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Editorial

Health Informatics and the Internet

The 1998 Yearbook of Medical Informatics bears the timely title: *Health Informatics and the Internet*. The editors of the Yearbook realized that the use of Internet and Intranet in health care is increasing exponentially, not only for browsing web sites of companies, member societies, and universities, but also for the electronic interchange of patient-related data and medical knowledge.

This year, the editors were assisted by nine authors who prepared two invited Review Papers on this subject and, because of the Yearbook's theme, the editors selected recent papers from the published literature on the use of the Internet in health care and devoted a special Section of the Yearbook to this subject. Seven guest editors wrote Synopses of papers included in the Yearbook and 29 referees assisted in the selection of the papers. In addition, overviews are given of a selection of Research and Education programs in medical and health informatics, as has been done over the past years. As usual, the papers were selected from the refereed literature, published during the previous year, by a process in which for each paper at least three international reviewers were involved.

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

Bethesda, USA. Don was invited because of his continuous and enormous stimulation of health and medical informatics, and because of the fact that he has fulfilled a catalyzing function in the promotion of the Internet in health care. Last not least, due to the fact that Dr. Lindberg was the first Director of the High-Performance Computing Center in the USA.

This 1998 Yearbook is the seventh in the series of IMIA Yearbooks of Medical Informatics. Interest in the Yearbooks is increasing and most of the 45 Member and Corresponding Societies of IMIA order Yearbooks for their members. Some of the Societies distribute the Yearbook to all their members as part of their membership. Each year, approximately 10,000 copies of the Yearbook are distributed worldwide. Because several Member Societies prefer to receive the Yearbook earlier in the year, to be able to distribute the books at their annual conferences, the 1999 and subsequent Yearbooks will be published six months earlier than usual, that is, in February of each year.

Health Informatics and the Internet

Physicians and other health care workers are confronted nowadays with

a large variety of systems for the practice of health care. The most recent developments in health care are systems that contain computer-based patient records that have access to or collect patient data from systems elsewhere. Therefore, the use of the Internet is a major focal point for the interchange of data contained in these systems. Within hospitals, too, a local version of Internet (Intranet) supports, for instance, the transfer of the results of biochemical analysis from the laboratory to clinical departments, or the transmission of clinician's orders for drugs to the hospital pharmacy. Electronic data interchange on the Internet enables general practitioners to collaborate with specialists in a shared care setting, for instance, by electronically transmitting referral letters, discharge reports, or reports on X-rays or ECGs. Many physicians also use the Internet for knowledge browsing. An increasing number of patients use the World-Wide Web for retrieving medical knowledge on their own disease or that of relatives.

The Internet even transports medical images, for instance, for remote consultation (teleconsulting). Medical research and education are very stimulated by the fact that Medline has been made available to researchers, students and physicians; but recently also the general public has access to

Medline thanks to NLM's Healthfinder initiative. Even the Visible Humans Project of the NLM has been disclosed on the Internet. Medical training and education are also much stimulated by the use of the Internet. A recent project, still ongoing, is the development of a Web site for the Handbook of Medical Informatics. The cover of this Yearbook shows a selection of home pages that may be familiar to readers.

The editors requested the support of a number of colleagues to write original articles about this new and interesting paradigm of distributing data and knowledge. The 1998 Yearbook, therefore, includes two excellent contributions on this subject, both from the southeast Asian region: Takashi Takahashi (Kyoto University Hospital, Kyoto, Japan) contributes on the current status of health card systems, and Yu-Chuan Li (Taipei Medical College, Taipei, Taiwan) on finding medical resources on the Internet. As mentioned above, an entire Section in the Yearbook, composed of published articles in the literature, is devoted to the use of Internet.

Education in Medical and Health Informatics

This year's section on education and training in medical and health informatics comprises again an interesting cross-section of activities in different countries. Contributions are given by Pierre Le Beux (Rennes University School of Medicine, France), G. Whymark (Central Queensland University, Australia), K.C. Lun (National University, Singapore), John Mantas (University of Athens, Greece), Francesco Pincioli (Politecnico di Milano, Italy). In addition to the papers on this subject of the last few years, the series on research and education is further extended and it is hoped that this will stimulate the establishment of training programs in medical and health informatics.

Guest Editors

After the selection of papers to be included in the Yearbook was made by the 29 referees of this year (see below), the guest editors were requested to write a Synopsis and review of the papers in the different sections.

They include: Keith Campbell (Informatics, Sunnyvale CA, USA) on *Internet*; J.M. Teich (Brigham and Women's Hospital, Chestnut Hill MA, USA) on *Health and Clinical Management*; Isaac S. Kohane (Harvard Medical School, Boston MA, USA) on *Computer-based Patient Records*; Judy Messerle (Harvard University, Boston MA, USA) on *Information Systems*; Nicos Maglaveras (Aristotle University, Thessaloniki, Greece) on *Image and Signal Processing*; Jan A. Kors (Erasmus University Rotterdam, The Netherlands) on *Decision-support Systems and Knowledge Processing*; and Reinhold Haux (Ruprecht Karls University, Heidelberg, Germany) on *Education in Medical Informatics*. The editors are most grateful to these colleagues for their contributions to the Yearbook.

IMIA

As usual, the Yearbook contains extensive and updated information on IMIA, its Member Societies and its Working Groups. Dr. Jean-Raoul Scherrer, Geneva, again carefully prepared the Section on Working Groups. IMIA's Secretary, Dr. Ian H. Symmonds, from Wellington, New Zealand, assisted in the preparation of the general IMIA pages. IMIA representatives from most countries offered material on their respective Societies. A full list of Presidents and Secretaries of Member Societies and addresses is included in the Yearbook.

The 1999 Yearbook

The 1999 IMIA Yearbook of Medical Informatics will be the last in this century and will be devoted to a highly interesting and current theme: *The Promise of Medical Informatics*. In this forthcoming Yearbook we will take a critical look, both backwards and forwards. What were the early expectations and what was the outcome? What is can we expect in the next decade? In what way and to what extent can health care benefit from the accomplishments of medical and health informatics?

The editors will invite a host of review writers to contribute with their visions to this forthcoming Yearbook. It is being discussed to devote a special conference to this most interesting theme and it is being considered to realize electronic participation to this conference from all parts of the world. Companies that are active in this area will also be invited to contribute. Any creative idea on this subject is welcomed by IMIA's president and board members.

Acknowledgments

The editors gratefully acknowledge the contributions of the referees and the guest editors. The editors would also like to thank the high-level contributions by the colleagues who wrote the Review Papers and the contributions in the Research and Education Section. They are grateful for the time and effort given by the managing editors, Paul van der Linden, Peter Moorman, Frank Pierik, Peter Rijnbeek, and Bob Schijvenaars. A large amount of organizational work was done by the secretaries of the Institute of Medical Informatics of the Erasmus University Rotterdam (Désirée de Jong in the entire organization of the Yearbook and in the collection of papers and all other

material for the Yearbook, correspondence with authors, referees, reviewers, synopsis writers, and journal publishers, together with Rosa Scholte, in preparing the Yearbook for the Publisher). The contributions of Schattauer Verlag in Stuttgart (Dieter Bergemann and Hannelore Hensen) are also gratefully acknowledged. We would like to thank all authors and publishers for their willingness to contribute papers to the 1998 Yearbook, all IMIA Member Societies, and especially Jean-Raoul Scherrer and Ian Symmonds for their contributions to the IMIA sections.

The Referees who contributed

to the selection of articles in the 1998 IMIA Yearbook of Medical Informatics are:

H. Ahlfeldt, Sweden
P. Le Beux, France
C. Ceinos, Spain
U. Engelmann, Germany
N.B. Giuse, USA
S.J. Grobe, USA
A. Hasman, The Netherlands
H.A. Heathfield, United Kingdom
C. Jaffe, USA
M.G. Kahn, USA
J.A. Kors, The Netherlands
H.P. Lehmann, USA
F.J. Leven, Germany
N.M. Lorenzi, USA

H.J. Lowe, USA
P. McNair, Denmark
J.R. Möhr, Canada
K.D. Nielsen, Denmark
C. Nohr, Denmark
J. Roberts, United Kingdom
N. Saranummi, Finland
D.F. Sittig, USA
W.V. Slack, USA
I.H. Symonds, New Zealand
J.L. Talmon, The Netherlands
J.D. Tresling, Rep of South Africa
J.F. Veenland, The Netherlands
J. Wyatt, United Kingdom
K. Yana, Japan
Their contributions are gratefully acknowledged.