BACKGROUND TO INTRODUCTION OF THE MSc COURSE

In recent years, post-graduate training in rheumatology and other medical and surgical specialities has undergone major changes. Two of the important changes resulting from implementation of the ‘Calman Report’ [1] are that most junior doctors will undergo a shorter period of training, and that training requirements are more explicit and formalized than previously. In rheumatology, the duration of single speciality training is now 4 yr. Of these 4 yr, one may be spent in research [2].

It was against this background that Manchester decided to establish an MSc course in clinical rheumatology. With the implementation of a shorter training period in rheumatology, fewer trainees would be in a position to undertake an MD during the training period, a concern which has been expressed elsewhere [3]. This potential problem was exacerbated by the fact that with the current emphasis on structured post-graduate medical education, there would be even less ‘free’ time in most trainees’ timetables to undertake research projects. These changes in post-graduate training were seen as an opportunity: with most trainees undertaking a structured taught MSc programme, this would contribute to the requirements for post-graduate clinical training, and give trainees an insight into research methodology. Those trainees who found that they had an aptitude and a liking for the research component could then make an informed decision as to whether they wished to undertake further research, e.g. leading towards a PhD.

AIMS

The broad aims of our MSc course are as follows.

1. **Clinical skills.** To provide a comprehensive curriculum which will enable post-graduate students to acquire the knowledge, understanding, attitudes and skills relevant to the practice of rheumatology.

2. **Research skills.** To give an understanding of research methodology.

3. **Scientific background.** To enable students to gain an appreciation of the links between basic science and clinical medicine.

MECHANISMS OF ACHIEVING THESE AIMS

The course has been designed to facilitate achievement of the above three aims.

**Clinical skills**

There is a strong clinical emphasis throughout the course, which is open only to medical graduates. Three of the modules are disease based (see below), and during these modules and the ‘introductory’ module there is a programme of seminars and practical sessions designed to cover the needs of doctors aiming towards a career in rheumatology. For example, in the introductory module, there are sessions on functional anatomy and clinical examination, synovial fluid analysis, X-ray interpretation, and the general principles of medical and surgical management of the rheumatic diseases. In each of the disease-based modules, there is a programme of seminars covering the different aspects of the rheumatic diseases falling within the scope of that module. In addition to rheumatologists, teachers on the course include orthopaedic surgeons, other specialists with whom rheumatologists collaborate when caring for patients with multisystem disease, radiologists, physiotherapists, occupational therapists and podiatrists. Thus, the multidisciplinary approach to care is emphasized.

The majority of post-graduate students on the course have so far been local trainees, who are continually gaining clinical skills and experience on a day-to-day basis. However, other students, e.g. general practitioners or doctors from overseas, are less well placed to gain clinical rheumatology experience throughout the course and so additional teaching has been required by them. For these doctors, we arrange clinical oberservships to allow them to attend clinics and ward rounds, and each is assigned a clinical supervisor who ensures that he or she is gaining adequate clinical experience. We also arrange extra teaching sessions (outside the formalized teaching programme) aimed primarily at overseas doctors, with the emphasis on clinical skills.

**Research skills**

A structured approach to research methods is provided in the research skills and epidemiology modules. Subjects covered include many basic topics not previously taught in a structured manner, e.g. effective use of library resources and laboratory safety issues. The project work then allows students to develop research skills under supervision. The project may be either laboratory or clinically based, depending on the wishes...
of the student. Examples of some of the projects undertaken by the first cohort of students undertaking the course included: a study of nailfold capillary dimensions in patients with primary Raynaud’s phenomenon and systemic sclerosis; polymorphisms in the CTLA-4 gene associated with rheumatoid arthritis, systemic lupus erythematosus and multiple sclerosis; a double-blind trial of acupuncture in chronic soft-tissue shoulder pain.

**Scientific background**

We have striven to design the MSc course so as to draw attention to the importance of basic science to the rheumatologist, emphasizing the two-way links between the laboratory and the bedside. Many of the teachers on the course are either scientists or clinical academics, and several of the seminars are science based, e.g. sessions on the immunogenetics of the rheumatic diseases, and pain physiology.

**STUDENTS**

Students are eligible to apply for the course if they are medically qualified (MB ChB or equivalent). We feel that previous experience in rheumatology is desirable, but not essential. Experience from the first 2 yr of the course suggests that students should also have at least 3 yr of general medical or equivalent training (to equate roughly to MRCP level). This is because, otherwise, overseas doctors may have difficulty coping with the demands of the course, and we are aware of the differing needs of overseas doctors and local trainees. We encourage applications from general practitioners with a musculoskeletal interest. The course is

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Module</th>
<th>Method of examination</th>
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<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>Introduction to rheumatology/the approach to the patient with rheumatic disease</td>
<td>Continuous assessment/MCQ and essay papers/clinical examination</td>
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<td>Topics include: joint structure and function, normal bone and cartilage biology, functional anatomy, genetic factors in rheumatic disease, history taking and examination, investigations (including synovial fluid analysis, modern techniques in tissue pathology, X-ray interpretation) and principles of management of the patient with rheumatic disease</td>
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<tr>
<td></td>
<td>1</td>
<td>Inflammatory arthritis and pain physiology</td>
<td>Continuous assessment/MCQ and essay papers/clinical examination</td>
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<td>Topics include: pathology, aetiology and pathogenesis (including the role of cytokines and growth factors, and cellular responses in inflammation), clinical features and management of different forms of inflammatory arthritis, pathophysiology and pharmacology of inflammatory pain, pain management, and clinical methods of assessment of inflammatory arthritis</td>
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<td>2</td>
<td>Back pain, osteoarthritis and soft-tissue rheumatism</td>
<td>Continuous assessment/MCQ and essay papers/clinical examination</td>
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<td>Topics include: structure and function of the spine, spinal pathology, differential diagnosis and assessment of back pain (both acute and chronic), imaging of the spine, medical and surgical management of back pain, metabolic bone disease, osteoarthritis, soft-tissue rheumatism, fibromyalgia, work-related upper limb disorders and complex regional pain syndrome (reflex sympathetic dystrophy)</td>
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<td>Remainder of academic session—project work</td>
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| B    | 1        | Research skills | Continuous assessment/MCQ/written assignment/paper presentation |
|      |          | Topics include: statistics, computing, literature searches, presentation skills, experimental design, grant writing, ethics and the law, laboratory safety issues | |
|      | 1        | Connective tissue diseases and vasculitides | Continuous assessment/MCQ and essay papers/clinical examination |
|      |          | Topics include: pathology, aetiology and pathogenesis, clinical features and management of the connective tissue diseases and vasculitides | |
|      | 2        | Epidemiology of the rheumatic diseases | Continuous assessment/MCQ and essay papers/paper critique |
|      |          | Topics include: measurement of disease occurrence, risk factors for developing disease (or outcome), classification criteria, study design (including clinical trials), questionnaire design, paper critique, genetic epidemiology, methods of genetic analysis, studying prognosis, life-table and survival analysis, health care needs assessment, measurement of disease severity, epidemiology of major rheumatic diseases | |
|      |          | Remainder of academic session—project work | |

MCQ, multiple-choice questions.
widely advertised and applications are welcomed from overseas, including from other European countries.

Trainees who do not wish to undertake the full MSc (e.g. those who already have MDs or PhDs) may arrange to undertake one or more modules of interest to them, without undertaking the full programme. Similarly, postgraduate students registered for a PhD may wish to undertake one or more modules, depending on the particular needs of the individual.

For the academic session 1997/8, there are 12 students registered on the course. Seven began in September 1996 and are in their second year, five began in September 1997. Five are/were local trainees (one has taken up a consultant appointment since registering), one has a staff grade appointment, four are from overseas, one is a general practitioner.

COURSE STRUCTURE
We have designed the course to enable local trainees to register. This means that the structured teaching has to be concentrated into 1 day per week. Each module runs over 6 weeks, with two modules during the first semester and one at the beginning of the second semester. The rest of the session is devoted to project work, and so approximately half of the project work is carried out in the first year of the course, with the other half in the second. An outline of the six modules and their content is given in Table I.

EVALUATION
Each module is separately assessed, by a combination of a continuous assessment mark, a written examination and, where applicable, a clinical examination (Table I). Examinations are held at the end of the first semester (for the first, second, fourth and fifth modules) and in the middle of the second semester (for the third and sixth modules). While this practice of holding four clinical examinations (with resits) every 2 yr is labour intensive, one of our emphases is on clinical skills and so we feel that this approach is essential. The structure of the clinical examination depends on the module, but is either an OSCE (objective structured clinical examination) or a combination of a long case and short cases. With respect to the project work, this is assessed as a dissertation. Each dissertation is assessed by both an internal and external examiner.

Therefore, we assess whether the aims of the course are fulfilled for individual students as follows.

1. Clinical skills. These are assessed primarily in clinical examinations, and also in the written papers.
2. Research skills. These are assessed in the examinations of the research skills and epidemiology modules, and also by the dissertation. The research skills module examination includes a presentation by each student of a scientific paper (assessing presentation as well as research skills), and writing a proposal for an application to conduct a piece of scientific research. The epidemiology module examination includes a critique of a scientific paper.

3. Scientific background. This is assessed primarily in the written components of the module examinations (both essay and multiple-choice questions).

EXTENSION TOWARDS FURTHER RESEARCH
As the MSc is undertaken in the second and third years of the training scheme, students may go on to undertake further research during the remainder of their training period. Also, students may elect to undertake a longer period of research, leading towards an MD or PhD.

POPULARITY OF THE COURSE
The MSc course has proved popular among trainees. So far, all have elected to register for the course, with the exception of those already holding a higher degree. We are confident that it will attract trainees to Manchester. Also, we have been very pleased with the support which the MSc course has received from consultant colleagues throughout the North West, many of whom are involved in the teaching.

It should be stated that although we strongly encourage local trainees to register for the MSc course, this cannot be obligatory to training. There are other rheumatology post-graduate training sessions in the North Western region open to all those interested. Our experience, however, is that most specialist registrars see the MSc as worthwhile, and we anticipate that most trainees will continue to wish to register. Thursdays have been designated for the structured teaching of the MSc course and, with the programme being drawn up well in advance, clinical commitments can be reduced appropriately.

ACKNOWLEDGEMENT
We are grateful to the Arthritis and Rheumatology Council for awarding us an ICAC grant. Without this, many activities of the rheumatology department, including the MSc course, would not be possible.

REFERENCES