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Target Audience
The target audiences for this educational supplement are nurse practitioners, rheumatologists, and other allied health care professionals involved in the treatment of patients with rheumatoid arthritis.

Purpose Statement
This supplement fills a learning need by providing a performance-focused educational activity that will assist nurse practitioners to effectively and efficiently manage patients with RA.

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Rheumatoid Arthritis: Meeting the Patient-Care Challenge

Educational Needs
Arthritis is the leading cause of disability among Americans over age 15. As reported by the US Centers for Disease Control and Prevention (http://www.cdc.gov/arthritis), in 2005, an estimated 66 million individuals in the United States had signs and symptoms of arthritis. The most common and most disabling form of this disease is rheumatoid arthritis (RA), which affects an estimated 2.1 million adults in the United States. RA is an inflammatory musculoskeletal disease that causes pain and damage to joints, eventually causing deformity and disability. A recent, “first-of-its-kind” survey was compiled from data from the Behavioral Risk Factor Surveillance System. The survey demonstrated that the pervasiveness of arthritis in the US workforce may create a significant challenge to the economy as the population ages and, by extension, create even greater challenges for those involved in the care of patients (Rheum News. 2007; 6 (11):14).

In the past decade, research has shown that RA is among the group of disorders that have been classified as immune mediated inflammatory disease (IMIDs), a classification that also includes Crohn’s disease, juvenile RA, psoriatic arthritis, and plaque psoriasis. Common to the IMIDs are pathophysiologic processes that involve immune systems proteins, including cytokines such as tumor necrosis factor (TNF). Investigators continue to explore the full range of mechanisms that may play a role in the pathogenesis of IMIDs.

For RA, the disease-modifying antirheumatic drugs (DMARDs)—including prednisone, methotrexate, and nonsteroidal anti-inflammatory drugs—are helpful in managing pain in many patients and still have an important role in therapy. However, the DMARDs are not effective in halting the progression of joint destruction. Within the last decade, biologic agents have been developed that target and inhibit TNF, and these drugs have been shown to be effective in controlling pain, arresting the disease process, and improving the quality of life of patients affected by RA and other IMIDs.

Several of these biologic agents have been approved by the US Food and Drug Administration (FDA) for the treatment of several inflammatory diseases. New biologic agents on the horizon also have been proven effective in RA. As a class, these new treatment options have revolutionized patient care and outcomes. The development of these treatments, along with a greater understanding of appropriate multidisciplinary clinical management, has contributed to a new era in the field of RA diagnosis and management.

Allied health providers like nurse practitioners are an integral and critical part of the rheumatoid arthritis management team. They must be prepared to address clinical needs as well as to assist patients as they contend with their disease and its associated pain and disability and the resulting adverse effects of these processes on their quality of life and that of their families. This supplement fills an educational need by providing a performance-focused tool that will assist in the proper management of patients with RA.

It includes an overview of the current understanding of pathogenesis and pathophysiologic evidence regarding the efficacy, safety, and optimal use of the available treatment options, and specific management/implementation plans that will be immediately useful in patient care.

Learning Objectives
At the conclusion of this educational activity, participants should be able to:

- Summarize the pathogenesis and pathophysiologic of rheumatoid arthritis.
- Identify the signs and symptoms of rheumatoid arthritis in its earliest stages.
- Describe the traditional and new biologic treatment options available for monotherapy and combination regimes in clinical practice as they relate to disease progression.
- Determine a patient’s immediate and initial long-term needs.
- Describe and implement current evidenced-based treatment strategies including multidisciplinary therapies for managing rheumatoid arthritis.
- Observe for and manage treatment-related adverse effects that may occur.
- Monitor and support patient compliance with recommended regimens.
- Identify the patient’s unmet needs as the management plan progresses and implement solutions.
- Evaluate the safety and efficacy of biologic treatments in the management of rheumatoid arthritis.

How to Earn Credit
In order to earn CE credit for this activity, you must:

- Read the learning objectives.
- Read and review the four articles.
- Complete a post-test online and achieve a passing score of 80%.
- Complete online an evaluation of this activity.
- A certificate is provided immediately online upon successful completion.

Note: The post-test and evaluation are available at: www.mcstrategies.com/RNS062008

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Ms Feldmann has nothing to disclose. Dr Johnson has nothing to disclose. Dr Mease is a consultant to, has received honoraria, grant funding, or has served on advisory boards for Abbott Laboratories, Amgen, Inc., Bristol-Myers Squibb Company, Biogen IDEC, Centocor, Inc., Genentech, Inc., Roche, Wyeth Pharmaceuticals, and UCB Inc. Dr Semanik has nothing to disclose.

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Rheumatoid arthritis (RA) affects more than 2 million adults in the United States, leading to high rates of morbidity and disability despite recent advances in diagnosis and treatment. About 40% of patients with RA who are employed stop working within 5 years of diagnosis. Patients with RA have a high prevalence of comorbid conditions, particularly cardiovascular disease and infection. Cardiovascular disease tends to occur at an earlier age in patients with RA compared with individuals who do not have RA. A considerable volume of evidence has demonstrated that RA shortens a person’s lifespan.

Although no cure for RA exists, early diagnosis and aggressive treatment can improve the outlook for many patients. The American College of Rheumatology recommends starting disease-modifying therapy within 3 months of diagnosis in patients who do not respond promptly to initial conservative treatment.

Effective management of RA requires a comprehensive, multidisciplinary approach involving physicians, nurse practitioners, physical therapists, occupational therapists, psychologists, social workers, and other health care professionals. Although pharmacologic therapy forms the basis of RA treatment, medication alone does not address the myriad issues and needs that arise in patients and their caregivers.

RA affects virtually every aspect of a patient’s life, and no two patients are affected in exactly the same way or to the same extent. Each patient requires a comprehensive assessment to identify the disease’s total impact on the patient’s life, so that an individualized clinical management program can be developed to meet each patient’s specific needs. At each follow-up visit with a patient, the full spectrum of needs should be re-evaluated to identify new or unmet needs.

Nurse practitioners play a central role in the care of patients with RA. Not uncommonly, nurse practitioners serve multiple roles: clinician, counselor, educator, confidante, and friend to the patient and to the family or primary caregiver. Above all, nurse practitioners serve as facilitators of optimal clinical management.

The emergence of more effective therapy for RA, particularly biologic agents, has added new tasks and roles to the nurse practitioner’s responsibility for care of RA patients. Evolving trends in patient care will likely lead to further expansion of the nurse practitioner’s role in the planning and implementation of comprehensive clinical management strategies for RA.

This supplement to Rheumatology News provides information on the current status of care for patients with RA. Specialists in the care of patients with RA discuss the latest approaches to diagnosis and treatment, the contributions of nonpharmacologic therapy to patient care, the importance of identifying and addressing unmet needs of patients and caregivers, and the evolving role of the nurse practitioner in comprehensive care.

— Rebecca A. Johnson, PhD, RN, FAAN

Current Clinical Strategies for Rheumatoid Arthritis

Philip J. Mease, MD

Rheumatoid arthritis (RA) is a chronic inflammatory condition affecting approximately 1% of the population. Spontaneous remission rarely occurs, and the condition typically progresses to a chronic state that causes substantial morbidity and disability, creating an economic burden at the individual and societal levels. Although widely recognized as an autoimmune disorder, full understanding of RA etiology and pathophysiology remains incompletely understood after decades of investigation. Biologic agents are therapeutic proteins which are specifically targeted to effect molecular targets in the inflammatory cascade. With an expanding list of treatment options, clinicians face the opportunity and challenge of optimizing therapy for each patient, including therapeutic switch and discontinuation, in order to try to reach goals which are now achievable: remission or low disease state.

Etiology and Pathogenesis

The onset of RA involves a cascade of inflammatory cells and cell products, including T-α and B-lymphocytes, macrophages, dendritic cells, monocytes, and various effector cells whose activity is influenced by other cells and their products, effector molecules known as cytokines. Cytokines are involved in initiating, coordinating, and directing the inflammatory cascade. Key cytokines include tumor necrosis factor-α (TNF-α), interleukin (IL)-1, and IL-6.

Epidemiology and Natural History

RA affects populations worldwide and has a female predominance estimated at 2:1 to 3:1. Although the condition can arise at any age, about 80% of cases occur between 30 and 60 years of age. Radiographic evidence of joint damage emerges early in the course of the disease, persists, and progresses, particularly during the first 1 to 2 years. Disease progression can be slowed substantially by early, aggressive, effective therapy.

Patients with RA have estimated disability rates that are 4 to 15 times greater than those of the general population. Some degree of disability is evident within a year of diagnosis. Work disability rates 5 years after diagnosis vary between 30% and 40%. As many as half of affected patients have significant disability and/or deformity after 10 years, increasing to 80% or more at 20 years.

Patients with RA also have a high burden of comorbid conditions. RA increases the risk of cardiovascular disease, infection, osteoporosis, and cancer, among other conditions. The ongoing inflammatory response that drives RA also drives the risk for many of the comorbidities. Cardiovascular disease (CVD), along with infection, is the most common cause of death among patients with RA.

Diagnosis and Follow-Up

The American College of Rheumatology (ACR) has established diagnostic criteria that help clinicians identify patients within a few weeks after onset of symptoms. The criteria consist of a combination of seven clinical, laboratory, and radiographic findings. A definitive diagnosis of RA requires the presence of at least four of the seven criteria (Table 1 on page 4).

Serologic Markers

Rheumatoid factor (RF) is the traditional laboratory marker for RA, but not all patients with RA are RF positive. It is important to be aware that not all RA patients are RF positive. Among patients who meet the ACR criteria, rheumatoid factor has a sensitivity of 60% to 70% and a specificity of 80% to 90%. Elevated levels of RF correlate with aggressive and erosive RA. Testing for antibodies to cyclic citrullinated peptide...
(CCP) is another useful test for early diagnosis of RA, particularly patients who are RF-negative. Anti-CCP antibodies are a less sensitive, but more specific marker of RA and can be detected years before development of clinical RA. Like RF, anti-CCP antibodies predict aggressive disease that has a poor prognosis.\textsuperscript{13-15} Erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) correlate strongly with radiographic damage and long-term disability.\textsuperscript{2,19}

**Radiographic Markers** Because joint erosions correlate with disability, identifying erosions as early as possible in the course of RA plays a major role in clinical decision making and disease management. Typically, erosions appear on plain radiographs within 6 months or a year of diagnosis, although they can be visualized much sooner in some instances.

**Evolution of Pharmacologic Therapy** Once viewed as an insidious but non-lethal condition, RA has earned a reputation as a rapidly progressing disease that causes substantial morbidity, disrupts every aspect of a patient’s life, gives rise to a variety of serious and potentially life-threatening comorbidities, and steals years from a normal lifespan. Increased recognition of the threat posed by RA has greatly influenced the overall approach to treatment.

Not so long ago, clinicians routinely delayed intensifying therapy until clear signs of progression emerged. Today, knowledgeable clinicians know that putting off aggressive therapy can mean losing an opportunity to slow or halt disease progression. The ACR guidelines recommend waiting no longer than 3 months after diagnosis to intensify therapy.\textsuperscript{19}

Clinicians have more pharmacologic options than ever for managing RA. Available drugs fall into four general categories: 1. Nonsteroidal anti-inflammatory drugs (NSAIDs), 2. Glucocorticoids, 3. Disease-modifying antirheumatic drugs (DMARDs), and 4. Biologic agents (Table 2 on page 5).

Patients who have clear evidence of aggressive disease is that likely to progress quickly should start with a more potent DMARD. For many clinicians that means methotrexate, which generally is acknowledged as the most potent of the conventional DMARDs.

Regardless of the initial treatment choice, patients should be followed closely to monitor for signs of increased disease aggression or inadequate response to therapy. The ACR guidelines specify seven key clinical signs indicative of persistent disease activity or aggressiveness (Table 3 on page 5).\textsuperscript{19}

The 28-item disease activity score (DAS28) is one of several scales for assessing RA activity. Worsening of a patient’s DAS, or even lack of improvement, reflects disease that is not responding to treatment. Several simpler scoring methods, such as the Simple Disease Activity Index (SDAI) and the Clinical Disease Activity Index (CDAI), have more recently been introduced. These have shown good correlation with the DAS scoring system and thus may be likely used more broadly in clinical practice.\textsuperscript{7-20}

The ACR also has developed response criteria that have been used extensively in clinical trials.\textsuperscript{11} The criteria center on changes in the number of involved joints, the extent of swelling and inflammation in the involved joints, evaluation of patient and clinician, impact on function, and an acute phase reactant. The term ACR20, for example, refers to 20% improvement, ACR50 to 50% improvement, and ACR70 to 70% improvement of a proportion of these composite elements.

When RA fails to respond to initial treatment, multiple options enter into clinical decision making. These include increasing the dose of existing medications, adding another drug to the regimen, or switching to more potent agents. Consideration of biologic agents should occur at this point, if not sooner.

**Biologic Therapy** The introduction of biologic agents revolutionized treatment of RA. The biologics represent the most specific form of RA therapy developed to date. Despite differing mechanisms of action, biologic agents have in common the ability to target key proteins or cytokines involved in the inflammatory cascade, such as TNF-\(\alpha\).

Biologic agents also address a challenging therapeutic issue. For reasons that are not entirely understood, conventional RA therapies, including DMARDs, lose their activity over time or cause side effects that patients eventually find intolerable. With methotrexate, for example, about 50% of patients who start the drug discontinue within 18 months because of loss of efficacy or side effects.\textsuperscript{21}

Less attrition is seen with biologic agents, and when a biologic agent does show diminished effectiveness, a patient can be switched to a different biologic therapy to regain control of disease activity.

**TNF Inhibitors** This class currently comprises adalimumab, etanercept, and infliximab. Adalimumab is a fully human monoclonal antibody, etanercept is a fusion protein consisting of two molecules of a TNF-\(\alpha\) receptor protein and a fragment of human immunoglobulin G1, and infliximab is a chimeric monoclonal antibody. All three of these agents bind to TNF-\(\alpha\) and thus diminish its ability to activate cells.

All of the TNF inhibitors are associated with an increased risk of infection. Additionally, each agent in the class has an FDA Black Box warning about the potential for reactivation of latent tuberculosis. Administration-site reactions are the most common adverse effect observed with the agents.

**Adalimumab** The most recent addition to the anti-TNF class, adalimumab has demonstrated safety and efficacy during long-term treatment of RA. At the 2007 ACR meeting a report on 1,469 patients treated for as long as 7 years with the combination of adalimumab and methotrexate showed significant improvement on all efficacy measures at 6 and 12 months. The proportion of patients meeting remission definitions by ACR criteria (ACR70) or the DAS continued to increase during the first 2 years of treatment.\textsuperscript{21,22}

**Etanercept** Four-year follow-up data from a randomized study comparing etanercept plus methotrexate to either drug alone demonstrated the superiority of the combination.\textsuperscript{23} Comparison of radiographic findings demonstrated substantially less progression with the combination.

A randomized comparison of etanercept plus methotrexate versus methotrexate alone showed that almost half the patients treated with the combination had achieved a DAS44 clinical remission at 1 year compared with 28% of patients on methotrexate monotherapy.\textsuperscript{24} Of note, the trial involved patients with early-stage RA, reflecting the current emphasis toward early initiation of aggressive treatment.

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**Table 1. ACR Clinical Classification Criteria for Rheumatoid Arthritis**\textsuperscript{11}

<table>
<thead>
<tr>
<th>Using history, physical examination, laboratory, and radiographic findings:</th>
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<tbody>
<tr>
<td>4 of the following must be present with 1 through 4 present a minimum of 6 weeks.</td>
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<tr>
<td>Morning stiffness (\geq 1) hour</td>
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<tr>
<td>Arthritis of 3 or more of the following joints: right or left proximal interphalangeal, metacarpal phalangeal, wrist, elbow, knee, ankle, and metatarsophalangeal joints</td>
</tr>
<tr>
<td>Arthritis of wrist, metacarpal phalangeal, or proximal interphalangeal joint</td>
</tr>
<tr>
<td>Symmetric involvement of joints</td>
</tr>
<tr>
<td>Rheumatoid nodules over bony prominences, or extensor surfaces, or in juxtaarticular regions</td>
</tr>
<tr>
<td>Positive serum rheumatoid factor</td>
</tr>
<tr>
<td>Radiographic changes including erosions or bony decalcification localized in or adjacent to the involved joints</td>
</tr>
</tbody>
</table>

**Source:** American College of Rheumatology (ACR) Subcommittee on Rheumatoid Arthritis Guidelines\textsuperscript{11}
Infliximab: An updated analysis of a trial comparing infliximab plus methotrexate versus methotrexate alone provided additional evidence of anti-TNF therapy’s persistence of clinical activity. After 4 years of follow-up more than half of a group of patients with early RA had discontinued infliximab and maintained good disease control by DAS criteria. A comparison of radiographic findings showed that initial treatment with methotrexate and infliximab was associated with significantly less progression of joint damage versus delaying the combination until failure of another DMARD.

T-Cell Modulators
The first agent in this class for the treatment of RA is abatacept, a fusion protein that diminishes activation of T-cells. The agent binds to the B7 protein on antigen-presenting cells to inhibit the costimulatory signaling required for full T-cell activation. Principal adverse effects include infusion reactions and an increased risk of infection.

At the 2007 ACR meeting, investigators presented long-term data from two trials evaluating abatacept in patients who had inadequate responses or loss of response to treatment with a DMARD or a TNF inhibitor. Three years after the switch to abatacept, 60% of patients had an ACR50 response, and the data suggested the benefits of the agent may increase over time.

Selective B-Cell Inhibitors
Rituximab, originally developed as a treatment for lymphoma, is a monoclonal antibody that targets the CD20 protein. ACR meeting. Additional ACR meeting evaluations of rituximab have included evaluations of rituximab as monotherapy or in combination with methotrexate in patients with RA. Certolizumab was administered as a 400 mg loading dose every 2 weeks after an initial 3 doses followed by 200 or 400 mg every 2 weeks. Treatment resulted in significant improvement by ACR20, ACR50, and ACR70 criteria, and similar effects with the 200-mg or 400-mg dose were demonstrated. Radiographic data from one study demonstrated significant inhibition of disease progression with certolizumab, similar to data shown with other anti-TNF agents.

Emerging Biologic Agents
Several investigational agents are in various stages of clinical evaluation and could expand the biologic options for RA in the near future. The agents include members of existing biologic classes and prototypes of new classes.

Certolizumab Pegol
Structurally distinct from other members of the anti-TNF class, certolizumab consists of the antibody binding fragment (Fab) of a humanized anti-TNF antibody attached to polyethylene glycol (pegylated). As a result of pegylation, the construct has a longer half-life and possibly increased specificity for TNF-α.

Certolizumab, infliximab, etanercept, and adalimumab were compared with respect to their inhibiting cytokine production in vitro. Each of the anti-TNF agents was incubated with human monocytes. Certolizumab, infliximab, and adalimumab all demonstrated dose-dependent inhibition of both TNF-α and IL-1 beta, whereas etanercept achieved only partial inhibition of the cytokines. As compared with infliximab and adalimumab, certolizumab had approximately 100-fold greater potency for inhibiting monocyte production of cytokines.

The activity of certolizumab in the laboratory has carried over into clinical evaluation. Studies reported at the 2007 ACR meeting included evaluations of certolizumab as monotherapy or in combination with methotrexate in patients with RA. Certolizumab was administered as a 400 mg loading dose every 2 weeks after an initial 3 doses followed by 200 or 400 mg every 2 weeks. The treatment resulted in significant improvement by ACR20, ACR50, and ACR70 criteria, and similar effects with the 200-mg or 400-mg dose were demonstrated. Radiographic data from one study demonstrated significant inhibition of disease progression with certolizumab, similar to data shown with other anti-TNF agents.

Ofatumumab
Ofatumumab is a human monoclonal anti-CD20 immunoglobulin G1 antibody. In a trial involving 225 patients with RA who had incomplete responses to DMARDs, treatment with two different doses of ofatumumab led to ACR50 responses in 20% to 25% of patients.

Ocrelizumab
Another member of the anti-CD20 class of biologics, ocrelizumab demonstrated good tolerability and evidence of clinical activity in a preliminary clinical trial involving patients with RA. ACR50 responses occurred in 20% to 30% of patients treated with different doses of the fully humanized monoclonal antibody.

TRU-015
TRU-015 is a small modular immunopharmaceutical (SMIP) directed against CD-20, the same target of rituximab. Data reported at the 2007 ACR meeting showed that a single dose of 800 or 1600 mg of the agent led to significant improvement in the DAS28 at 16 and 24 weeks of follow-up. The drug also was well tolerated.

Tocilizumab
An antibody directed against the IL-6 receptor, tocilizumab led to improvement in health-associated quality of life in a study reported at the ACR meeting. A second ACR presenta-

Table 2. Medications for Rheumatoid Arthritis

<table>
<thead>
<tr>
<th>Anti-Inflammatories</th>
<th>DMARDs</th>
<th>Biologics</th>
<th>Glucocorticoids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>Methotrexate</td>
<td>Etanercept</td>
<td>Cortisone</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>Hydroxychloroquine</td>
<td>Infliximab</td>
<td>Dexamethasone</td>
</tr>
<tr>
<td>Indomethacin</td>
<td>Sulfasalazine</td>
<td>Adalimumab</td>
<td>Prednisone</td>
</tr>
<tr>
<td>Naproxen</td>
<td>Leflunamide</td>
<td>Abatacept</td>
<td>Prednisolone</td>
</tr>
<tr>
<td>Celecoxib</td>
<td>Azathioprine</td>
<td>Rituximab</td>
<td></td>
</tr>
<tr>
<td>Valdecoxib</td>
<td>Cyclosporine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Not exhaustive

Table 3. Assessment of Disease Activity in Rheumatoid Arthritis

At each visit, evaluate for subjective and objective evidence of active disease

- Degree of joint pain (by visual analog scale)
- Duration of morning stiffness
- Duration of fatigue
- Presence of actively inflamed joints on examination (tender and swollen joint counts)
- Limitation of function

Periodically evaluate for disease activity or disease progression

- Evidence of disease progression on physical examination (loss of motion, instability, malalignment, and/or deformity)
- Erythrocyte sedimentation rate or C-reactive protein elevation
- Progression of radiographic damage of involved joints

Other parameters for assessing response to treatment (outcomes)

- Physician’s global assessment of disease activity
- Patient’s global assessment of disease activity
- Functional status or quality of life assessment using standardized questionnaires

Source: ACR Subcommittee on Rheumatoid Arthritis Guidelines

continued on page 11
Patients with rheumatoid arthritis (RA) face a lifelong struggle with a potentially progressive, debilitating disease. Although no cure exists, a comprehensive, multidisciplinary approach to clinical management offers patients with RA the best opportunity to avoid joint destruction and disability. Successful implementation of a comprehensive clinical management strategy requires ongoing treatment, assessment, and monitoring of care. A sound clinical strategy has little chance of success without each patient’s active participation in the management of the disease. Nurse practitioners are uniquely trained and positioned to affect a partnership with patients. Emerging trends in health care delivery, particularly in the management of chronic conditions, give nurse practitioners the opportunity to expand their role and influence in clinical decision making and management of RA.

**Patient Care**

**Acute Care** The predominant factor that brings patients with RA to nurse practitioner’s office is pain. As such, pain relief is a principal objective in the acute care of patients with RA (Table on page 7). Paradoxically, joint and muscle pain tends to be more severe in early RA than in more long-standing or burnt out disease in which joints appear more mechanically challenged. Early RA pain reflects active inflammation. In longer duration RA, the inflammation may have largely run its course, often leaving patients with damaged and deformed joints that are minimally painful, if at all, but that can cause substantial functional limitations.

Because pain is such a prominent feature of the disease, pain management is a major component of clinical management. Numerous pain scales have been developed to assist clinicians in assessing pain severity. The National Institutes of Health Pain Consortium provides six examples on its Web site: http://painconsortium.nih.gov/pain_scales/index.html. Some of the scales were developed for the nursing profession. Additionally, the American Pain Society has published guidelines specific to management of pain in patients with RA or osteoarthritis.1 The American Geriatrics Society has developed guidelines for management of pain in older individuals.2

A therapeutic exercise plan should be developed to assist pain relief efforts, as well as to maintain range of motion, muscle strength, and musculoskeletal integrity. Consultation and input from a physical therapist or other allied health professional can result in an individualized activity regimen that takes into account any physical limitations the patient has. Complementary and alternative therapies are useful as an adjunct to pharmacotherapy or as initial therapy for RA-associated pain. Examples of complementary and alternative therapies commonly used in pain management are massage therapy, biofeedback, relaxation training, yoga, cognitive-behavioral psychotherapy, music therapy, and visual imagery.

**Long-Term Care** Because RA usually is a progressive disease that currently has no cure, most relationships formed between clinicians and patients are long term. The transition from acute to long-term care often occurs quickly. For example, the ACR guidelines recommend initiation of DMARD therapy at 3 months after disease onset in patients who do not respond to initial treatment.3

At each follow-up visit with a patient, the clinician assesses the patient’s physical status, therapy (including physical activity and nutrition, if indicated), and medication issues. Additionally, the clinician repeats the nonmedical assessments performed during the initial evaluation, although not in as great detail. If the disease progresses, new issues may arise, such as the mental or physical health of the patient’s primary caregiver, who is usually a family member, spouse, or partner. Through this process, the clinician may make adjustments to the patient’s treatment plan or make a referral to an appropriate resource.

The emergence of biologic therapy for RA has added another facet to the responsibilities of nurse practitioners who care for patients with RA. Initially, nurse practitioners have to educate patients about the drugs, how they work, and their potential adverse effects. Nurse practitioners monitor the administration of intravenous and intramuscular (IM) therapy or may administer the drugs themselves. Patients receiving agents administered by subcutaneous or IM injection may require education and instruction in self-injection.

The Interaction Model of Client Health Behavior offers excellent guidance in long-term care and is especially applicable to chronic conditions such as RA. In the words of Dr. Cheryl Cox, the nurse researcher who developed the model, “The IMCHB identifies background, cognitive, affective, motivational, and contextual variables that help explain health-related behaviors.”5 The model emphasizes patient responsibility for decisions and follow-through regarding care, with the clinician serving as advisor and facilitator. The model has been applied successfully to the management of several types of chronic diseases.

Over the course of a relationship that may span 20 years or more, the clinician becomes more than just a health care provider. Not uncommonly, the nurse practitioner serves as therapist, counselor, and confidante to patients. Nurse practitioners involved in chronic care often come to know patients as well as or better than family or friends do. In my own practice, I have come to feel like “family” to some patients, and in my own clinical experience, I know that some patients feel more comfortable sharing private information with a nurse practitioner than with a physician.

**The initial evaluation should include an assessment of other life domains often affected by RA.**

Table 1. Pain Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical</td>
<td>Pain experienced as a physical or physical sensation</td>
<td>Includes intensity, duration, location, radiation, and modifying factors</td>
</tr>
<tr>
<td>Activity</td>
<td>Pain experienced while performing daily activities</td>
<td>Includes intensity, duration, location, radiation, and modifying factors</td>
</tr>
<tr>
<td>Psychological</td>
<td>Pain experienced as a subjective sensation</td>
<td>Includes intensity, duration, location, radiation, and modifying factors</td>
</tr>
<tr>
<td>Social</td>
<td>Pain experienced as an social or environmental sensation</td>
<td>Includes intensity, duration, location, radiation, and modifying factors</td>
</tr>
<tr>
<td>Emotional</td>
<td>Pain experienced as an emotional or psychological sensation</td>
<td>Includes intensity, duration, location, radiation, and modifying factors</td>
</tr>
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The initial evaluation should include an assessment of other life domains often affected by RA. The Interaction Model of Client Health Behavior offers excellent guidance in long-term care and is especially applicable to chronic conditions such as RA. In the words of Dr. Cheryl Cox, the nurse researcher who developed the model, “The IMCHB identifies background, cognitive, affective, motivational, and contextual variables that help explain health-related behaviors.” The model emphasizes patient responsibility for decisions and follow-through regarding care, with the clinician serving as advisor and facilitator. The model has been applied successfully to the management of several types of chronic diseases.

Over the course of a relationship that may span 20 years or more, the clinician becomes more than just a health care provider. Not uncommonly, the nurse practitioner serves as therapist, counselor, and confidante to patients. Nurse practitioners involved in chronic care often come to know patients as well as or better than family or friends do. In my own practice, I have come to feel like “family” to some patients, and in my own clinical experience, I know that some patients feel more comfortable sharing private information with a nurse practitioner than with a physician.

**Evoking Role of the Nurse Practitioner**

Several trends in health care will likely have a major impact on the nurse practitioner’s role in the care of patients with RA. One trend relates to the proliferation of “centers of excellence” following “disease management models.” Driven largely by insurers, this trend involves referral arrangements whereby payers contract with selected institutions for the
The Role of the Nurse Practitioner

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Summary

Rheumatoid arthritis is a chronic disease that will affect a growing proportion of the aging US population. Nurse practitioners have a central role in patient management of RA by performing regular clinical assessments of patients, educating patients and caregivers, referring patients and caregivers to other health care providers as needed, directing patients to resources that address non-medical needs, and monitoring or administering therapy. Nurse practitioners have the training and clinical expertise to assume an ever-expanding role in the care of patients with RA. Current economic and practice trends are likely to increase the demand for nurse practitioners skilled in the management of RA.

References

The impact of nursing care on patient outcomes was examined more directly in a study that compared three treatment models: a clinical nurse specialist working in consultation with a physician in an outpatient clinic; a multidisciplinary inpatient care team; and a multidisciplinary outpatient care team. After 2 years of follow-up, investigators could find no differences among the three groups on any outcomes of interest. Functional status, quality of life, and disease activity all improved significantly and to a similar degree with the three approaches to care.

Self-efficacy and effective coping are invaluable to the patient with RA. Investigators in the United Kingdom compared outcomes with patient management by a clinical nurse specialist, who saw patients with RA weekly for a month after diagnosis and then monthly, versus outcomes with outpatient nursing staff care. At one year, patients who met regularly with a clinical nurse specialist had significantly better perceived ability to cope with their disease and to control symptoms compared with routine outpatient nursing care.

Whether managing a clinic, working in collaboration with a physician in primary care, or contributing as a member of a multidisciplinary team, nurse practitioners can profoundly influence the quality of care patients receive and the quality of outcomes resulting from their care.

Identifying Unmet Needs
A comprehensive assessment of a patient with RA encompasses a number of issue-specific assessments (Table on page 9). Collectively, these “assessments within an assessment” provide important insights into the current state of the patient: physical, emotional, social, and even financial. With this information, nurse practitioners and other health care professionals can begin the process of treating the whole person. In the discussion that follows, some of the common assessments are described. In most cases, validated questionnaires or instruments are available and can aid the various components of the assessment process.

Psychological Distress About 20% of patients with RA have comorbid psychiatric conditions, and a similar proportion have subsyndromal psychiatric symptoms. Despite the strong comorbid association between RA and psychological distress, psychiatric disorders frequently are overlooked because of the focus on RA symptoms and the potential for disability.

Psychological distress exacerbates RA, reduces the likelihood of an adequate response to therapy, diminishes a patient’s coping skills and sense of self-efficacy, and leads to increased health-seeking behavior and utilization of health care resources. Incorporation of a psychological assessment into the overall evaluation of a patient with RA can help identify issues that might adversely affect treatment. A strategy to address those issues can be planned and implemented.

The presence of social support can offset RA-associated stress. Patients with a strong social support network exhibit better coping and increased self-efficacy.

Fatigue Fatigue can lead to inactivity, loss of muscle strength, and loss in range of motion. Therapeutic exercise, particularly low-impact aerobics, can reduce fatigue and help patients maintain energy levels and functional ability. Daily walking, yoga, or Tai Chi also may help limit loss of flexibility. Strengthening exercises can prevent muscle atrophy and help maintain the structural integrity of the musculoskeletal system.

Sleep Disturbances Many patients with RA have disturbed sleep, including difficulty falling asleep, frequent awakening, excessive daytime sleepiness, and restless legs syndrome. Sleep disturbance adversely affects daily functioning and undermines a patient’s sense of self-efficacy, leading to depression in some instances. Complementary therapies have demonstrated value in the treatment of sleep disturbances. Relaxation training, progressive muscle relaxation, guided imagery, biofeedback, and reframing or management of negative thinking are some of the complementary interventions employed by nurse practitioners to help patients with sleep disturbances.

Burden of Caregiving Family members, partners, or other regular caregivers spend almost 6 days a week for an average of 11.4 years providing care to...
patients with RA. Statistically, the caregiving burden associated with RA approaches that of caring for a person with dementia. The magnitude of the caregiver burden is related to schedule disruption, lack of family support, financial problems, and loss of physical strength. Caregivers often have moderate to extreme episodes of pain and varying degrees of clinical depression. Assessment of RA’s impact on caregivers guides nurse practitioners’ efforts to identify social and material support to help relieve the burden of caregiving.

**Monitoring and Supporting Adherence**

The functional status of a patient with RA is predicted by the extent and severity of RA-specific symptoms (joint pain, swelling, muscle weakness, and pain) rather than general symptoms (depression, bruising, and insomnia). Careful assessment and appropriate treatment of RA symptoms are central to effective patient management.

Recognition of specific patterns of behavior or attitude plays a major role in the assessment and interpretation of symptoms. Examples of underlying patterns include energy – giving of self to others; fatigue – teaching patients to receive help from others; giving – work, care of others; receiving – act of allowing others to help; family patterns – silence versus speaking out, being in control versus letting go, vulnerability versus resilience. Nurse practitioners can help patients with RA to integrate new and positive patterns, such as finding simple pleasures, having a positive attitude, and gaining self-control.

Self-esteem and adjustment to the disease are crucial to patients’ participation in disease management. Self-esteem is a mediator of pain perception and thus psychological well-being and quality of life. Patients may have difficulty maintaining self-esteem because of their “non-compliant” bodies that have been made “public” by the need for frequent examinations and assessments.

As patients with RA become more accepting of their disease and feel more in control of it, they may become stoic or more tolerant of pain. This can affect adherence. Moreover, self-reported pain may be incongruent with radiologic evidence of disease progression. Careful assessment is required to recognize stoicism or increased pain tolerance.

Ongoing patient education is essential to the RA management plan. Nurse practitioners often are patients’ primary or only source of information about the disease and its management. Nurse practitioners’ input can aid patients in virtually every aspect of their lives: energy conservation techniques, learning to prioritize activities and tasks, and setting reasonable and attainable goals. In the capacity of educators, nurse practitioners identify problems and then work with patients to help resolve the problems. Approaching the patient as an equal partner in disease management can have an empowering effect that increases the patient’s sense of control and independence as well as their ability to cope with the disease.

**References**

The principal goal for rehabilitation is to prevent disability rather than to serve as a response to problems that arise as a consequence of the disease process and resulting disability. Because nurse practitioners have much of the responsibility for the care of patients with rheumatoid arthritis (RA), physical therapy and nursing staffs should interact regularly to assess a patient’s status and to identify potential issues that can be addressed before they become problems. Collegial interaction between the disciplines helps ensure that each patient receives the most appropriate care and has every opportunity to avoid disability and maintain an active and productive lifestyle.

Goals of Physical Therapy and Rehabilitation

Physical therapy contributes in a variety of ways to the health and well-being of patients with RA. Key goals include:

- Prevent disability
- Maintain functional ability
- Relieve pain, and
- Protect the integrity of tissues affected by RA.

Those goals are addressed from the very beginning by means of a comprehensive assessment of physical status and functional ability. Components of the assessment include:

- Range of joint motion
- Muscle strength
- Posture, and
- Functional evaluation, including issues such as gait and activities of daily living.

The assessment focuses on efficiency and safety, whether patients move or perform activities with the least expenditure of energy possible and with the least risk of injury or joint damage.

The assessment should focus on ascertaining how an individual patient spends the day, what are the patient’s routine or common activities, and what difficulties does the patient encounter in performing the activities. A validated functional assessment tool can help with the process. Scales commonly used to evaluate patients with rheumatic diseases include the Arthritis Impact Measurement Scale, the Health Assessment Questionnaire, and the McMaster Toronto Arthritis Patient Preference Disability Questionnaire.

Components of Physical Therapy

To achieve the goals of physical therapy, the practitioner has an array of skills and tools. The patient assessment will guide the selection and use of these interventions to optimize an individual plan of care and maximize the patient’s opportunity to prevent disability and maintain function.

Therapeutic Exercise

The benefits of therapeutic exercise often go underappreciated. With proper instruction and guidance, patients with RA can exercise safely and in a manner that contributes to the treatment of the disease. Inflammation causes pain and can reduce range of motion, muscle strength, coordination, and physical function. Inflammation also can infiltrate joints, muscles, and connective tissues.

Exercise therapy can prevent or minimize RA’s adverse effects on the musculoskeletal system. Benefits of therapeutic exercise include increased aerobic capacity, joint range of motion, endurance, muscle strength, coordination, joint stability, and physical function.

Cold/Hot Modalities

Among the most widely used physical therapies, cold and hot applications aid in the treatment of both acute and chronic disease. Cold applications are used in acute stages of disease involving active joints. Use of cold packs, ice, nitrogen spray, or cryotherapy can help reduce inflammation and pain. Heat facilitates analgesia, relieves muscle spasm, and improves elasticity in periarticular structures.

Massage Therapy

Massage confers multiple benefits to patients with RA, such as improved flexibility; reduction in joint swelling, pain, and inflammation; and enhanced sense of well-being. Massage therapy has been reported to improve pain threshold; reduce depression, anxiety, mood disturbance, and pain; and decrease levels of stress hormones.

Joint Protection

Examples of joint protective therapy include rest and splinting, compression gloves, and use of assistive devices and adaptive equipment. Rest does not mean prolonged bed rest, which can contribute to reduced range of motion and mobility. Brief periods of bed rest during acute stages of RA can be helpful, but patients should be encouraged to continue exercising to the extent possible to prevent loss of muscle strength and joint range of motion. Splints allow patients to assume a functional position during rest and minimize any adverse effects of immobilization.

Compression gloves have been reported to reduce joint swelling and enhance well-being. However, no evidence exists to show that compression gloves improve grip strength or hand function.

Assistive devices and adaptive equipment help patients conserve energy, reduce pain, and maintain functional independence. Examples include walking canes, elevated or otherwise modified toilet seats, and widened grip handles.

Hydrotherapy

A wide range of benefits has been attributed to hydrotherapy, most of which have not been demonstrated conclusively. Principal objectives are to increase range of motion, strengthen muscles, relieve muscle spasms, and help improve a patient’s sense of well-being. Beneficial effects attributed to hydrotherapy include promotion of hemodilution and a reduction in levels of rheumatoid factor; decreased joint loading, enhanced relaxation, and increased physical conditioning; increased grip strength and reduced pain; and release of endorphins, the body’s endogenous analgesic.

Electrical Stimulation

Transcutaneous electrical nerve stimulation (TENS) and other forms of electrostimulation are used to relieve pain in patients with RA. Reported benefits associated with TENS have included analgesia, improved hand grip strength, pain reduction, and reduced levels of synovial fluid and inflammatory exudate.

Summary

Physical therapy can make a major contribution to multidisciplinary care of patients with RA. To maximize the potential benefits, however, the physical therapist must be involved early on after the diagnosis of RA, participating in the patient assessment and then contributing to the development and implementation of a clinical strategy that addresses the patient’s specific needs.

References
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References


11. A potential adverse effect common to all biologic agents is:
   A. Fever  C. Nausea
   B. Muscle pain  D. Administration-site reaction

12. Which class of biologic agents has an FDA Black Box warning about the potential for reactivation of latent tuberculosis?
   A. Methotrexate  B. Tumor necrosis factor-α inhibitors
   C. Opiate analgesics  D. COX-2 inhibitors

13. The Interaction Model of Client Health Behavior emphasizes:
   A. Patient responsibility for care  B. Prevention of health-seeking behavior
   C. Collegial interaction among health care disciplines  D. Identification and elimination of unnecessary expenditures

14. Incongruity between objective evidence of worsening RA and patient attitudes suggesting otherwise may indicate:
   A. Nerve damage from the disease process  B. Excessive use of analgesics
   C. Stoicism arising from a patient's desire to feel in control of the disease process  D. None of the above

15. Psychological distress, lack of social support, and caregiver issues are examples of:
   A. Problems common to all patients, regardless of illness  B. Issues over which clinicians have no control
   C. Health-seeking behavior by a patient  D. Nonphysical aspects of a patient's life that can be affected by RA

16. How often should a patient with RA have an assessment of unmet needs?
   A. At every clinic visit  B. Once a year
   C. When the patient requests an assessment  D. When time allows during an appointment

17. Because TNF inhibitors affect immune system function, what is a potential risk with all members of the class?
   A. Loss of therapeutic efficacy  B. Infection
   C. Extreme sensitivity to temperature changes  D. Constipation

18. Which of the following is true of biologic therapies?
   A. Loss of therapeutic effect occurs less often compared with DMARDs
   B. They represent the most specific form of therapy yet developed for RA
   C. Loss of therapeutic effect can be restored by switching from one biologic agent to another
   D. All of the above