Factors Associated With the Initiation of Disease-Modifying Antirheumatic Drugs in Newly Diagnosed Rheumatoid Arthritis: A Retrospective Claims Database Study

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ABSTRACT

Objectives: The objectives of this study were to quantify the proportion of US patients with newly diagnosed rheumatoid arthritis (RA) in whom disease-modifying antirheumatic drug (DMARD) therapy was initiated within 12 months following diagnosis, to determine mean time to initiation, to compare the characteristics of initiators versus noninitiators, and to identify factors associated with noninitiation.

Methods: A retrospective study was conducted using claims from the databases of commercial managed care and Medicare supplemental managed care to identify patients with claims containing codes for RA dated January 1, 2004, through September 30, 2008. The percentage of patients with RA and a prescription for a DMARD within 12 months after the index date (*initiators*) was evaluated. The characteristics of DMARD initiators and noninitiators during the preindex period were compared, including demographic and clinical characteristics, health care resource utilization, and cost variables. The probability of DMARD initiation was determined using survival analysis. Multivariate analysis was performed to estimate mean time from diagnosis to DMARD initiation based on demographic and clinical variables.

Results: Of 26,911 patients with newly diagnosed RA identified in the database searches, 63% had been prescribed a DMARD within 12 months after diagnosis. DMARD initiators were significantly more likely to have had a rheumatologist visit and rheumatoid factor testing and were more likely to have received a corticosteroid and/or an NSAID (all, $P < 0.001$). DMARD initiators had significantly lower total costs ($10,534 vs $12,725, respectively) and pharmacy drug costs ($2438 vs $2822) over the preindex period compared with noninitiators (both, $P < 0.001$). Independent factors associated with a greater likelihood of DMARD initiation included a rheumatologist visit, rheumatoid factor testing, NSAID use, and corticosteroid use. Age ≥85 years and the presence of comorbidities were associated with a significantly lower likelihood of DMARD initiation.

Conclusions: Among managed care enrollees in the present analysis, 37% of patients newly diagnosed with RA were not being treated with DMARDs in the first 12 months after diagnosis. Time to DMARD initiation plateaued after 90 days, suggesting that if a patient was not prescribed a DMARD soon after RA diagnosis, he or she was not likely to receive one. (*Clin Ther*. 2012;34:457–467)

Key words: administrative claims research, disease-modifying antirheumatic drug (DMARD) therapy, rheumatoid arthritis, treatment guidelines.

INTRODUCTION

The prevalence of rheumatoid arthritis (RA) in adults worldwide is ~1%,[1,2] with an estimated 1.3 million persons aged ≥18 years affected with the disease in the United States.[3] RA is a chronic and progressive disorder, characterized by debilitating pain and stiffness and resulting in joint destruction and functional impairment.[1,2,4] The economic impact of RA is significant. Estimated excess health care costs of patients with RA compared with those without RA are US $8.4 billion/y (year-2005 dollars). When indirect and intangible

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costs, relating to decreased quality of life and early mortality, were added to direct medical costs, the total disease burden was nearly $40 billion/y.[5]

Early therapy for RA is crucial, because up to 30% of patients with newly diagnosed RA are unable to work within 3 years of diagnosis if not treated.[2] Pharmacologic treatment options for RA include NSAIDs; corticosteroids; and disease-modifying antirheumatic drugs (DMARDs), such as methotrexate and, more recently, biologics, including tumor necrosis factor inhibitors (infliximab, etanercept, adalimumab, certolizumab, and golimumab). Treatment guidelines are consistent in their recommendations to initiate DMARD therapy as soon as possible following diagnosis in an effort to slow disease progression and joint destruction.[1,2,6] The American College of Rheumatology (ACR) 2008 guideline recommends the use of a DMARD regardless of the duration of RA; disease activity level; or presence of poor prognostic factors, such as functional limitation or extraarticular disease.[6] The Healthcare Effectiveness Data and Information Set (HEDIS) indicators were revised in 2005 to include a measure of the proportion of patients with RA and at least 1 ambulatory DMARD prescription during the measurement year.[7,8] Despite this recommendation, some data suggest that patients with RA are not adequately treated with DMARDs.[7,9–11]

The primary objective of this study was to quantify the proportion of patients with newly diagnosed RA who are prescribed a DMARD within 12 months following diagnosis. Secondary objectives included determining the mean time to initiation, characterizing DMARD initiators versus noninitiators, and identifying factors associated with noninitiation.

METHODS

Study Design and Data Collection

This retrospective cohort study was conducted using data from the MarketScan Commercial Claims and Encounters (Commercial) Database and the Medicare Supplemental and Coordination of Benefits (COB) Database for the time period of January 1, 2003, through September 30, 2009. The Commercial Database contains the health care experiences of privately insured individuals covered under a variety of fee-for-service, fully capitated, and partially capitated health plans. It was constructed from claims and enrollment data provided by >130 large employer-sponsored health plans across the United States. Over 35 million individuals were included in the 2008 Commercial Database, encompassing employees, their spouses, and their dependents. The Medicare Database contains the health care experiences of ~2.5 million individuals annually with Medicare Supplemental insurance paid for by employers. Both the Medicare-covered portion of payment (represented as the COB amount) and the employer-paid portion are included, as well as any out-of-pocket expenses to patients. In 2007, 34% of the 40.8 million Medicare beneficiaries received their drug benefits through an employer or union-sponsored health plan.[12]

Detailed cost, use, and outcomes data were available, covering inpatient services, outpatient services, and prescription drug claims. Medical claims were linked to outpatient prescription drug claims and patient-level enrollment data through unique enrollee numbers. Data were fully compliant with the Health Insurance Portability and Accountability Act. Because the study did not involve the collection, use, or transmittal of individually identifiable data, institutional review board approval was not required.

Patient Selection

Patients with an *International Classification of Diseases, 9th Edition, Clinical Modification* (*ICD-9-CM*) diagnostic code of 714.xx (RA or other inflammatory polyarthropathy) on an inpatient or nondiagnostic outpatient claim (index event) from January 1, 2004, through September 30, 2008, were identified. Those with a second claim within 120 days of the index event and with an *ICD-9-CM* diagnostic code of 714.0x (RA) or 714.2x (other RA with visceral or systemic involvement) were included in the analysis. Data were included from patients aged ≥18 years at the index event and having 12 months of continuous enrollment prior to (preindex) and subsequent to (postindex) the index event. Data were excluded from patients who had an RA diagnostic claim or DMARD prescription claim in the preindex period, an HIV diagnostic claim in the pre- or postindex period, and/or evidence of pregnancy in the pre- or postindex period.

End Points

Demographic characteristics, measured as of the index date, included age, sex, insurance plan type, geographic region, and payer type (commercial or Medicare). Age was reported as mean (SD) and by age group (18–<45, 45–<55, 55–<65, 65–<75, 75–<85, or

≥85 years). Insurance plan type was categorized as comprehensive (traditional fee-for-service), health maintenance organization, point of service, preferred provider organization, and other. Geographic region was based on US census groupings, defined as Northeast, North Central, South, and West.

Clinical characteristics were evaluated separately for the preindex period and included mean Deyo Charlson Comorbidity Index (CCI), percentage of patients with a comorbid condition (general conditions of interest, conditions consistent with DMARD indication, and conditions consistent with DMARD contraindication), percentage of patients with a rheumatologist visit, mean number of rheumatologist visits, percentage of patients with a procedure claim indicating rheumatoid factor testing (Current Procedural Terminology code 86430 or 86431), and percentage of patients with a claim for a medication of interest (corticosteroid, NSAID, and/or chemotherapy agent).

All-cause health care resource utilization and costs in the preindex period were evaluated in total and by specific categories of service, including inpatient, emergency department (ED), outpatient medical (office visits and drugs dispensed in the medical setting), and outpatient pharmacy. Copayment burden was evaluated as the total out-of-pocket costs across all claims and separately for all outpatient pharmacy claims.

Outcomes variables included the percentage of patients with newly diagnosed RA and a prescription for any DMARD within 3, 6, and 12 months after diagnosis, with separate counts for conventional DMARDs and biologic DMARDs within 12 months after diagnosis.

Descriptive and Statistical Analyses

Descriptive analysis was performed with counts and percentages reported for categorical variables and means (SD) reported for continuous variables. Findings on demographic, clinical, health care resource utilization, and costs were stratified by DMARD initiation (binomial; yes/no). Statistical tests of significance for differences between DMARD initiators and noninitiators were conducted, with χ^2 tests used for evaluating differences in categorical variables and t tests for differences in continuous variables. The probability of being initiated on DMARD therapy within the year following RA diagnosis was determined using survival analysis to calculate cumulative probability. Kaplan-Meier curves were generated to display findings stratified by specific demographic and clinical characteristics.

Multivariate analysis was performed using a Cox proportional hazards regression model, with time from initial RA diagnosis to DMARD initiation as the dependent variable and demographic and clinical characteristics as the explanatory effects. Explanatory effects with hazard ratios <1.00 and with P values <0.05 were identified as independent factors associated with significantly longer time to initiation of DMARD therapy.

RESULTS

Study Population

A total of 26,911 eligible patients were identified (female, 71.7%; mean age, 59.7 years) (Table I). Of these, 17,014 (63%) had been initiated on DMARD treatment within 12 months of RA diagnosis. DMARD initiators were younger than noninitiators (58.1 vs 62.6 years, respectively; $P < 0.001$); the gender difference was not statistically significant. DMARD initiators were more likely to have been enrolled in a commercial payer plan (71.2% vs 57.4%) and less likely to have been covered under Medicare (28.8% vs 42.6%) compared with noninitiators (both, $P < 0.001$).

In the 12-month preindex period, DMARD initiators had a significantly lower mean CCI relative to noninitiators (0.58 vs 0.76, respectively; $P < 0.001$), reflecting an overall lower level of comorbidity. Significantly greater percentages of noninitiators had diagnoses of cardiovascular conditions, cerebrovascular disease, chronic obstructive pulmonary disease (COPD), diabetes, gastrointestinal disorders, hypertension, osteoarthritis, and osteoporosis. Similarly, significantly greater percentages of noninitiators had potential contraindications to DMARDs, including heart failure, infectious disease, malignancy, multiple sclerosis, and renal insufficiency. Compared with noninitiators, DMARD initiators were more likely to have had a rheumatologist visit (16.7% vs 10.8%), rheumatoid factor testing (44.6% vs 21.0%), and a prescription for a corticosteroid and/or an NSAID (all, $P < 0.001$).

Health Care Resource Utilization and Costs

In the 12-month preindex period, the percentages of patients with an inpatient hospitalization (12.7% vs 18.6%, respectively) and/or an ED visit (27.1% vs 30.2%) were significantly lower among DMARD initiators versus noninitiators (both, $P < 0.001$) (Table II). Although the percentage of DMARD initiators with an outpatient office visit was significantly higher versus noninitiators (96.6% vs 93.9%), the mean number of

Table I. Baseline demographic and clinical characteristics among initiators and non-initiators of treatment with disease-modifying antirheumatic drugs (DMARDs) in newly diagnosed rheumatoid arthritis.

Characteristic	DMARDs (n = 17,014)	No DMARDs (n = 9897)	*P* Vs No DMARDs	All Patients (N = 26,911)
Age, mean (SD), y	58.1 (13.3)	62.6 (14.9)	<0.001	59.7 (14.1)
Age group, %				
18–<45 y	14.6	10.8	<0.001	13.2
45–<55 y	24.8	19.7	<0.001	23.0
55–<65 y	31.6	26.9	<0.001	29.9
65–<75 y	15.8	17.5	<0.001	16.4
75–<85 y	11.4	18.2	<0.001	13.9
≥85 y	1.8	6.9	<0.001	3.6
Sex, %			0.508	
Female	71.8	71.5		71.7
Male	28.2	28.6		28.3
Geographic region, %				
Northeast	8.8	11.5	<0.001	9.8
North Central	31.5	31.6	0.935	31.5
South	40.7	37.3	<0.001	39.4
West	18.6	19.0	0.36	18.8
Data unavailable	0.4	0.6	0.01	0.5
Insurance plan type, %				
Comprehensive	24.6	33.4	<0.001	27.8
HMO	16.3	13.1	<0.001	15.1
POS	9.7	7.3	<0.001	8.8
PPO	45.6	43.0	<0.001	44.6
Other	2.5	2.3	0.031	2.5
Data unavailable	1.3	1.1	0.086	1.2
Payer				
Commercial	71.2	57.4	<0.001	66.1
Medicare	28.8	42.6	<0.001	33.9
Charlson Comorbidity Index, mean (SD)	0.58 (1.08)	0.76 (1.30)	<0.001	0.65 (1.17)
Comorbidities of interest, %				
Hypertension	32.9	37.5	<0.001	34.6
Osteoarthritis	27.3	28.8	0.007	27.8
GI disorders	22.1	26.6	<0.001	23.8
Cardiovascular conditions	18.1	26.1	<0.001	21.0
Dyslipidemia	18.0	17.9	0.882	18.0
Diabetes	12.2	13.1	0.027	12.6
Respiratory infection	11.8	12.4	0.156	12.0
COPD	6.1	8.0	<0.001	6.8
Asthma	5.2	5.6	0.229	5.4
Cerebrovascular disease	4.6	7.0	<0.001	5.5
Osteoporosis	3.2	3.9	<0.001	3.4
Pulmonary embolism	0.4	0.5	0.146	0.4
Tuberculosis	0.1	0.1	0.952	0.1

(continued)

Table I (continued).

Characteristic	DMARDs (n = 17,014)	No DMARDs (n = 9897)	*P* Vs No DMARDs	All Patients (N = 26,911)
Comorbidities for which DMARDs are prescribed, %				
Psoriatic arthritis	0.6	0.5	0.289	0.6
Crohn's disease	0.3	0.4	0.229	0.3
Ankylosing spondylitis	0.3	0.3	0.889	0.3
Plaque psoriasis	1.0	0.8	0.088	0.9
Comorbidities for which DMARDs are contraindicated, %				
Infectious diseases	11.4	15.6	<0.001	13.0
Malignancy	11.1	13.2	<0.001	11.8
Heart failure	2.8	5.6	<0.001	3.9
Renal insufficiency	1.5	3.1	<0.001	2.1
Liver disease	0.9	1.0	0.107	0.9
Lymphoma	0.4	0.3	0.3	0.3
Multiple sclerosis	0.3	0.4	0.038	0.3
Rheumatologist as health care provider, %	16.7	10.8	<0.001	14.5
Rheumatologist visits, mean (SD)	0.33 (1.01)	0.28 (1.17)	0.002	0.31 (1.08)
Rheumatoid factor test, %	44.6	21.0	<0.001	35.9
Medications of Interest*				
Corticosteroids				
Patients, %	55.4	43.8	<0.001	51.1
Prescriptions, mean (SD)	2.91 (3.36)	3.07 (3.16)	<0.001	2.96 (3.30)
NSAIDs				
Patients, %	50.2	34.3	<0.001	44.4
Prescriptions, mean (SD)	2.79 (2.37)	3.04 (2.84)	<0.001	2.86 (2.52)
Chemotherapy				
Patients, %	0.72	0.93	0.066	0.80
Prescriptions, mean (SD)	3.55 (5.70)	5.45 (7.47)	<0.001	4.36 (6.57)

COPD = chronic obstructive pulmonary disease; HMO = health maintenance organization; POS = point of service; PPO = preferred provider organization.
*Mean number of prescriptions calculated among patients with prescriptions in the specific drug category.

all-cause office visits was significantly lower (9.2 vs 9.6) (both, $P < 0.001$). A similar pattern was observed with pharmacy drug claims: a significantly higher percentage of DMARD initiators versus noninitiators had a drug claim (95.9% vs 89.0%), but the mean number of all-cause drug claims was significantly lower (29.6 vs 34.3) (both, $P < 0.001$). DMARD initiators had significantly lower total health care costs ($10,534 vs $12,725) and pharmacy drug costs ($2438 vs $2822) compared with noninitiators (both, $P < 0.001$).

Time to DMARD Initiation and DMARD Type

Of the 17,014 patients with newly diagnosed RA in whom treatment with a DMARD was initiated, 87% were started on treatment within 90 days of diagnosis (Table III). An additional 8% of patients were initiated on treatment between days 91 and 180. The median time to initiation was 57 days. Nearly 97% of patients received at least 1 prescription for a conventional DMARD (methotrexate, hydroxychloroquine, sulfasalazine, leflunomide, minocycline hydrochloride, azathioprine, cyclophosphamide, gold sodium thiomalate, cyclosporine, chloroquine, auranofin, penicillamine), whereas almost one quarter received at least 1 prescription for a biologic DMARD (etanercept, infliximab, adalimumab, rituximab, abatacept, anakinra). Of the 97% of patients who received a conventional DMARD, the median time to initiation was 66 days (95% CI, 63–69). Approximately 20% of DMARD initiators had claims for both types of agents (conven-

Table II. Baseline health care resource utilization and costs among initiators and non-initiators of treatment with disease-modifying antirheumatic drugs (DMARDs) in newly diagnosed rheumatoid arthritis.

Parameter*	DMARDs (n = 17,014)	No DMARDs (n = 9897)	*P* Vs No DMARDs	All Patients (N = 26,911)
All-cause utilization				
Inpatient				
Patients, %	12.7	18.6	<0.001	14.9
Admissions, mean (SD)	1.25 (0.64)	1.31 (0.70)	<0.001	1.28 (0.67)
Length of stay, mean (SD), d	4.86 (6.15)	6.69 (10.88)	<0.001	5.71 (8.70)
Emergency department				
Patients, %	27.1	30.2	<0.001	28.2
Visits, mean (SD)	1.68 (1.70)	1.92 (2.16)	<0.001	1.77 (1.90)
Outpatient medical				
Patients, %	96.6	93.9	<0.001	95.6
Office visits, mean (SD)	9.17 (6.95)	9.62 (7.88)	<0.001	9.33 (7.30)
Patients with medical claim drugs, %	26.5	22.9	<0.001	25.1
No. of drugs, mean (SD)	2.09 (2.22)	2.40 (3.34)	<0.001	2.20 (2.65)
Outpatient pharmacy				
Patients with pharmacy claim drugs, %	95.9%	89.0%	<0.001	93.4%
No. of drugs, mean (SD)	29.64 (26.61)	34.30 (31.13)	<0.001	31.27 (28.36)
All-cause costs, mean (SD), US $				
Inpatient	2261 (14,627)	3381 (18,030)	<0.001	2673 (15,972)
Emergency department	234 (855)	270 (1181)	0.004	247 (988)
Outpatient medical				
Office visits	839 (744)	810 (812)	0.003	828 (770)
Medical drug claims	24 (1153)	51 (1172)	0.071	34 (1160)
Outpatient pharmacy				
Pharmacy drug claims	2438 (3274)	2822 (4661)	<0.001	2579 (3847)
Total costs	10,534 (20,259)	12,725 (24,500)	<0.001	11,340 (21,940)
Copayment burden, mean (SD), US $				
All claims	1230 (1519)	1224 (1370)	0.738	1228 (1466)
Pharmacy claims	478 (553)	492 (611)	0.052	483 (575)

*Mean number of visits calculated among patients with visits in the specific category of service. Mean length of stay calculated among patients with an inpatient admission.

tional and biologic DMARDs) in the 12-month postindex period. In conventional and biologic DMARD initiators, 62% and 66%, respectively, were prescribed prednisone.

After controlling for demographic and clinical characteristics, treatment-related factors associated with a greater likelihood of DMARD initiation included having been prescribed an NSAID and/or a corticosteroid (**Figure 1**). Rheumatoid factor testing and a visit to a rheumatologist were also associated with DMARD initiation. Conversely, after demographic and clinical characteristics were controlled for, patients aged ≥85 years having a higher CCI and specific comorbidities of interest were less likely to have received DMARD treatment.

A series of Kaplan-Meier curves showed the probability of DMARD initiation after stratification by specific variables. **Figure 2** presents the findings on rheumatologist visits in the preindex period, a corticosteroid prescription in the preindex period, and CCI at index as variables, all of which were statistically significant indicators of DMARD initiation. In patients with a rheumatologist visit, the likelihood of being initiated on treatment with a DMARD by 30 days after diagnosis was 54.6%, increasing to 61.4% at 60 days. The median time to initiation was 20 days in patients with a rheu-

Table III. Time to treatment initiation with disease-modifying antirheumatic drugs (DMARDs) in newly diagnosed rheumatoid arthritis (N = 17,014).

Measure	Patients, %
Time to any DMARD initiation	
Within 90 d	86.9
Within 180 d	95.1
Within 365 d	100
DMARD type	
Conventional	96.7
Biologic	23.1
Conventional vs biologic	
Conventional only	76.9
Biologic only	3.4
Conventional and biologic	19.7
Conventional prior to biologic	18.1
Biologic prior to conventional	1.3
Conventional and biologic same day	0.3

matologist visit. In patients without a rheumatologist visit, the median time to initiation was 66 days. Similarly, the likelihood of being initiated on treatment with a DMARD in patients with a prescription for a corticosteroid was 47.4% by 30 days and 56.4% by 60 days, with a median time to initiation of 37 days. In patients with a CCI of 0, 1, 2, or 3, the likelihoods of initiating treatment with a DMARD by 30 days were 42.9%, 41.5%, 37.8%, and 35.8%, respectively, and by 60 days, 52.1%, 50.1%, 46.6%, and 43.5%, with median times to initiation of 51, 59, 84, and 141 days. All of the plots suggested that the likelihood of DMARD initiation plateaued after 90 days, suggesting that if patients were not initiated on therapy soon after RA diagnosis, they were not likely to be.

DISCUSSION

In the present study, 63% of patients' treatment plans followed the ACR guideline's recommendation of treatment with a DMARD as soon as possible after diagnosis, whereas in 37% of patients' treatment plans, DMARD treatment had not been initiated within the year following RA diagnosis. Of those who were initiated on treatment with a DMARD, the majority (87%) were started on therapy within 90 days after RA diagnosis, with a median time to initiation of 57 days. This finding is consistent with the recommendations in the practice guidelines of the ACR[1] and the National Institute for Health and Clinical Excellence.[13] Having been prescribed an NSAID or a corticosteroid was associated with a greater likelihood of DMARD initiation. Patients with RA were also more likely to have been treated with a DMARD if seen by a rheumatologist or if a rheumatoid factor test was performed, a finding that warrants further investigation. Elderly patients (those aged ≥85 years) and those with comorbidities were less likely to have been treated with a DMARD. Relatively little is known about the patients who were not initiated on DMARD treatment within the 12 months following diagnosis. Data from patients who had evidence of pregnancy and those diagnosed with HIV were excluded from the study because those conditions may have prevented physicians from initiating DMARD therapy. Conditions in which DMARDs are contraindicated (eg, heart failure, infectious disease) were flagged to determine whether they influence the rate of DMARD initiation. In general, although DMARD noninitiators were more likely to have had potential contraindications to DMARD treatment, the differences between DMARD initiators and noninitiators were relatively small (range, 0.1%–4.2%), potentially accounting for only a small portion of noninitiation.

In most measures of the present study, noninitiators utilized more health care services and had higher costs in the preindex period than did initiators (with the exception of office visits, more initiators than noninitiators used services); however, the difference in copayment burden in the preindex period between initiators and noninitiators was not statistically significant.

Based on a literature search, this was the first study of DMARD use in patients with RA in a large managed care population in the United States that included persons covered under commercial and Medicare health plans, thus providing information on adults of all ages. Schmajuk et al[10] analyzed data from 5864 Medicare beneficiaries with RA who received drug coverage through the Pennsylvania pharmaceutical benefit program and reported that 30% of patients received a DMARD in the 12-month follow-up period, with an increase in use over time (24% in 1996 vs 43% in 2003). The higher DMARD treatment rates in the present study may have been due to a number of factors. Schmajuk et al[10] included patients with established

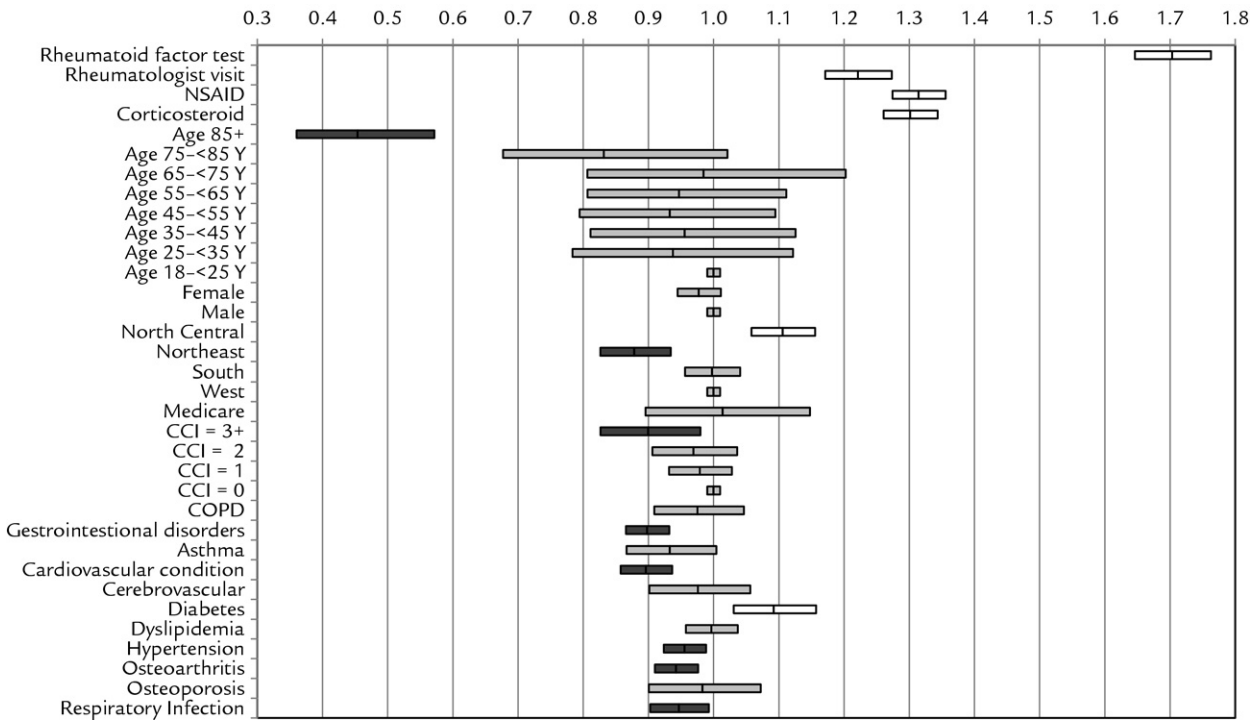

Figure 1. Mean (95% CI) time to treatment initiation with disease-modifying antirheumatic drugs (DMARDs) in newly diagnosed rheumatoid arthritis (N = 17,014) (proportional hazards [Cox] regression model). CCI = Charlson Comorbidity Index; COPD = chronic obstructive pulmonary disease. White bars indicate significantly greater likelihood of being initiated on DMARD treatment; dark gray bars indicate a significantly lower likelihood of being initiated on DMARD treatment.

RA, and providers may be less likely to prescribe a DMARD in patients who are not newly diagnosed with minimal disease progression. Also, because more recent data were analyzed in the present study, the higher rates may reflect the wider availability of DMARDs as more products entered the market, the existence of updated recommendations regarding their use,[6] and a greater understanding of the risk–benefit of early treatment,[14] all contributing to an increased comfort level in DMARD prescribing among physicians. The increase in DMARD usage rates over time in the study by Schmajuk et al[10] support this reasoning. The composition of the study population also was likely a factor in the difference in usage rates, with the study by Schmajuk et al[10] being limited to data from Medicare patients and the present study including patients enrolled in commercial and Medicare plans; 37% of patients in the study by Schmajuk et al[10] were aged 65 to <75 years, 47% were aged 75 to <85 years, and 16% were aged ≥85 years. As in the present study, that by Schmajuk et al[10] reported that the likelihood of being prescribed a DMARD decreased with increasing age. In both studies, the likelihood of DMARD treatment was increased if a patient had been seen by a rheumatologist.

A second study by Schmajuk et al[7] evaluated performance on the HEDIS quality measure for RA requiring the receipt of at least 1 DMARD prescription in the measurement year. Of the 93,143 patients with RA enrolled in Medicare managed care analyzed from 2005 through 2008, 63% had received a DMARD, matching the rate in the present study. In contrast to the earlier study by Schmajuk et al,[10] the 2005–2008 time period of the second study more closely mirrored the 2004–2008 period of the present study. Consistent with the findings from the present study, age appeared to have influenced DMARD prescribing, with patients aged ≥85 years having a 30% lower rate compared with patients aged 65 to <70years.

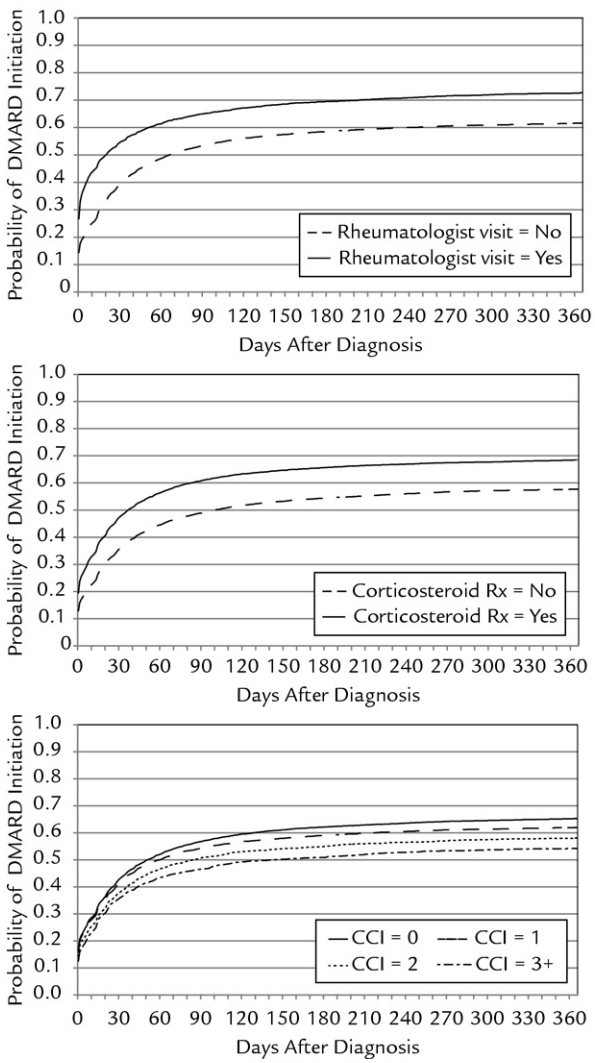

Figure 2. Probability of initiation on treatment with a disease-modifying antirheumatic drug (DMARD) in patients with newly diagnosed rheumatoid arthritis, as influenced by (A) a rheumatologist visit ($P < 0.0001$ [log-rank test]; median times to initiation, 20 days in patients with a visit and 66 days in patients without a visit); (B) corticosteroid use ($P < 0.0001$ [log-rank test]; median times to initiation, 37 days in patients with a corticosteroid use and 100 days in patients without corticosteroid use); and (C) Charlson Comobidity Index (CCI) ($P < 0.0001$ [log-rank test]; median times to initiation, 51, 59, 84, and 141 days in patients with a CCI of 0, 1, 2, and 3, respectively). (N = 17,014).

A study from Canada also documented the low rate of DMARD use as in the present study. Widdifield et al[9] evaluated data from 24,942 seniors with newly diagnosed RA in Canada from 1997 to 2006 and reported that 39% had received a DMARD in the year after diagnosis, and as in the present study, that DMARD use was increased with rheumatologist care.

The association of increased age and decreased DMARD use is a consistent finding across studies and suggests that age may be a useful indicator in identifying patients with RA not treated according to current guidelines. Although several conditions were associated with a decreased likelihood of DMARD initiation (cardiovascular conditions, hypertension, osteoarthritis, gastrointestinal disorders, and respiratory infection), the presence of diabetes was associated with an increased likelihood of DMARD initiation. Furthermore, the likelihood of DMARD initiation was not significantly higher (or lower) in patients with COPD, asthma, dyslipidemia, cerebrovascular disease, or osteoporosis. The usefulness of these findings in identifying RA patients not treated according to current guidelines requires further study.

Further research is also needed to better understand the timing of DMARD initiation. In 87% of the patients in whom treatment with a DMARD was initiated in the present study, the prescription was filled within 90 days of RA diagnosis. An additional 8% were started on therapy by 180 days, but it is unclear as to why treatment was delayed in these patients and why a large proportion of patients do not receive treatment with a DMARD. The consequences of this treatment delay are well-documented: early DMARD initiation seems to be associated with significant improvements in both short- and long-term outcomes.[15–18] Failure to initiate DMARD therapy might represent a lost opportunity, requiring further evaluation of the patient and clinician-related factors associated with noninitiation. Given that seeing a rheumatologist was positively associated with DMARD initiation, barriers to seeing a rheumatologist should be explored further.

In addition to the commonly recognized constraints of administrative claims data,[19] limitations specific to this study should be noted when interpreting the results. First, the selection of patients with RA was based on the presence of specific diagnostic codes in the claims history and thus was dependent on the accuracy of those codes. Diagnostic code

714.xx is not specific for RA; it can be used for coding other arthropathies. To minimize the inclusion of patients who did not have RA, the study protocol required the presence of a claim with 714.0x (rheumatoid arthritis) or 714.2x (other rheumatoid arthritis with visceral or systemic involvement). Second, patients with RA who had not sought medical attention and patients with undiagnosed RA were not included in the study. It is likely that those patients had milder disease and thus they would have been underrepresented in the selected RA population. Third, patients were required to have had 12 months of continuous enrollment prior and subsequent to the index event. To the extent that death was the cause of the end of coverage, this criterion may have resulted in a sample of patients with RA who were healthier compared with the general RA population. Fourth, although the investigators attempted to control for confounding variables in the multivariate regression analyses, other factors not captured in administrative claims data, such as race, socioeconomic status, and conditions not in the claims data, may have influenced early DMARD initiation and cannot be determined from this study. Although the use of DMARDs has been reported to vary by health plan,[7] the potential influence of RA-management protocols and DMARD reimbursement was not measured. Finally, the study population was composed of commercially insured patients and patients covered by Medicare with supplemental insurance, and the findings may not be representative of all patients with RA, especially the uninsured and those covered by Medicaid.

CONCLUSIONS

Despite the recommendations in the ACR guideline, based on the findings from the present study, more than one third of patients with newly diagnosed RA were not being treated with a DMARD in the 12 months following diagnosis. This finding points to a significant opportunity to improve the quality of care of patients with RA, slowing disease progression and improving functional status. The rate of DMARD initiation plateaued over time, suggesting that if a patient was not prescribed a DMARD soon after the diagnosis of RA, he or she was not likely to receive one; 87% of patients in whom DMARD therapy was initiated had the prescription filled within 90 days of diagnosis.

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CONFLICTS OF INTEREST

The authors have indicated that they have no conflicts of interest with regard to the content of this article.

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