Factors Influencing Prescribing the First Add-on Disease-Modifying Anti-Rheumatic Drugs in Patients with Rheumatoid Arthritis Initiating Methotrexate

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BACKGROUND

- Methotrexate (MTX) is the most preferred first disease-modifying anti-rheumatic drugs (DMARDs) therapy for Rheumatoid arthritis (RA) management.
- Most RA (>70%) patients require additional therapy and guidelines recommend the addition of conventional DMARD (cs DMARDs, Tumor necrosis factor inhibitors (TNFi), and non-TNFi biologics after initiation of MTX therapy, especially in those with poor prognostic factor.
- Limited data exists regarding the factors influencing prescribing the first add-on DMARD in RA patients iinitiating MTX.

OBJECTIVE

- This study examined the factors associated with adding the first DMARD in RA patients initiating MTX.

METHODS

- **Data**: MarketScan Database (2012-2014)
- **Patient Identification**: DMARD-naïve RA patients newly initiating an MTX (July 1st, 2012-Dec 31st, 2013)
  - **Combination Cohort:** Having a MTX in the first 30 day from the DMARD initiation
- **Outcome**: Addition of DMARD prescription assessed from the index date +30 days till the index date + 365 days
- **Conceptual Framework of Variables:**
  - Anderson Behavioral Model (predisposing factors, enabling factors and need factors)
- **Statistical Analysis:**
- A multivariable logistic-regression to examine the factors associated with adding a TNFi vs a csDMARD.
- Another model evaluated the factors associated with adding a biologic vs a csDMARD.
- **Sensitivity Analysis:** Model 1: adding a TNFi vs adding a csDMARD; Model 2: adding a biologic vs a csDMARD

RESULTS

- Among 2,665 DMARD-naïve RA patients initiating MTX, majority were added TNFi (550 (58%)), followed by csDMARD (352 (37%)) and non-TNF biologics (40 (4%)).
- Most of the patients receiving combination therapy were females (79%), from South (46%), and with preferred provider organization (PPO) plan (64.%).

RESULTS

RA (2012-2014) N=162,072

A MTX Prescription (index date) (July/01/2012-Dec/31/2014) N=44,106

Excluded prevalent users of MTX N=19,798

Adults N=9,521

With 6-month continuous eligibility N=14,356

Excluded prevalent users of DMARD N=8,695

Excluded other diagnosis (psoriasis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, or ulcerative colitis) N=8350

Initiated a DMARD post-index period N=2665

Combination therapy cohort requiring an MTX within 30 days post-index N=945

csDMARD Addition 352 (37%)	TNFi Addition 550 (58%)	Non TNFi Biologics Addition 40 (4.2%)	tsDMARD Addition 3 (0.3%)

Model 1: Multivariable Results of Factors Associated with Adding a TNFi vs a csDMARD

	aOR	P Value
Enabling Factors		
Preferred Provider Organizations	1.43 (1.06-1.93)	0.0207
Need Factors		
Elixhauser Index	0.91 (0.86-0.97)	0.0028
Chronic Pulmonary Diseases	1.98 (1.14-3.44)	0.0159
Liver Diseases	5.24 (1.77-15.49)	0.0027

Model 2: Multivariable Results of Factors Associated with Adding a Biologic vs a csDMARD

	aOR	P Value
Enabling Factors		
Metropolitan Statistical Areas	1.50 (1.04-2.16)	0.031
Preferred Provider Organizations	1.41 (1.05-1.90)	0.023
Need Factors		
Elixhauser Index	0.94 (0.89-0.99)	0.021
Chronic Pulmonary Diseases	1.81 (1.06-3.09)	0.029
Liver Diseases	4.01 (1.47-10.94)	0.0067

KEY FINDINGS

- Enabling factors of PPO (odds ratio [OR], 1.428; 95% confidence interval (CI), 1.056-1.932), and need factors of chronic pulmonary disease (OR, 1.976; 95% CI, 1.136-3.437), liver disease (OR, 5.24; 95% CI, 1.772-15.491), Elixhauser index score (OR, 0.912; 95% CI, 0.858-0.969) were significantly associated with addition of a TNF-α inhibitors in RA.
- An additional multivariable model additionally found that predisposing factor of MSA (OR, 1.499; 95% CI, 1.038-2.164) was associated with adding any biologics.
- Sensitivity analyses obtained similar results with those of the main model.

CONCLUSIONS

- Nearly one in two adults with RA added a TNFi therapy following MTX.
- Enabling and need factors contribute to prescribing a TNFi add-on therapy.
- In addition to above factors, predisposing factor of metropolitan area was associated with adding any biologics
- The impact of variation in prescribing decision on outcomes should be examined further in RA patients.