Real World Analysis: Key Trends in Biologic Medication Adherence and Overall Costs and Outcomes in Patients with Rheumatoid Arthritis

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Background

- It has been estimated that more than 1.3 million adults in the United States are living with rheumatoid arthritis (RA).
- In line with recent guideline updates, the treatment paradigm in RA has shifted to a treat-to-target approach that favors earlier aggressive management with biologic disease-modifying antirheumatic drugs (DMARDs).
- Consequently, utilization and associated costs of biologic DMARDs has continued to rise as demonstrated by an observed 20% increase in the number of biologic prescriptions from 2004 to 2013.
- Total cost of care for RA patients utilizing biologics has been estimated to exceed $36,000 per year. Although drug costs represent a large portion of total cost of care for patients with RA utilizing biologics, other direct costs for office-based care, inpatient care, and emergency department visits can also be significant.
- Adherence to drug therapy is essential to achieving optimal quality of care as it is thought that better adherence will lead to improved medical outcomes.
- However, there is a lack of literature available demonstrating the true impact of improved adherence on subsequent medical outcomes and associated costs in patients with rheumatoid arthritis.

Objective

- To determine key trends in adherence, costs of care, and medical outcomes for patients with RA.

Methods

Data Source & Study Time Period

- This retrospective study analyzed medical and pharmacy claims data (Clinformatics® Data Mart Database) from January 1st, 2011 to December 31st, 2015.
  - Clinformatics® Data Mart (CDM) is a statistically de-identified database of administrative health claims for members of a large national managed care company affiliated with Optum.

Inclusion Criteria

- A diagnosis of RA (ICD-9, 714.0).
- At least two pharmacy or medical claims for an RA medication.
- Age ≥18 years old at the time of index date.
- Continuous eligibility for both medical and pharmacy coverage for six months prior to the index date through at least 24 months after the index date.
  - The index date is the first fill date for a self-administered biologic drug indicated for the treatment of RA.

Statistical analysis

- Adherence was measured continuously using proportion of days covered [PDC].
  - PDC assessed the available days' supply of a dispensed medication from pharmacy claims data across the follow-up time for each individual patient. If a medication fill date overlapped with a previous fill, the start date of the new fill was pushed forward to start when the previous fills' day supply expired.
  - PDC for medical benefit drugs was calculated using a day supply assumed based on its indicated dosing interval.
- Patients were categorized as adherent vs. non-adherent based on their PDC in the first 12 months of treatment post-index date. Adherent was defined as PDC ≥ 85%.
- Descriptive statistics were generated to describe baseline continuous (mean, median, standard deviation) and categorical variables (count and percentage).
- Statistical significance was calculated using the t-test.

Calculation of Costs

- Resource utilization cost and medical outcomes (inpatient hospitalizations, emergency visits, and outpatient office visits) were measured for patients between months 13 and 24 post-index date.
- Cost information, across all encounters regardless of reason, was based on the claim allowed amounts for both medical and pharmacy claims data.
  - Costs were segregated by site of care and classified as medical costs or pharmacy costs.

Results

Baseline Demographics

	All Patients (n=2,290)	PDC < 85% (n=1,139)	PDC ≥ 85% (n =1,151)
Age			
Average	50.59	51.52	52.34
18-29	102 (4.4%)	70 (6.1%)	32 (2.8%)
30-39	253 (11.0%)	132 (11.6%)	121 (10.5%)
40-49	525 (22.9%)	270 (23.7%)	255 (22.2%)
50-59	892 (39.0%)	440 (38.6%)	452 (39.3%)
60-69	518 (22.6%)	227 (19.9%)	291 (25.3%)
Gender			
F	1,691 (73.8%)	868 (76.2%)	823 (71.5%)
M	599 (26.2%)	271 (23.8%)	328 (28.5%)
Pre-index Deyo-Charlson Comorbidity Index* (RA diagnosis not included)			
0	59 (2.6%)	33 (2.9%)	26 (2.3%)
1	743 (32.4%)	345 (30.3%)	398 (34.6%)
2	522 (22.8%)	268 (23.5%)	254 (22.1%)
3+	966 (42.2%)	493 (43.3%)	473 (41.1%)

Biologic DMARD Utilized at Index Date	All Patients (n=2,290)
ABATACEPT	240 (10.5%)
ADALIMUMAB	508 (22.2%)
ANAKINRA	5 (0.2%)
CERTOLIZUMAB	118 (5.2%)
ETANERCEPT	832 (36.3%)
GOLIMUMAB	106 (4.6%)
INFLIXIMAB	280 (12.2%)
RITUXIMAB	122 (5.3%)
TOCILIZUMAB	57 (2.5%)
TOFACITINIB	13 (0.6%)
USTEKINUMAB	9 (0.4%)

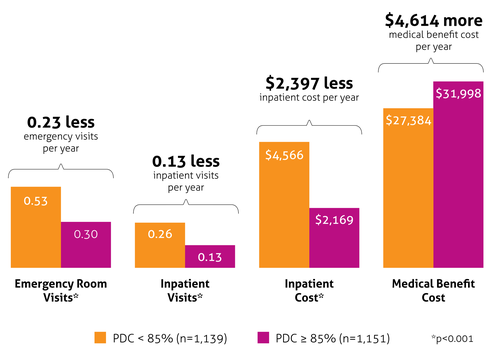
*The Charlson/Deyo Comorbidity Index is a weighted score that reflects patient overall comorbid disease burden

Health Care Resource Utilization Outcomes, All Patients (Mean Value per Patient)

	PDC < 85% (n=1,139)	PDC ≥ 85% (n=1,151)	Difference
Medical Costs	$27,384	$31,998	$4,614
Pharmacy Costs	$14,396	$19,741	$5,345
Combined Medical and Pharmacy Costs	$41,779	$51,739	$9,960
Inpatient cost	$4,566	$2,169	-$2,397*
Emergency Visits	0.53	0.30	-0.23*
Inpatient Visits	0.26	0.13	-0.13*
Outpatient Visits	11.03	10.65	-0.38

*p<0.001

Medical Cost and Outcomes, All Patients (Mean Value per Patient)

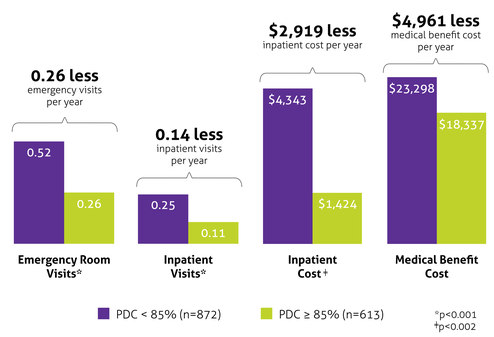


Health Care Resource Utilization Outcomes, Patients Utilizing Pharmacy Benefit Biologics at Index Date (Mean Value per Patient)

	PDC < 85% (n=872)	PDC ≥ 85% (n=613)	Difference
Medical Costs	$23,298	$18,337	$-4,961
Pharmacy Costs	$14,924	$26,412	$11,488
Combined Medical and Pharmacy Costs	$38,222	$44,749	$6,527
Inpatient cost	$4,343	$1,424	-$2,919+
Emergency Visits	0.52	0.26	-0.26*
Inpatient Visits	0.25	0.11	-0.14*
Outpatient Visits	10.68	9.46	-1.22^

*p<0.001
╪p=.002
^p=0.027

Medical Cost and Outcomes, Patients Utilizing Pharmacy Benefit Biologics at Index Date (Mean Value per Patient)



Discussion

- Among 2,290 patients treated with biologic DMARDs, the average adherence (PDC) to biologic therapy was 72% with approximately 50% of patients achieving a PDC of 85% or greater.
- Patients not able to achieve adherence goal had an average inpatient cost 2.1 times greater than adherent patients. These patients also had twice as many inpatient visits as adherent patients (0.26 vs 0.13; p<0.001) and 1.8 times as many emergency room visits (0.53 vs. 0.30; p<0.001).
- Despite the observed reduction in inpatient and emergency room utilization, adherent patients had an average annual medical and pharmacy costs greater than non-adherent patients ($4,614 and $5,345 greater for medical and pharmacy costs, respectively).
  - This cost difference is most likely driven by increased drug costs in adherent patients.
- When excluding patients who utilized drugs that are commonly billed on the medical benefit, adherent patients had an average annual medical cost approximately 21% less than non-adherent patients ($18,337 vs. $23,298).
- Limitations of this study include:
  - PDC measurements may not be fully reflective of patient adherence as patients may have received drugs through manufacturer assistance programs or discontinued treatment for clinically appropriate reasons that cannot be discerned from claims data.
  - Day supply for drugs billed under the medical benefit are not available. Day supply was assumed based on indicated dosing intervals for rheumatoid arthritis which may not be reflective of dosing intervals for each unique patient.

Conclusion

- Better adherence (PDC ≥85%) to biologic disease-modifying antirheumatic drugs (DMARDs) was associated with a significant reduction in inpatient and emergency room visits and a reduction in medical costs associated with inpatient hospitalizations in the following year.
- Due to the progressive nature of rheumatoid arthritis, the gaps in outcomes between adherent and non-adherent patients may continue to increase over time.
- Longer follow-up periods may provide further insights on the long-term impact of non-adherence on overall medical cost and utilization.
- Nevertheless, the observed association between better adherence and reduced inpatient and emergency room utilization supports the implementation of targeted clinical programs to optimize adherence in patients with PDC <85%.

Disclosures

- This research was conducted by MagellanRx Management, Scottsdale, AZ, without external funding.

References

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