


THE POTENTIAL OF COMPUTER APPLICATIONS
IN RHEUMATOLOGY

Rheumatologists are becoming increasingly aware of the potential advantages of introducing computer methods to all aspects of their work: administrative, clinical and research. In this issue of the Journal the results of a survey of computer use by members of the British Society for Rheumatology (BSR) are reported [1]. Over half of all rheumatology departments already had a computer (or access to one); while two thirds of those without were contemplating acquiring one. However, while manufacturers have continued to produce increasingly efficient equipment at lower prices and in a more compact form, the development of software packages suitable for the rheumatologist's requirements seems to have progressed very little. The conference on 'Computers in Rheumatology', held in June 1986 at the London Hospital Medical College and sponsored by the BSR and the Arthritis and Rheumatism Council for Research (ARC), was therefore a timely opportunity to bring together clinical rheumatologists, statisticians, epidemiologists and experts in the computer and related fields.

The programme, arranged over two days, opened with brief reviews of the operation and potential of computers. These were followed by a series of presentations describing clinicians' experiences of introducing computers into their own clinical practice. A 'hands on' practical demonstration period was included. On the second day the conference split into five separate workshops addressing specific aspects of computerization (diagnostic index, audit, medical records, clinical research and data analysis). Each was chaired by and composed principally of clinical rheumatologists, but included a number of specially invited participants with statistical and computer expertise. All reported back to a final plenary session.

This mixture of personal experience, technical know-how and enthusiasm for potential development combined to demonstrate that computers are able to assist in many tasks relevant to rheumatological practice. These range from improving the administration of appointment systems to the complex statistical analysis of large data sets for research purposes.

Three basic computer abilities can be harnessed to assist our works: data storage and retrieval; repetitive calculation and interaction with the user. The ready availability of clinical data stored on disc certainly has its advantages, but it also brings problems. Some of these are simply administrative—who types the data in? Who gets it out again? Other problems are more fundamental and deal with questions such as which data are to be stored, in what format and to what end? Because of these difficulties, systems are likely to be successful only if they are well defined and limited in their aims.

The calculating power of computers brings multivariate analysis to the fingertips of those with minimal numeracy. This method of analysis is one in which many variables are compared simultaneously, taking account of the different relationships between them. It provides a number of powerful tools with great potential for discovering new associations which are otherwise difficult to perceive [2]. On the other hand, using the computer in this way has hidden dangers which make it far from straightforward. The ease and rapidity with which summary results can be provided mask their dependency on the underlying assumptions made in the analysis. If these assumptions are incorrect, or an analysis is employed inappropriately, the results and conclusions can be seriously misleading. It would be a pity to misuse this area of statistical enquiry just when clinicians are beginning to grasp the nature of data variation, correlation, and the contrast between statistical and clinical significance.

Using computers interactively in medicine is
in its infancy. Suitable programs can make use of the clinical environment as well as the software which has been written into the system. They provide a resource which cannot be obtained from filing systems, simple calculations, or even a library full of books and scientific journals. Cognitive aids based on interactive programs may help to suggest appropriate investigations or co-ordinate patient assessment and management [4]. Miniaturization of hardware and sophisticated software (such as language recognition) will make the practical use of computers in routine clinics increasingly likely. In addition, interactive education programs, based perhaps on programmed learning texts, will offer new opportunities for undergraduate, postgraduate and patient education.

One topical and exciting area of discussion at the conference was that of clinical and epidemiological research in rheumatology. The ability of computers to store, retrieve and analyse large, longitudinal clinical data sets on patients provides previously unavailable opportunities to investigate the natural history and results of intervention in the rheumatic disease (and indeed all chronic conditions). Without computerized systems it is doubtful whether answers could be obtained to some basic questions, and this area demands a co-ordinated effort from clinicians, statisticians and epidemiologists.

A full report of this meeting has been published as the first of a new series called ‘ARC Conference Proceedings’ [5] and is obtainable directly from the ARC (41 Eagle Street, London WC1R 4AR). The series is designed to disseminate information from meetings on topics of interest to those in rheumatology, especially in areas of rapid development where early distribution would be beneficial. The practical use of computers in rheumatology is certainly one of these areas.

JOHN R. KIRWAN
Bone and Joint Research Unit,
The London Hospital Medical College, Turnier Street, London E1 2AD

REFERENCES
The rheumatology text which meets the needs of today's practising clinicians

CLINICAL RHEUMATOLOGY
G. V. Ball & W. Koopman

★ succinct and easy to use
★ practical and clinical in orientation
★ extensively researched

This new book presents common as well as uncommon rheumatological disorders in a concise and readable format. It emphasises clinical illness, with particular attention to medical orthopaedic entities requiring non-surgical treatment. The opening chapters cover basic science issues, and present the latest research findings as a foundation for understanding disease, considering the immune system and immune response, the HLA and complement system, and the structure of collagen in cartilage and bone. The material which follows includes expert and comprehensive coverage of rheumatological disorders, plus pertinent pharmaceutical guidelines, making Clinical Rheumatology an invaluable aid to diagnosis and treatment.

0 7216 1451 5 362 pages Illustrated Softcover 1986 W. B. Saunders £39.50

To: Bailliére Tindall/W. B. Saunders,
1 St Anne’s Road, Eastbourne,
East Sussex BN21 3UN, England

Qty:
☐ Clinical Rheum 0 7216 1451 5 £39.50
☐ Tektbr Rheum, Vol. 10 7216 5363 4 £95.00
☐ Tektbr Rheum, Vol. II 0 7216 5364 2 £95.00
☐ Tektbr Rheum, Comb. 0 7216 5362 6 £180.00
☐ Osteoarthritis 0 7216 6571 3 £95.00

I enclose £_____________ in payment for book(s) ordered, plus £_____________ for postage and packing/handling charges (see instructions).

METHODS OF PAYMENT
Total payment is £________ by (please tick):
☐ cheque (made payable to Holt-Saunders Ltd)
☐ eurocheque
☐ sterling bank draft
☐ Access
☐ American Express
☐ Dispers Club
☐ Visa (except France)

Credit Card No. 

Expiry date 

NAME (please print) 

ADDRESS 

Postcode 

Country 

DAYTIME TEL. NO. 

SIGNATURE 

Date ________________ CNEAA41

Also recommended...

TEXTBOOK OF RHEUMATOLOGY (2/e) Kelley et al

This complete multi-authored sourcebook offers detailed coverage of the pathophysiology of rheumatic diseases and spans clinical pharmacology, internal medicine, radiology, surgery and rehabilitation. The authors are renowned experts and their approach is comprehensive and wide-ranging.

0 7216 5362 6 Single combined volume £180.00
0 7216 5363 4 Vol. I £95.00
0 7216 5364 2 Vol. II £95.00
2200 pages (over 2 vols) 1150 Ibs Hardback 1985 W. B. Saunders

OSTEOARTHRITIS: Diagnosis & Management Moskowitz et al

Unique in its full coverage of all aspects of osteoarthritis, this valuable book deals with both investigative and clinical aspects of this common and often disabling disorder. It provides timely and authoritative guidelines complemented by excellent illustrations.

0 7216 6571 3 585 pages 458 Ibs Hardback 1984 W. B. Saunders £95.00

Ordering Instructions
Available through bookdealers. In case of difficulty, complete the order form and send, with payment, to Bailliére Tindall/W. B. Saunders, 1 St Anne’s Road, Eastbourne, East Sussex BN21 3UN, U.K.

Prices, specifications and availability are subject to change without notice. Overseas shipping and handling charges are for delivery within the UK & Eire. Regions: Add £2.50 for the first book and £0.75 for each additional book. Rest of the World: Add £3.00 for the first book and £1.30 for each additional book. For multi-volume titles, each volume is subject to the postage/packing/handling charges.

Allow 28 days delivery overseas (air-speeded methods used).

BAILLIERE TINDALL
W. B. SAUNDERS

Registered Office: Holt Saunders Ltd
1 St Anne’s Road, Eastbourne, East Sussex BN21 3UN, England
Registration No. 157431 Tel No. Eastbourne (0323) 633221
NAPROSYN

PRESCRIBING INFORMATION

NAPROSYN Tablets (naproxen 250mg per tablet)
NAPROSYN 500 Tablets (naproxen 500mg per tablet)
NAPROSYN Suspension (naproxen 25mg/ml)
NAPROSYN Suppositories (naproxen 500mg per suppository).

Uses: Rheumatoid arthritis, osteoarthrosis, ankylosing spondylitis, acute gout and acute musculo-skeletal disorders. Dosage:
For rheumatoid arthritis, osteoarthrosis and ankylosing spondylitis: 500mg to 1g daily taken in two doses at 12-hour intervals. High doses should be used with caution in the elderly.
For acute gout: 750mg at once, then 250mg every eight hours until the attack has passed.
For juvenile arthritis in children over 5 years: 5mg/kg body weight twice daily. For acute musculo-skeletal disorders: 500mg initially, then 250mg at 6-8 hour intervals as needed with a maximum daily dose after the first day of 1250mg. Contra-indications: Active peptic ulceration. Hypersensitivity to naproxen or naproxen sodium formulations. Aspirin/anti-inflammatory-induced allergy. Warnings, precautions, etc: Episodes of GI bleeding have been reported. Use with care in patients with a history of GI disease. Use with caution in patients with impaired renal or hepatic function. Monitor renal function and consider reducing dosage in patients where renal blood flow is compromised (e.g. in extracellular volume depletion, cirrhosis of the liver, sodium restriction, congestive heart failure, pre-existing renal disease) – some elderly patients may fall in this category.
Use with caution in patients with asthma or allergic disease. Caution is required if any of the following is administered concurrently: hydantoins, anti-coagulants or highly protein-bound sulphonamides; frusemide; propranolol or other beta-blockers; lithium; probenecid; methotrexate. NAPROSYN decreases platelet aggregation and prolongs bleeding time. Its use in pregnant or breast-feeding women should be avoided if possible. Side-effects: GI – nausea, vomiting, pain; occasionally bleeding and ulceration. Dermatological/hypersensitivity – skin rashes, urticaria, angio-oedema; rarely anaphylactic reactions and eosinophilic pneumonitis. CNS – headache, insomnia, inability to concentrate, cognitive dysfunction. Haematological – thrombocytopenia, granulocytopenia, aplastic anaemia, haemolytic anaemia. Other – tinnitus, hearing impairment, vertigo, mild peripheral oedema (patients with compromised cardiac function may be at a greater risk on NAPROSYN); rarely jaundice, fatal hepatitis, nephropathy and ulcerative stomatitis.
Further information is available from: Syntex Pharmaceuticals Ltd., St. Ives Road, Maidenhead, Berkshire SL6 1RD.
*NAPROSYN is a trademark.
The power patients prefer

Naprosyn* 500 bd.
If food allergy is your interest . . . here is the essential reference

Brostoff & Challacombe

NEW! FOOD ALLERGY AND INTOLERANCE

Food Allergy and Intolerance offers an outstanding contribution to the world literature of allergy and immunology. This major new title covers the complex and controversial field of food allergy and intolerance and gut immunology. In an area of much speculation, this book rests on scientific evidence and sound clinical practice. International authorship includes many of the world’s most respected authorities in their fields.

I. Basic Mechanisms – Supplies the fundamental knowledge of how the body processes food in both normal and abnormal situations.

II. Food Components and Their Reactions – Describes the structure and antigenicity of foods such as eggs, fish, and milk and reviews dietary lectins. Discussion of Chemicals and Preservatives examines their place in the food chain and how diagnosis of chemical sensitivity can be made clinically.

III. End Organ Effects – Looks at the various mechanisms known or postulated to produce allergic or non-allergic reactions. Clinical symptoms are described systematically by organ system, providing evidence as to the effect of food on each system.

IV. Diagnosis of Food Allergy and Intolerance – Describes the variety of clinical diagnostic techniques used to delineate food induced reactions. Introduced by Professor Goldman this section includes elimination diets, non-allergic food reactions, and a complete chapter on chronic candidiasis. Dr. O. Frick offers a summary of the laboratory and alternative diagnostic techniques available to the clinician.

V. Treatment of Food Allergy – Covers treatment by diet, drugs, hyposensitization and immunopotentiation. Professor J. Soothill completes the work with a look at the prevention of food allergy and future prospects.

0 7020 1156 8 1024pp 480 Ibs Hb
October 1986 Baillière Tindall (UK)
£75 (postage and packing included)

Ordering Instructions
Available through booksellers. In case of difficulty, complete the order form and send, with payment, to Baillière Tindall/W. B. Saunders, 1 St Anne’s Road, Eastbourne, East Sussex BN21 3UN, UK.
Prices, specifications and availability are subject to change without notice. Allow a minimum of 28 days delivery overseas (air-speeded methods used).

Edited by: J. Brostoff, MA, DM, FRCP, FRCPath, Reader in Clinical Immunology, The Middlesex Hospital Medical School; Consultant Physician, The Middlesex Hospital, London S. J. Challacombe, PhD, BDS, MRCPath, Reader & Consultant in Oral Immunology, Guy’s Hospital, London.

BAILLIÈRE TINDALL
W. B. SAUNDERS
Registered Office: Holt-Saunders Ltd., 1 St Anne’s Road, Eastbourne, East Sussex BN21 3UN, England.
Registration No. 157437 Tel No. Eastbourne (0323) 638221

[Order Form]

Beaillère Tindall/W. B. Saunders, 1 St Anne’s Road, Eastbourne, East Sussex BN21 3UN, UK

<table>
<thead>
<tr>
<th>Qty</th>
<th>C</th>
<th>Food Allergy and Intolerance 0 7020 1156 8</th>
<th>£75.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>I enclose £ ................................ for books ordered (postage and packing included).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAYMENT:</td>
<td>I enclose £ ................................ being paid by (please tick):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ cheque (payable to Holt-Saunders Ltd)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ eurocheque □ sterling bank draft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Access □ American Express</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Diners Club □ Visa (except France)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Credit Card No: ______________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expires _____________________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NAME (please print): __________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADDRESS: ____________________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Postcode ___________________________ Country __________________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DAYTIME TELEPHONE NO:______________</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIGNATURE: _________________________ DATE: _______________</td>
<td></td>
</tr>
</tbody>
</table>