Implications for Managed Care and Specialty Pharmacy in Rheumatoid Arthritis

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Abstract

Treatment of rheumatoid arthritis (RA) can be very costly. Cost-effectiveness studies provide insight into the value of treatment from a number of perspectives (eg, societal, healthcare). In most cases, the indirect costs of RA can offset the direct costs in 2 ways. Prevention of disease progression can limit future costs, such as those related to surgery and hospitalization. When disease progression is minimized, patients feel better and can have improved work productivity. Disease control of RA has improved over time, and this is attributed primarily to the introduction of more effective therapies. Despite the effectiveness of new therapies, there are a number of barriers to optimal treatment. Barriers include lack of education for patients and practitioners about RA, poor patient-provider communication, uncertainty regarding which treatments to choose, cost, and lack of adherence. Specialty pharmacy and disease therapy management programs can assist patients by providing structure, education, and mechanisms to improve treatment adherence and persistence to optimize therapy.

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For author information and disclosures, see end of text.

The European League Against Rheumatism (EULAR) recently endorsed 3 overarching principles for the treatment of rheumatoid arthritis (RA).[1] The principles state that rheumatologists are the specialists who should primarily care for patients with RA, that the treatment of patients with RA should aim at the best care (based on a shared decision between the patient and the rheumatologist), and that RA is expensive with regard to medical costs and productivity costs, both of which should be considered by the treating rheumatologist.[1] The 2012 update of the 2008 American College of Rheumatology (ACR) recommendations for medication management of RA provides a written framework, based on evidence, for handling the medication management of patients with RA, as outlined in the second article by Gibofsky in this supplement.[2,3] This article will provide an overview of direct and indirect costs associated with RA, with a focus on treatment-related costs, the role of specialty pharmacy and managed care, and mechanisms to provide disease management that optimizes economic outcomes.

Direct and Indirect Costs of RA

Significant patient, healthcare, and societal costs are associated with RA. According to recent estimates, the per patient annual direct medical cost of RA ranges from $2000 to $10,000. Estimates for indirect costs range from $1500 to $22,000.[4,5] These costs depend on the cost estimates of the model, year of the estimate, degree of inflation over time, severity of disease, and treatment approach. To provide a degree of perspective, a study conducted between 1993 and 1994 in a US group-model health maintenance organization (HMO) compared resource utilization and cost of care in 365 patients with RA with 10,101 patients with osteoarthritis (OA).[6] The average individual cost of arthritis care was $2162 for RA and $543 for OA, a nearly 4-fold greater cost for RA. In that study, the respective utilization of various resources was compared, including prescription medication cost (62% vs 32% for RA and OA, respectively), ambulatory care costs (21% vs 22%, respectively) and hospital visits (16% vs 46%, respectively). Despite the higher cost per patient for RA, the total population cost was $703,053 for RA and $4,728,425 for OA, suggesting that the HMO cost for RA was substantially less (approximately 7-fold) than that for OA due to the relative

infrequency of RA.[6] It is important to note that these data are relatively old, and more expensive therapies have been introduced for both diseases; therefore, if inflation were applied, the assumptions should be similar.

As suggested in the HMO study,[6] medications account for a large portion of the direct medical expenses associated with RA. Ambulatory care costs include primary care and specialist visits, urgent ambulatory care visits, joint imaging, laboratory assessment, joint aspiration and injection, and nerve conduction studies. Hospital care involves admission for disease symptoms or adverse effects, admission for joint surgery (including joint replacement), emergency department visits, physical therapy, and radiologic costs.[6] Other medical costs beyond treatment of joint disease in RA are associated with extraarticular RA.[7] Joyce and colleagues sought to determine the attributable annual costs of cardiovascular disease and depression coexistent with RA using a healthcare claims database.[7] Of 10,298 patients identified, 8916 (86.6%) had RA alone, 608 (5.9%) had RA with cardiovascular disease (CVD), 716 (7%) had RA with depression, and 58 (0.5%) had RA with depression and CVD. Adjusted mean total healthcare costs were highest in the RA plus CVD group ($14,145), followed by RA plus depression and CVD ($13,513), RA plus depression only ($12,225), and RA alone ($11,404). The mean RA-related healthcare costs were similar among groups ($6100-$6600), suggesting that the extraarticular manifestations of RA are an important component of the cost of healthcare.[7]

Cardiovascular complications associated with RA are an important contributor to mortality in RA.[8] An ideal therapy would increase life expectancy and quality of life. In a recent analysis of mortality with non-biologic disease-modifying antirheumatic drugs (DMARDs) and tumor necrosis factor (TNF) inhibitors, rituximab, and other biologics, mortality per 1000 patient years adjusted for age, sex, treatment, and comorbid conditions was improved with TNF inhibitors relative to DMARDs (hazard ratio [HR], 0.65; P = .0004). Mortality associated with rituximab (HR, 0.81; P = .34) and other biologics (HR, 0.84; P = .42) was similar to that associated with DMARDs. Across the population, each 1-point increase in the disease activity score in 28 joints (DAS28) was associated with a 15% higher death rate (HR, 1.15; P = .002). Increased prednisone use was also associated with higher mortality (HR per 5 mg/day increment of prednisone dose, 1.2; P = .003).[9] The reduction in cardiovascular events with TNF inhibitors relative to DMARDs was demonstrated in some,[10,11] but not all, recent studies.[12]

Health-related quality of life is measurable through a number of general (Short Form-36) and disease-specific instruments (RA quality of life [QoL]), or combined with mortality into a health utility, like the quality-adjusted life-year (QALY).[5] While mortality or cardiovascular events may not be tangible or measurable for most individual patients, productivity and quality of life are important components of indirect costs. Health benefits of RA treatment are expressed in terms of pain, fatigue, and loss of function.[5] Physical function may be monitored through the disability index of the Health Assessment Questionnaire (HAQ), and fatigue may be measured using indices such as the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F). Fatigue occurs in about 90% of patients with RA. In a phase 3, placebo-controlled trial of golimumab, in patients who were inadequately responsive to methotrexate, HAQ (r = –0.62, P <.01) and DAS28 score (r = –0.42, P <.01) were significantly correlated with FACIT-F score.[13] Fatigue was an independent predictor of physical function and disease activity, and higher baseline FACIT-F scores (less fatigue) were more likely associated with achieved remission at week 24 (P = .024). Golimumab was associated with improved FACIT-F scores relative to placebo at week 12 (57.5% vs 42.8%, P <.001) and at week 24 (65.8% vs 40.3%, P <.001).[13] These findings were confirmed with other TNF inhibitors.[14,15] A recent systematic review and meta-analysis confirmed a small, but significant, effect of any biologic agent in patients with an inadequate response to DMARDs or TNF inhibitors [effect size (ES), 0.45; 95% confidence interval [CI], 0.31-0.58]. An ES of less than 0.5 was considered small, 0.5 to 0.8 was moderate, and greater than 0.8 was considered large. When TNF inhibitors plus DMARDs were compared with placebo plus DMARDs, the ES was smaller (ES, 0.36; 95% CI, 0.21-0.51). When biotherapies (anti-TNF, rituximab, or abatacept) plus DMARDs were compared with DMARDs plus placebo for an inadequate response to DMARDs, the ES was similar (ES, 0.38; 95% CI, 0.3-0.46). When abatacept, golimumab, or rituximab were given with DMARDs and compared with placebo plus DMARDs for an inadequate response to TNF inhibitors, the ES was moderate (ES, 0.57; 95% CI, 0.27-0.86).[15] Thus, fatigue was minimized by improved disease activity attained with aggressive treatment.

Improvement in disease activity and fatigue can lead to functional improvement, which could improve work productivity. Work disability associated with RA has been estimated to be 3 times as expensive as the direct medical costs of managing the disease.[5] Factors associated with work disability include the ability to retain employment, absenteeism, early retirement, and reduced work performance. Significant irreversible work disability usually occurs within 5 years of disease onset; however, by 1 year, about 20% of patients

are no longer engaged in full-time work, and this number increases to about 50% by 15 years. The average disability costs are estimated at $10,000 per year. These estimates are variable and depend on the type of output of the company and the salary of the individual. Step activity is a measure of functional capacity in RA. A recent study of etanercept demonstrated that step activity could be improved along with improvements in HAQ and DAS28 disease activity, but this was only observed early in the disease (<5 years in duration), before irreversible joint damage occurred.[16] A number of studies have demonstrated improvement in work productivity with TNF inhibitor therapy compared with DMARD therapy in early RA.[17-19] In 1 of those studies, etanercept plus methotrexate improved work attendance by an estimated 22 to 37 days per patient, compared with methotrexate alone. The associated cost of productivity gained, converted to US dollars, was approximately $2500 to $4000 per person. When presenteeism (reduced work performance on the job) was included, the estimate increased to $4700.[17] Thus, from a societal perspective, effective treatment of RA could improve work productivity. From an employer perspective, a study evaluated direct and indirect costs of RA in patients compared with matched controls.[20] The estimated annual cost for a disabled patient with RA was $17,822, 3 times that of the average matched disabled control ($6131). Disability was more common among employees with RA (44%) than other matched controls (22%). Work loss costs for patients with RA, including disability and absenteeism, were 1.6 times that of matched controls.[20] Caution should be used when interpreting these data. A limitation of modeling cost-effectiveness in RA is that extrapolation of long-term benefits is often made with little or no long-term data. If there were a way to determine which patients would have severe progressive disease or which medication would yield the best response in an individual patient, then the cost-effectiveness numbers would improve substantially. As research continues, we may find that early biologic intervention may induce durable drug-free remission, which would also improve the cost-effectiveness of these biologics.

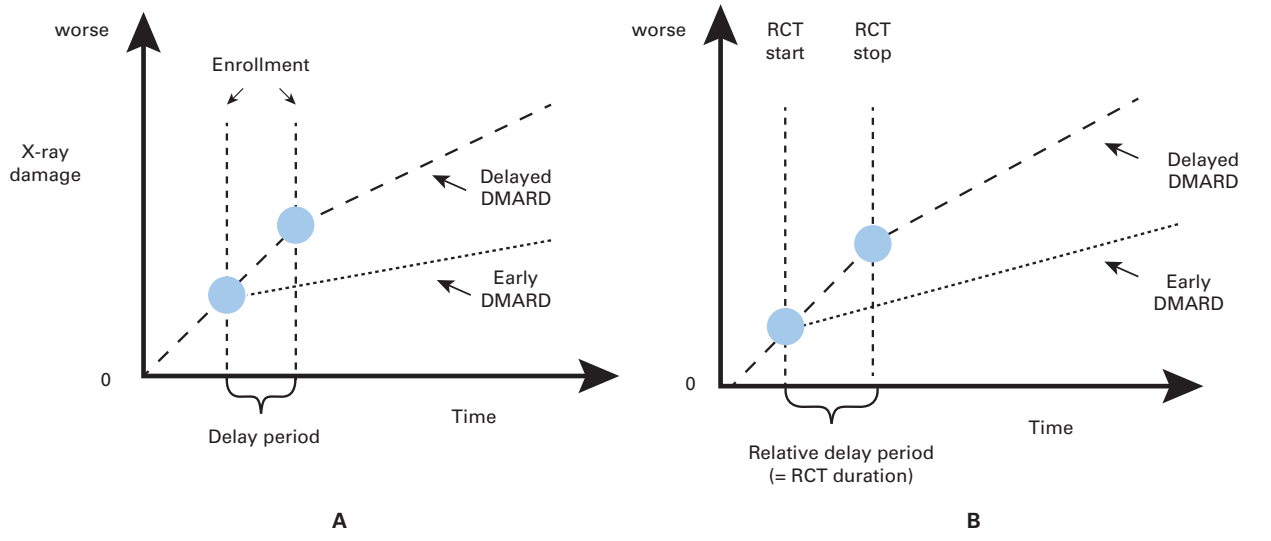
Treatment-Related Costs

Costs of treatment include the cost of medication, tests for monitoring the effects (disease response) or adverse effects of the drug, and administration costs (if applicable).[5] A number of studies have demonstrated that, over time, disease activity has improved in populations with RA. The improvement in disease activity and increased attainment of remission has been attributed to the introduction of newer therapies, an improved approach to treatment, and earlier initiation of treatment.[21-23] Rather than provide an exhaustive review of all pharmacoeconomic studies for every available agent, this section will present select studies that focus on representative approaches to treatment, as suggested in the 2012 ACR treatment recommendations.[2] The second article by Gibofsky in this supplement can be used to assess differences among available treatments.[3]

A recent meta-analysis examined the impact of early treatment on radiographic progression in RA.[24] Compared with early treatment initiation, delayed treatment initiation was associated with a –0.19 standardized mean difference (95% CI, –0.34 to –0.04), which corresponded to a 33% reduction (95% CI, –50% to –16%) in long-term progression (**Figure 1**). Patients with more aggressive disease demonstrated a greater benefit from DMARD initiation (P = .04).[24] A recent analysis compared the cost-effectiveness of 6 DMARD-based approaches to early treatment, including monotherapy, step-up combination, parallel combination, intensive step-up combination, step-down combination, and a steroid plus monotherapy (**Table**).[25] Step-down combination therapy exceeded monotherapy, step-up, parallel, and steroid combinations, because it was less costly and more effective, and thus dominated the other strategies with the exception of the intensive strategy. Comparing the remaining strategy (intensive DMARD combination) to step-down treatment, the estimated incremental cost-effectiveness ratio (ICER) was £27,392. The authors assumed that decision makers adopt a threshold of £20,000 (approximately US$29,000) per QALY, thus the value of each strategy can be expressed in monetary terms; using QALY to determine a net benefit, the best strategy would be that with the greatest net benefit. In this case, step-down combination therapy (£258k) had the greatest net benefit and could be considered the most cost-effective.[25]

Another study compared sequential monotherapy, step-up combination, monotherapy with prednisone, and combination therapy with infliximab.[26] **Figure 2** demonstrates the 2-year costs in 2008 euros (1 euro equals approximately US$1.25) of these regimens using 3 different pharmacoeconomic models. The models show that infliximab had a larger increase in QALYs, but that cost-effectiveness was only improved with work productivity in the human capital method. The friction method only accounts for productivity losses up to 6 months, and assumes an employee is replaced or back to work at that point. The human capital method accounts for sustained productivity. Thus, depending on the model, high-cost items could be cost-effective as long as cost utility is improved and work productivity is associated with an improvement in QALYs.[26] Thus, it appears that

■ **Figure 1.** Representation of DMARD Initiation by Study Type[24]



Representation of delayed disease-modifying antirheumatic drug (DMARD) initiation by study type. **A**, In cohort studies of patients with early rheumatoid arthritis, long-term radiographic progression is contrasted between subsets with early versus delayed initiation of DMARD therapy. **B**, In a randomized controlled trial (RCT), effective DMARD regimens are compared with placebo or a less-effective DMARD regimen. At the end of the RCT period, blinding is removed and patients are free to receive any DMARD. In follow-up studies of these RCTs, delayed DMARD initiation is conceptualized as a relative delay to effective DMARD therapy in the comparator arm compared with the active treatment arm. Studies that did not receive comparable DMARDs during the follow-up period were excluded so that long-term radiographic progression could be compared with respect to the initial therapeutic strategy. Shaded circles indicate DMARD initiation.
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aggressive treatment of early RA, compared with monotherapy regimens, is cost-effective using step-down combination therapy or combination with a TNF inhibitor due to enhanced efficacy, improvements in QALY, and improved productivity. These results confirm other published findings.[27-29] The lowest direct cost would be from DMARD optimization,[27-29] but biologics as monotherapy are also considered cost-effective, with ICERs ranging from $50,000 to $100,000 (**Figure 3**).[28] Consequently, biologics in combination with DMARDs for early RA have mostly proved not to be-cost-effective, due to ICERs greater than $100,000 in 6 of 7 (85.7%) studies.[28] Figure 3 also demonstrates that when initial therapy fails, biologics after DMARD failure had ICERs less than $100,000 in 14 of 18 studies (77.8%), and biologics after TNF inhibitor failure had ICERs less than $100,000 in 4 out of 4 studies (100%).[28] A separate systematic review of biologics for DMARD failure evaluated several scenarios using 2009 Canadian dollars ($1 Canadian equals approximately US$1.01).[30] When methotrexate monotherapy failed, methotrexate monotherapy was compared with biologic combination with methotrexate, and all 20 comparisons found ICER values ranging from $6000 to $92,000, suggesting cost-effectiveness at a willingness to pay threshold of $100,000 per QALY. Seven of 12 (58.3%) of these comparisons conducted from a societal perspective and 2 of 8 (25%) from a payer perspective found the therapy cost-effective at a willingness to pay threshold of $50,000 per QALY. When patients who failed to respond to methotrexate combination therapy or sequential DMARD administration were compared with those who received additional DMARD sequencing or a biologic alone or in combination with a DMARD, 14 of 35 (40%) comparisons had ICERs below the $100,000 threshold. Median ICERs per QALY were $81,000 (range, $63,000-$383,000) for adalimumab, $79,000 (range, $60,000-$175,000) for adalimumab plus methotrexate, $127,000 (range, $45,000-$612,000) for etanercept, $75,000 (range, $72,000-$134,000) for etanercept plus methotrexate, and $133,000 (range, $80,000-$378,000) for infliximab plus methotrexate.[30] When biologics were evaluated after TNF inhibitor failure in 4 studies, rituximab and abatacept had ICER values less than $50,000 per QALY, and abatacept and etanercept had ICER values less than $100,000 in 2 of the studies (Figure 3). Thus, biologic agents have the potential to be cost-effective, especially when used in combination with DMARDs for DMARD failure, and are cost-effective for TNF inhibitor failure, particularly when rituximab or abatacept are used.[28]

Role of Managed Care and Specialty Pharmacy

Given the data on efficacy of pharmaceuticals in RA, managed care organizations have been left with a difficult decision regarding the most effective allocation of agents for

Table. Cost-Effectiveness Results of Initial Non-Biologic Therapy for Early RA[25]

Strategy[a]	Cost	QALY	ICER (compared with monotherapy)	Incremental Analysis[b]	Net Benefit (£20,000)	Net Benefit Rank
Monotherapy	£55,996	13.73	—	Dominated	£218,604	3
Step-up combination	£50,791	11.91	£2852	Dominated	£187,409	5
Parallel combination	£55,573	13.42	£1356	Dominated	£212,827	4
Intensive step-up combination	£61,046	15.77	£2482	£27,392	£254,354	2
Step-down combination	£48,849	15.32	Cost saving	Reference strategy	£257,551	1
Steroid plus monotherapy	£57,468	11.79	Dominated	Dominated	£178,332	6

DMARD indicates disease-modifying antirheumatic drug; ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life-year; RA, rheumatoid arthritis.
[a]Monotherapy = DMARD monotherapy; step-up combination = patients begin with DMARD monotherapy, and a second DMARD is added if an inadequate response is observed (within first 6 months); parallel combination = 2 or more DMARDs given in combination at the same time; intensive step-up combination = patients begin with a DMARD parallel combination strategy, and rapid dose increases are made when an inadequate response is observed (within first 6 months); step-down combination = initial parallel combination followed by downward dose titration and withdrawal; steroid plus monotherapy = glucocorticoids routinely used alongside a DMARD monotherapy regimen. The other combination strategies use steroids on an "as needed" basis.
[b]Incremental comparisons are against the next-best, nondominated treatment strategy.
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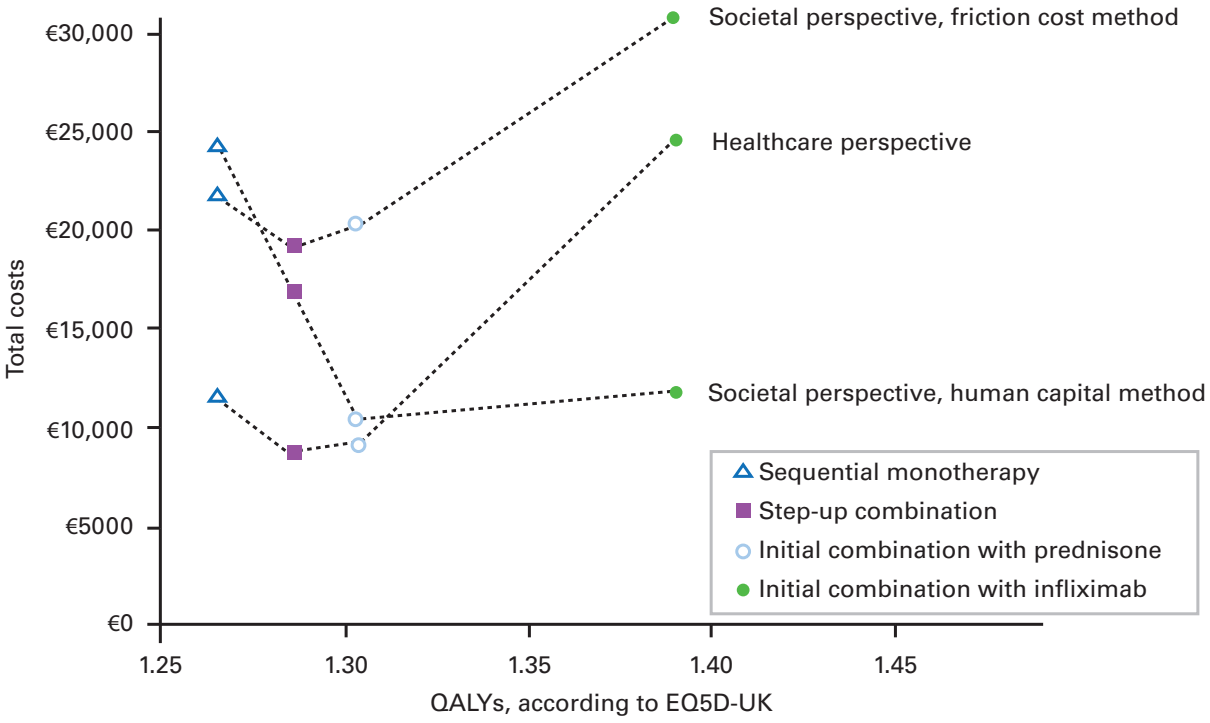
optimal disease management. Historically, specialty items like the biologics were covered under the medical benefit. Under the medical benefit, where agents were primarily given in the physician's office, it was difficult to track agent selection and sequence, as it was done for adjudicated claims through a pharmacy benefit management (PBM) company.[31] However, costs for specialty drugs have been increasing while those for traditional medications remain static, and the market for RA medications is expected to increase.[32,33] In an effort to control selection and sequence of agents, PBM companies acquired or contracted with specialty pharmacies to manage administration of high-cost medications. By managing these medications as part of the pharmacy benefit, specialty pharmacies ensure safe handling, restrict drug distribution, and can contract with pharmaceutical companies to get better acquisition rates and pass the savings along to the payers and patients compared with physician offices and clinics.[31] An important factor in treatment adherence, and hence efficacy of an agent, is the amount of cost-sharing a patient has to bear. A recent study indicated that for patients with RA or multiple sclerosis (MS), out-of-pocket (OOP) expenses of more than $100 for TNF inhibitors (RA OOP $0-$100, 4.7% abandonment; RA OOP >$100, 10.5%-26.4% abandonment; P <.001), or $200 for MS medications (MS OOP $0-$200, 5.3%-10.6% abandonment; RA OOP >$200, 25.8%-28.5%; P <.001 compared with $0-$100) were associated with increased risk of prescription abandonment.[34] A systematic review identified that the 2 most important factors in adherence to RA treatment were the relationship between the patient and the provider, and the belief that the medication was necessary.[35] In another study, factors important in filling the initial DMARD prescription included communication with, and trust in, the rheumatologist, and perceptions about the medication, such as perceived adverse effects. Factors associated with subsequent adherence included experience with the medication (eg, development of adverse effects), ability to fit the medication schedule into daily life, and level of engagement in decision making.[36] The final factor determining adherence appears to be the medication itself. One recent study identified differences in adherence and discontinuation between anakinra, infliximab, and etanercept.[37] The proportion of days covered (goal ≥0.8) was 0.36 for anakinra, 0.57 for etanercept, and 0.64 for infliximab, with respective adherence rates of 11%, 32%, and 43%, and discontinuation rates of 76%, 41%, and 41%.[37] These data highlight the importance of the relationship between a patient and their provider, the need for education, and the importance of agent selection in ensuring that the benefit of RA therapy is optimized.

Specialty pharmacies manage utilization, monitor patients, and ensure adherence to reduce the potential for adverse effects or suboptimal treatment. Specialty pharmacies are able to provide these services by obtaining prior authorization for patients, ensuring step-up therapy by documenting patients who have not responded to prior therapy before receiving approval for more expensive agents, provid-

■ **Figure 2.** Two-Year Costs and QALYs Depending on Type of Analysis[26]



EQ5D-UK indicates British EuroQol; QALY, quality-adjusted life-year.
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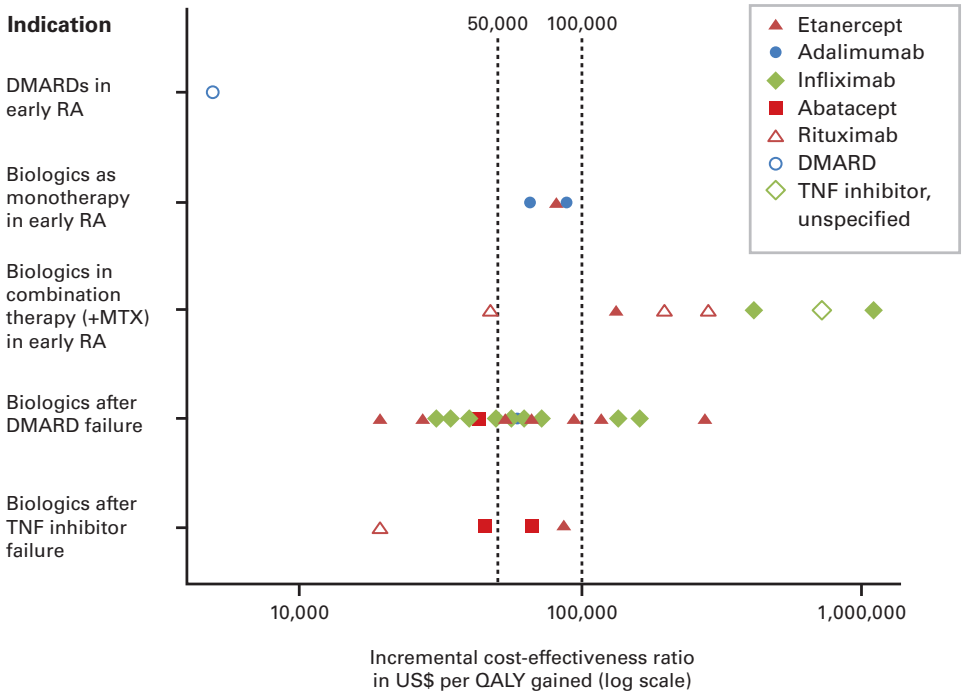
ing patient and provider training, determining quantity limits so that reauthorization is needed, determining dosing limits, establishing length of therapy limits, selecting alternative agents, and providing case management services.[31] The next section highlights some disease management programs in RA that have successfully improved patient outcomes.

Optimizing Clinical and Economic Outcomes With Disease Therapy Management

A focus group study completed recently in Quebec, Canada, sought to evaluate barriers to optimal care of patients with RA.[38] Barriers were divided into 4 categories: prior to primary care contact, speed of referral to a specialist, barriers to treatment, and inadequate resources. In the initial stage, there was a lack of awareness in the general population about RA, and patient demographics (eg, sex, age, socioeconomic status) can affect access to care. Once a patient is seen, primary care physicians may not differentiate the symptoms of RA from other inflammatory processes, and delay referral to a specialist. Patient demographic factors may also affect referral to a specialist. There are also access issues, which are barriers to being seen by rheumatologists. Results demonstrated that during treatment, primary care physicians are not comfortable initiating definitive therapy, communication between physicians and patients is lacking, and the role of the primary care physician in optimizing care is uncertain. The focus group also identified that interdisciplinary care could improve outcomes, but is often lacking, and that patient education is inadequate. In regard to the need for adequate resources, the main need was for a team approach across multiple disciplines.[38] Thus, special attention to patients with RA and a multidisciplinary approach may be useful in improving outcomes.

A randomized trial evaluated an intensive treat-to-target outpatient approach for RA versus routine care. This trial was called the TICORA (TIght COntrol for Rheumatoid Arthritis) study.[39] The intensive therapy group met with a rheumatologist monthly and had their disease activity calculated at each visit. Disease activity was determined to be high, moderate, or low. At each visit, swollen joints were injected with triamcinolone, unless previously injected in the last 3 months, and DMARD therapy was escalated as needed according to an established protocol. In the routine care group, patients were seen every 3 months by their rheumatologist with no formal composite measure of disease activity or plan of care. The improvement in disease activity was evident within 3 months in the intensive therapy group (P <.0001). At the 18-month follow-up, EULAR remission

■ **Figure 3.** Published Incremental Cost-Effectiveness Ratios[28,29]



DMARD indicates disease-modifying antirheumatic drug; ICER, incremental cost-effectiveness ratio; MTX, methotrexate; QALY, quality-adjusted life-year; RA, rheumatoid arthritis; TNF, tumor necrosis factor.
Data points represent reported ICERs of the drugs investigated. Values to the left of the vertical lines at $50,000 and $100,000 are commonly considered to be cost-effective. Comparing ICERs between trials is inappropriate.
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was achieved in 65% of patients in the intensive therapy group and 16% of those in the routine care group (OR, 9.7; 95% CI, 3.9-23.9; P <.0001), and ACR 20% improvement (91% vs 64%; OR, 5.7; 95% CI, 1.9-16.7; P <.0001), ACR 50% improvement (84% vs 40%; OR, 6.1; 95% CI, 2.5-14.9; P <.0001) and ACR 70% improvement (71% vs 18%; OR, 11; 95% CI, 4.5-27; P <.0001) were similarly improved, respectively. The intensive therapy group also benefited from less erosion score progression (median, 0.5; interquartile range [IQR], 0-3.375 vs median 3; IQR, 0.5-8.5; P = .002), but no difference in joint space narrowing (median 3.25; IQR, 1.125-7.5 vs median 4.5; IQR, 1.5-9; P = .331) was noted in comparison with the rountine care group. Total direct costs (hospital inpatient and outpatient, medication, travel, healthcare professional visits, and diagnostic test) in 2000-2001 £, were £1427 for intensive care and £1590 for routine care, indicating a cost savings with the intensive therapy regimen.[39]

Studies have also evaluated a team approach to RA.[40-42] One study[40] examined patients randomized to a clinical nurse specialist, inpatient team care, or day patient team care in the Netherlands. The nurse provided information about RA, prescribed medical equipment in consultation with a rheumatologist, and referred patients to other healthcare professionals such as occupational therapists, physical therapists, and social workers when needed for a period of 12 weeks. The inpatient team and the day patient team consisted of nurses, a rheumatologist, an occupational therapist, a physical therapist, and a social worker. The team met weekly to discuss treatment goals and modalities. Patients also received written materials and an hour-long educational session on RA. Inpatients and day patients received 9 treatment days. Inpatients stayed overnight for 12 consecutive days with 3 nontreatment days. Day patients stayed 3 days per week for 6 hours and had 1.5 hours of rest for 3 weeks. After the intervention period, all patients were followed as outpatients. In all 3 groups, functional status, quality of life, health utility, and disease activity improved significantly over time (P <.05). There was no significant difference among the groups over time. Patient satisfaction with the nurse specialist care was significantly lower (P <.001) than the other groups.[40] An economic analysis was presented in

a second publication.[41] Based on similar outcomes in the effectiveness of treatment on quality of life and utility instruments, and that other healthcare and non-healthcare costs were similar over the 2-year follow-up, the only differences observed were with the initial cost of care. The cost of initial treatment was €200 for the nurse, €5000 for the inpatient team care, and €4100 for the day patient care. Thus, the societal costs were significantly lower with the nurse specialist.[41] This is consistent with how most patients are managed today, as outpatients, but also highlights the importance of a team approach to care.

A national pharmacy benefit manager evaluated a disease therapy management (DTM) program for RA as an enhanced offering for patients receiving specialty pharmacy services.[42] Core consultation topics for the DTM program were pathophysiology of RA, laboratory values pertaining to RA and its treatment, optimization of medication therapy, adherence, symptom management, pain management, stress management, importance of a balanced diet, importance of exercise, importance of patient-provider communication, appropriate use of assistive devices, home safety, and additional resources, including financial assistance. Patients with an RA diagnosis and a pharmacy claim for RA who were continuously enrolled in the plan for 4 months before enrollment and 8 months after identification were stratified into 3 groups, DTM program (n = 340), specialty pharmacy (n = 244), and community pharmacy (n = 244), in observational fashion. Patients in the DTM program were further categorized as intent-to-treat (ITT) (all 340 patients in the DTM program) and completers (n = 244). The primary end point was proportion of days covered (PDC), a marker of persistence and adherence to treatment, over the 8-month post-identification period. Patient-reported outcomes (short form [SF]-12, Work Productivity Activity Impairment [WPAI], and Health Assessment Questionnaire-Disability Index [HAQ-DI]) were also collected in 371 patients who completed the 0- and 6-month consultations regardless of enrollment group or requirements. Among specialty pharmacy patients, 14% enrolled in the DTM program. Mean PDC was 0.81 for specialty pharmacy, 0.83 for the DTM program ITT group, 0.89 for the DTM program completers group (P <.001 vs specialty pharmacy), and 0.6 for community pharmacy (P <.001 for both DTM program cohorts). In addition, 10.7% of patients in the DTM program completer group, 20.3% of those in the DTM program ITT group, 22.1% of those in the specialty pharmacy group (P <.001 vs DTM program completers), and 40.6% of those in the community pharmacy group discontinued injectable biologic agents (P <.001 vs DTM program cohorts). In the quality-of-life assessment, the cohort included only 9.4% of patients in the DTM program groups, and the DTM program and non-DTM program groups were not compared. Baseline and 6-month SF-12 scores improved (P = .048), but productivity loss worsened from baseline (12.9% vs 28.3%, P = .045). HAQ-DI scores improved from baseline by 0.08 points (P <.001), including improvements in dressing, grooming, arising, grip, and reach. At month 6, 72.2% rated the program as very helpful in managing their health.

Overall, this study provides promise for improving treatment adherence and, potentially, patient outcomes in RA. It is important to note that this study was observational and that the QOL measures were not specific to the studied groups. In addition, the data were not limited to the first use of injectable medication, and it is uncertain how "late" in the disease patients were at enrollment, and consequently how much benefit they stood to gain, if any. Future studies should evaluate how QOL and productivity are impacted directly by a DTM program when therapies are initiated at the optimal time based on available treatment recommendations, and what effect it has on disease outcome (ie, radiographic progression).[2]

Conclusion

Rheumatoid arthritis is associated with significant treatment costs; however, in most situations, treatment is cost-effective when delivered in a structured and timely manner. Cost-effectiveness primarily stems from prevention of disease progression and improved work productivity associated with disease control. Disease control limits the potential costs associated with surgery and hospitalization, and also has the potential to make patients more productive members of society. Barriers to the success of treatment include lack of education for patients and practitioners about RA, access to specialists, communication, uncertainty regarding which treatments to choose, cost, and lack of treatment adherence. Specialty pharmacy and DTM programs can assist patients by providing structure, education, and mechanisms to improve patient adherence in order to optimize therapy.

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