OMERACT: An international initiative to improve outcome measurement in rheumatology

M. Boers[1], P. Brooks[2], L.S. Simon[3], V. Strand[4], P. Tugwell[5]

[1]Maarten Boers, MSc, MD, PhD, Department of Clinical Epidemiology and Biostatistics, VU University Medical Center, Amsterdam, The Netherlands;
[2]Peter Brooks, MD, FRACP, FAFRM, FAFPHM, Faculty of Health Sciences, The University of Queensland, Brisbane, Queensland, Australia;
[3]Lee S. Simon, MD, Harvard Medical School and Beth Israel Deaconess Medical Center, Boston, MA, USA;
[4]Vibeke Strand, MD, FACP, Division of Immunology, Stanford University, CA, USA;
[5]Peter Tugwell, MSc, MD, FRCPC, Department of Medicine, Ottawa University Hospital, Ottawa, Ontario, Canada.

Please address correspondence to: Maarten Boers, MSc, MD, PhD, Professor of Clinical Epidemiology, Department of Clinical Epidemiology and Biostatistics, PK 6Z 181, VU University Medical Center, Box 7057, 1007 MB Amsterdam, The Netherlands.

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ABSTRACT

*OMERACTis the acronym for an international, informally organized network aimed at improving outcome measurement in rheumatology. Chaired by an executive committee it organizes consensus conferences in a 2-yearly cycle that circles the globe since 2002. Data driven recommendations are prepared and updated by expert working groups. Recommendations include core sets of measures for most of the major rheumatologic conditions. Since 2002 patients have been actively engaged in the process. OMERACT 8 will take place in Malta, May 2006 (*www.omeract.org*).*

What is OMERACT?

OMERACT stands for 'Outcome Measures in Rheumatology'. The acronym OMERACT was coined at the first conference held in Maastricht, the Netherlands in 1992, limited to 'Outcome Measures in Rheumatoid Arthritis Clinical Trials'. Since then, the OMERACT initiative has turned into an international informal network, with working groups and gatherings interested in outcome measurement across the spectrum of rheumatology intervention studies. OMERACT strives to improve outcome measurement through a data driven, iterative consensus process. OMERACT has a 5 member Organizing Committee with members from three continents; it has a 15-member Scientific Advisory Committee composed of international opinion leaders from nine countries.

More information on OMERACT is available at our website (www.omeract.org), including information on the upcoming conference (May 10-14, 2006, in Malta), full proceedings from the recent conferences, and excerpts from earlier proceedings, all of which are freely downloadable.

What does OMERACT do?

Agreement regarding the use of standardized endpoints in randomized controlled trials and longitudinal observational studies is extremely important. Their use facilitates comparisons of outcomes across studies to provide the best estimates of benefit and safety of therapeutic interventions across differing patient populations.

To improve outcome measurement, OMERACTorganizes conferences that take place every two years and rotate around the globe. For these conferences, topics of interest are prepared by self-appointed groups of experts. These topics are then prepared for the conference by literature review and specification of the points for discussion.

Most topics are discussed in workshop format, where the aim is to make explicit the areas of agreement and disagreement, and to prioritize the research agenda. In several areas, the group has taken the lead in actually performing the necessary research to bring back to the conference. Recently, small group workshops have emerged alongside OMERACT conferences to speed up the work. When enough data is available, a full module is organized with the intention to come to consensus on guidelines.

In addition, OMERACThosts a discussion group on outcome measures. OMERACT works under the aegis of the International League for Rheumatology (ILAR). Most conferences have been held under the auspices of the World Health Organization (WHO). OMERACT is linked to the Cochrane initiative, with advantages for the synthesis of results to give clinicians and patients the best estimate of benefit.

How does OMERACTwork?

To reach consensus over what should be measured, and how, i.e., what measures are applicable in trials for each clinical indication, OMERACT has developed the following procedure. First, the organizing committee polls experts

and opinion leaders to generate interest in the topic at hand. These individuals then form a committee to guide the subsequent process. From the general domains of health status defined by the "D's" (Discomfort, Disability, Dollar Cost, Death), specific domains are formulated for the topic in question. In each domain, measures are collected and tested for their applicability (see below). The domains and the applicable measures form the basis for the consensus guidelines.

The process is data-driven and iterative, and has evolved over the conferences. Currently, an initiative starts as a Special Interest Group, a small group of experts that initiates the research agenda by literature reviews and validation studies. At the conference, in informal discussions, the research agenda is prioritized and tasks are distributed among interested parties. The next step is a Workshop, at which studies are presented that help the formulation and selection of the domains. Again, agreement is reached on priorities in research to be performed. The final step is the Module in which evidence (both from literature and from targeted studies) is presented, and final selection of measures can take place.

Both in Workshops and in Modules, plenary presentations alternate with small group sessions where participants express their views and preferences. These views are brought back to the plenary session, where a final consensus is formulated, often with the help of interactive voting. In Modules, consensus implies agreement on measures or domains; in Workshops it means the formulation of a research agenda in areas where data-driven decisions cannot be made. The process is iterative, in that guidelines are forever "preliminary" based on the assumption that future data (sometimes a direct result of the research agenda) will serve to refine or modify them.

When is a measure "applicable"?

A measure is "applicable" when it passes the OMERACT Filter in its intended setting. The OMERACT Filter can easily be summarized in only three words: Truth, Discrimination, and Feasibility. Each word represents a question to be answered of the measure, in each of its intended settings:

Truth: is the measure truthful, does it measure what it intends to measure? Is the result unbiased and relevant? The word captures the issues of face, content, construct and criterion validity.

Discrimination: does the measure discriminate between situations that are of interest? The situations can be states at one time (for classification or prognosis) or states at different times (to measure change). The word captures the issues of reliability and sensitivity to change.

Feasibility: can the measure be applied easily, given constraints of time, money, and interpretability? The word captures an essential element in the selection of measures, one that in the end may be decisive in determining a measure's success.

What has been achieved?

At the first OMERACT conference held in Maastricht, The Netherlands in 1992, initiatives that had been going on for over a decade culminated in a consensus over a core set of outcome measures for rheumatoid arthritis (RA) that was subsequently ratified as the "WHO/ILAR core set".

OMERACT 2 was held in Ottawa, Canada in 1994 and focused on toxicity, generic health status and economic evaluation. It resulted in 3 ILAR Task Forces that are expected to produce recommendations for these areas.

OMERACT 3 was held in Cairns, Australia in 1996; it focused on core sets of outcome measures in osteoarthritis and osteoporosis, and on psychosocial measures.

OMERACT 4 was held in Cancún, Mexico in 1998; it focused on domains and outcome measures appropriate to longitudinal and observational studies, RA response criteria and imaging, and domains and measures for clinical trials in ankylosing spondylitis and lupus erythematosus.

OMERACT 5 was held in Toulouse, France in 2000; it focused on methodologic classification of Minimal Clinically Important Differences; Health Economics, to work on establishing a core set of data for cost-effectiveness evaluations; Imaging to review response criteria for X-rays in RA trials, and scoring systems for MRIs; and a Safety module on establishing a standardized data set for recording adverse effects , and seeking agreement on a protocol to allow data on rare side effects to be collected from databases in different countries.

OMERACT 6 took place in Brisbane, Australia in April 2002. Due to the expanding area of interest, parallel programming was introduced for the first time. Also, a delegation of RA patients actively participated in the proceedings. Two consensus modules covered Health Economics and MRI Imaging in RA. In the former, a reference case for

Table I. Preliminary list of activities at OMERACT8.

Fellows & Young Researcher's
Pre-conference
(limited places and conditions apply)

Plenary activities
* Methodologic Requirements for Surrogate Endpoints in Rheumatology Trials
* Psoriatic Arthritis

Workshops *(100 attendees)*
* MRI in Ankylosing Spondylitis (AS)
* Fibromyalgia
* Patient Perspective : Fatigue
* Repair in RARadiographs / Joint Space Narrowing
* Vasculitis
* Drug Safety

Special Interest Groups *(30 attendees)*
* Scleroderma
* Work Productivity
* Item Response Theory & Computer Adaptive Testing
* Gout
* Low Back Pain
* Preventive Rheumatology
* Baseline State in RA
* Economic Reference Case in AS
* Total articular replacement as outcome
* Ultrasound*
* Synovial Tissue*
* Chemical Biomarkers*
* MRI in inflammatory arthritis*
* Single joint response*
* International Classification of Function
* Effective consumer

* also participating in Surrogate Endpoints

RA (minimum core format for presentation and analysis of economic studies in RA) was agreed on. In the latter, consensus was reached on a minimum assessment and evaluation protocol for MRI of the hands (OMERACT-MRI score). In (partially) parallel workshop sessions, topics included patient perspective in RA, systemic sclerosis, osteoarthritis response index, healing on plain radiographs in RA, and low disease activity state in RA.

OMERACT 7, the most recent conference, is covered in more detail below.

OMERACT 8 will take place in Malta, May 10-14, 2006. A list of proposed topics is in Table I. Apart from plenary modules, both workshops (100 attendees) and special interest groups (30 attendees) will run in parallel. It is notable that the size of a workshop at this conference will be equal to the size of the full conference at OMERACT 1.

More detail on OMERACT 7

This was the first time OMERACTwas convened in the United States; the meeting site was specifically chosen to facilitate informal interactions and consensus development. Situated along the Pacific coast between Monterey and Carmel, Asilomar was originally a YWCA camp in the early 1900's – and is now a 'preserved' California state park. This rustic site blends forest and ocean front settings with cabins and buildings designed in the "Craftsman style" of the early 20th century, now preserved as architectural heritage. Meetings representing academic, artistic, political and intellectual consensus efforts are regularly held in this unique setting – known for its natural beauty; offering a retreat from the frequently intrusive requirements of daily life.

OMERACT 7 was the largest to date: over 250 attendees from 17 countries; and most inclusive: extended by a full day to accommodate Special Interest Groups [SIGs] covering a broad range of topics. In addition to modules, module updates and workshops, SIGs met for 1.5-hour evening sessions, designed to facilitate formal development of consensus recommendations within a module at future OMERACTmeetings. Attendees included an international mix of rheumatologists, clinical trialists, representatives from industry and regulatory agencies and, importantly, patient participants (continuing an initiative from OMERACT 6). Of note, approximately 45% of participants had never attended an OMERACT meeting – yet they enthusiastically embraced and subsequently participated in the consensus process.

It is important to recognize that many ongoing activities represent a variety of consensus efforts dating back as far as OMERACT 3 [Australia, 1994], as recently as OMERCT 6 [Australia, 2002], and spanning discussions held in Canada [OM 2], Mexico [OM 4] and France [OM 5]. OMERACT 7 included ongoing meetings of working groups addressing outcome measures and definitions of remission in RA including imaging and synovial biopsy, outcomes and imaging in ankylosing spondylitis [ASAS], definitions of response in psoriasis/ psoriatic arthritis [GRAPPA], fibromyalgia, progressive systemic sclerosis and gout. As an example, work regarding measures of cartilage preservation in osteoarthritis is ongoing under the "OMERACT umbrella", without formal presentations at the international meeting.

Spin-off

The OMERACT process has been emulated by two other independent groups: one working in the field of chronic juvenile arthritis, and one in ankylosing spondylitis. The former group first developed a core set and has continued with response criteria, closely mimicking the process followed by the American College of Rheumatology and OMERACT for adult rheumatoid arthritis. The latter group initially formulated a core set for ankylosing spondylitis, but has now decided to bring their deliberations under the OMERACT umbrella.

Outside of rheumatology, members of the executive committee have lectured on the OMERACTmethodology for experts in MRI imaging, neurology (neuropathies), gastroenterology (non-ulcer dyspepsia), intensive care medicine, and community genetics.

Two meetings were held at the World Health Organization headquarters in Geneva, cosponsored by ILAR. At the first in 1993, the core set agreed upon at OMERACT 1 was ratified. At the second in 2000, the core sets and recommendations arising out of OMERACT 2-4 were ratified.

OMERACT 5 was the first to include a "Young Investigator's Day," thanks to sponsorship of the European Community (Fifth framework). This allowed active young investigators to present recent and ongoing work and be critically appraised by OMERACT faculty. After this day these investigators became full participants in the conference. Funding permitting, we hope to make this a permanent feature of OMERACT conferences.

A small workshop of economics experts was held in New York early in 2001 to lay the groundwork for the module at OMERACT6. The objective of that meeting was to develop a "reference case" for rheumatology as the first applied version of the generic reference case approach recommended by the US Public Health Service appointed Panel on Cost-Effectiveness in Health and Medicine. This comprises a proposed set of minimum criteria that all economic analyses should include in order to allow comparability across studies in the following categories: model horizon, duration of treatment, extrapolation beyond trial duration, modeling beyond trial duration, synthesis of comparisons where clinical trials do not exist, outcome measures, valuation of health (e.g. QALYs), classification and reporting of adverse events, discontinuation of treatment, therapeutic strategies, population risk stratification, and resource use. This was applied to rheumatoid arthritis at OMERACT 6 and for osteoarthritis and osteoporosis at an NIH funded meeting at the Mayo clinic in April 2003.

Funded by EULAR, in 2005 the OMERACT MRI group completed an atlas of MRI images as a special supplement to the Annals of Rheumatic Diseases: The "EULAR-OMERACT rheumatoid arthritis MRI references image atlas". This atlas allows training and further propagation of the reading method endorsed at OMERACT 6.

Since OMERACT 6, patients have been

actively involved in the OMERACT process. The patient group is mentored by John Kirwan (Bristol, UK), but has developed into an independent 'pressure group' within the OMERACT initiative. The group publishes a newsletter and has produced an OMERACT glossary for the benefit of patients, but eminently useful for professionals involved in OMERACT as well.

Conclusion

Efforts to identify, standardize and collect validated outcome measures, as well as definitions of minimal clinically important differences [MCID] in patient reported outcomes, have helped to interpret results from randomized controlled trials to everyday clinical practice. They have also facilitated definitions of clinically meaningful changes, especially in the context of metaanalyses conducted under the Cochrane Collaboration.

Consensus processes conducted within OMERACT facilitate efforts to define and measure improvements in health outcomes across broad populations with musculoskeletal diseases. Linking efforts under the "OMERACT umbrella" with the Bone and Joint Decade initiative will help to identify important unmet needs addressing impairments in physical function and health related quality of life shared by most individuals suffering from chronic inflammatory and/or arthritic conditions.

OMERACT Committee

Chair, OMERACT 8

Maarten Boers, MSc, MD, PhD
Professor of Clinical Epidemiology, Department of Clinical Epidemiology and Biostatistics, PK 6Z 181, VU University Medical Center, Box 7057, 1007 MB Amsterdam, The Netherlands

Members

Peter Brooks, *MD, FRACP, FAFRM, FAFPHM*
Executive Dean (Health Sciences), The University of Queensland, Edith Cavell Bldg, Royal Brisbane Hospital, Herston, Brisbane, Queensland 4029 Australia

Lee S. Simon, *MD*
Associate Professor of Medicine, Harvard Medical School, Directory of Rheumatology Clinical Research, Beth Israel Deaconess Medical Center, 110 Francis Street Suite 5A, Boston, MA02115, USA

Vibeke Strand, *MD, FACP*
Clinical Associate Professor, Division of Immunology, Stanford University 306 Ramona Road, Portola Valley, CA 94028, USA

Peter Tugwell, *MSc, MD, FRCPC*
Professor of Medicine, Department of Medicine, Ottawa University Hospital, 501 Smyth Rd, Suite LM12, Ottawa, On K1H 8L6, Canada

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