermountain Health Care, Salt Lake City, USA); Dan Adam (Technion - Israel Institute of Technology, Haifa, Israel); Marius Fieschi (Hôpital de la Timone, Marseille, France); Nora Oliveri (Fundación de Informática Médica, Buenos Aires, Argentina); Branko Cesnik (Monash Medical Centre, Clayton, Australia).

---

## IMIA

The Yearbook contains detailed information about IMIA, its Member Societies, Working Groups and Special Interest Groups. The section on IMIA Working Groups/Special Interest Groups, which are so critical to the coordination and advancement of medical informatics research and practice, was carried out by Nancy Lorenzi. Considerable assistance was received from Steve Huesing and Thomas Kleinoeder on the preparation of the general IMIA pages. The IMIA representatives from the individual countries provided the material for their own national societies.

---

## The 2002 Yearbook

The theme of the 2002 Yearbook of Medical Informatics will be on Medical Imaging Informatics, which now increasingly affects all aspects of health related research, care, and education.

In this issue, Regional Societies of IMIA will also be invited to report in more detail on their activities, including reports from their working groups. The collection and presentation of this information will be carried out by the regional editors.

The 2002 Yearbook will continue its comprehensive coverage of the state of the art in health and medical informatics, and will gradually extend

to include new topics, such as medically-oriented articles in the growing field of bioinformatics.

---

## Change of Editors

After nine editions of the IMIA Yearbook of Medical Informatics, the Yearbook editors, Jan van Bommel and Alexa McCray have passed on the editorial responsibilities to us. Together with Marion Ball, the past editors have kindly agreed to form an Advisory Board that will help maintain continuity in sharing their invaluable experience in planning for future Yearbooks. We cordially thank the past editors (including the managing editors and editorial assistants) for their assistance in making this a smooth transition. We look forward to the challenges of developing the Yearbook and expanding its scope as the field of medical informatics evolves, while maintaining the tradition of excellence and world-wide coverage that has characterized the IMIA Yearbook since its inception.

---

## Acknowledgments

The editors gratefully acknowledge the contributions of the Referees and Guest Editors. They would also like to thank the writers of the professionally invaluable Review Papers and contributors to the Education and Training Section. They are most appreciative of the considerable skill, time and effort contributed by the coordinating managing editor, Elske Ammenwerth, and by the section managing editors Petra Knaup, Christoph Maier, Volker Mluddek, Reiner Singer, Stefan Skonetzki and Astrid Wolff. A considerable amount of the organizational support was carried out by staff at the Department of Medical Informatics at the University of Heidelberg, and most especially the editorial assistant, Martina Hutter.

The referees who contributed to the selection of articles in the 2001 Yearbook of Medical Informatics are:

H. Åhlfeldt, Sweden  
E. Coiera, Australia  
P.P. Degoulet, France  
M.D. Denz, Switzerland  
M. Dugas, Germany  
C. Dujat, Germany  
M. Fieschi, France  
G. Gell, Austria  
U. Giani, Italy  
A.M. Grant, Canada  
L. Hanmer, South Africa  
H. Heathfield, United Kingdom  
W. Horn, Austria  
A. Horsch, Germany  
M.W.M. Jaspers, The Netherlands  
G. Kachukhashvili, Georgia  
M. Klück-Stumpf, Brazil  
G. Kozmann, Hungary  
P. Le Beux, France  
G. Lechleitner, Austria  
T. Lehmann, Germany  
R. Lenz, Germany  
C. Ludwig, Switzerland  
R. Macerati, Italy  
J. Mantas, Greece  
O.Y. Mayorov, Ukraine  
A. Merzweiler, Germany  
A. Michel, Germany  
G.I. Mihalas, Romania  
J. Möhr, Canada  
P.W. Moorman, The Netherlands  
J. Murphy, United Kingdom  
C. Nøhr, Denmark  
J. Pilz, Germany  
D.J. Protti, Canada  
J. Roberts, United Kingdom  
N. Saranummi, Finland  
R. Schubert, Germany  
I.H. Symonds, New Zealand  
H. Tange, The Netherlands  
D. UaConaill, Ireland  
A. Winter, Germany  
J. Wyatt, United Kingdom  
J.J. Yang, Norway  
J. Zvárová, Czech Republic