Timely Rheumatoid Arthritis Control with Biologic or Targeted Synthetic DMARDS in Clinical Practice; Separating Successes from Opportunities for Care Improvement

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1. BACKGROUND

Rheumatoid arthritis (RA) control with biologic (b) or targeted synthetic (ts) DMARDS may take months. Given the risks associated with uncontrolled disease – severe joint damage, infection, compromised organ function – the choice of initial therapy is critical. Here we examine outcomes with b/tsDMARD treatment in b/tsDMARD-naïve patients with moderate-severe disease, specifically to assess disease control at 24 weeks post-initiation.

2. METHODS

Data: PIONEER-Rheumatology, an EMR and open text-extracted database specific to care given by the American Rheumatology Network. Study population: Adult (18+ years old) patients with RA who initiated b/tsDMARDs for the first time between Aug 2020 and May 2022 (index), >180 days history, ≥365 days follow up, CDAI >10 at index (closest to, but within 90 days prior), and CDAI conducted at 24±4 weeks post-index. [FIGURE 1] Primary endpoint: change in CDAI scores at 24±4 weeks from index. Statistical comparisons: T-test (continuous) or Pearson's chi-square with proportions comparisons by z-test with Bonferroni correction (categorical). Minimal important difference (MID) in CDAI defined as ≥6 or ≥12 reduction from baseline moderate (>10 and ≤22) or severe (>22) CDAI, respectively. Low disease activity defined as CDAI ≤10. Discontinuations of drug episodes were confirmed by review of EMR visit notes.

3. RESULTS

Study population (n=450) characteristics are shown in TABLE 1. Most (70%) patients received TNF inhibitors at index and had concurrent csDMARDs (82%). At 24 weeks post-index, 59% of patients had a reduction from baseline CDAI score ≥ MID, 11% patients had increases in CDAI (worsened), 8% had no change in score, and 22% had decreases in score (improved) that were less than the MID. [FIGURES 2 & 3] The proportions of patients achieving MID were not significantly different based on baseline CDAI or index b/tsDMARD. [TABLE 1] A significantly higher proportion of patients who achieved MID remained on the index drug at 24w (90%) compared to the group that did not reach MID (83%, p=0.045). By disease activity, 56% (134/240) of patients with baseline moderate disease shifted to low activity and 69% (145/210) of patients with baseline severe disease improved to moderate (34%, 71/210) or low (35%, 74/210) activity. [TABLE 2] Notably, 31% (65/210) of patients with severe disease at baseline still had severe disease after 24 weeks.

4. CONCLUSIONS

In this study of patients with moderate-severe RA, 59% of patients achieved a meaningful reduction (i.e., MID) in CDAI at 24 weeks after initiating b/tsDMARDs. The remaining 41% of patients (11% worsened and 30% had zero to minimal improvement in score) represent a population that may benefit from precision medicine tools to optimize treatment choice and/or enhanced care engagement.

FIGURE 1: Study Diagram

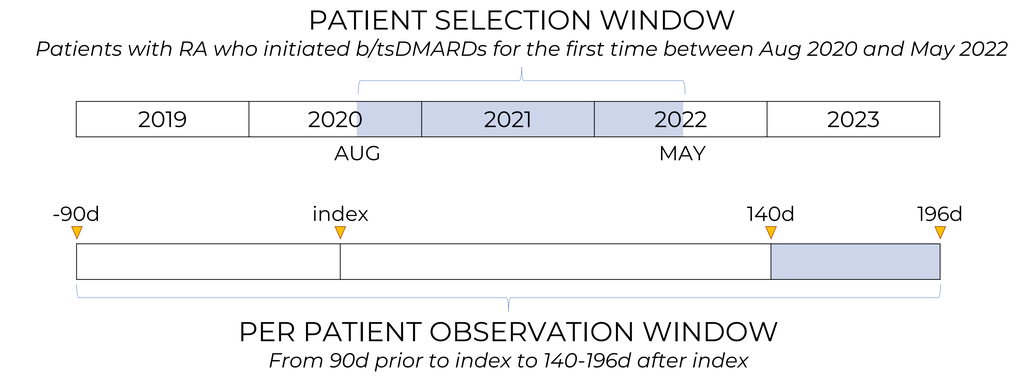
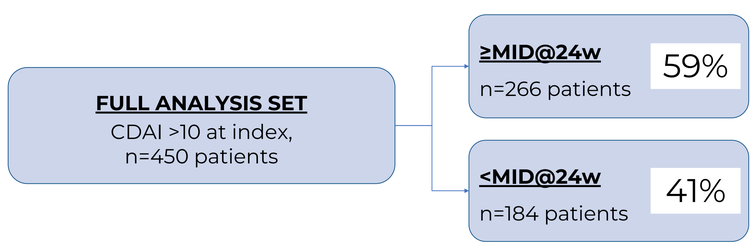


FIGURE 2: Patient Disposition



Minimal important difference (MID) in CDAI defined as ≥6 or ≥12 reduction from baseline moderate (>10 and ≤22) or severe (>22) CDAI, respectively.

FIGURE 3: Change in CDAI from Baseline to 24 weeks

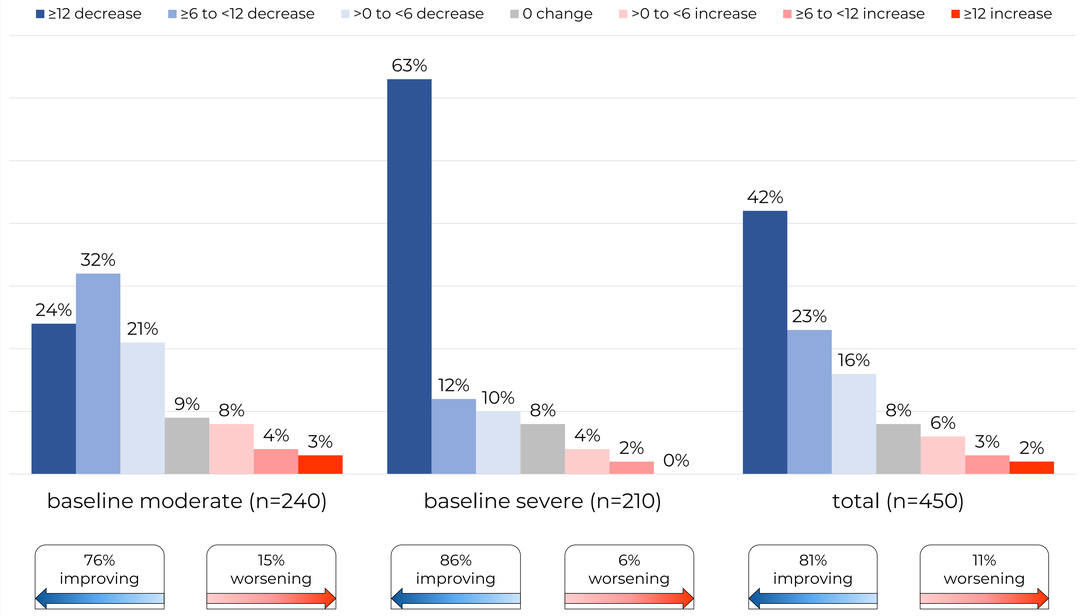


TABLE 1: Study Population Characteristic

No. (%) Patients unless specified	Total (n=450)	<MID@24w (n=184)	≥MID@24w (n=266)
Female	374 (83%)	155 (84%)	219 (82%)
Race			
Black	25 (6%)	14 (8%)	11 (4%)
White	239 (53%)	89 (48%)	150 (56%)
Other	39 (9%)	18 (10%)	21 (8%)
Unspecified	147 (33%)	63 (34%)	84 (32%)
Age at index			
median (IQR)	59 (48-70)	58 (47.5-68)	59 (50-71)
18-34	24 (5%)	11 (6%)	13 (5%)
35-49	95 (21%)	44 (24%)	51 (19%)
50-64	175 (39%)	70 (38%)	105 (39%)
65-74	93 (21%)	36 (20%)	57 (21%)
75+	63 (14%)	23 (13%)	40 (15%)
Baseline CDAI			
median (IQR)*	21.5 (16-31)	21 (14.75-28)	22.25 (16.5-33)
moderate (>10 ≤22)	240 (53%)	107 (58%)	133 (50%)
severe (>22)	210 (47%)	77 (42%)	133 (50%)
Index Drug Target			
B-cell	15 (3%)	6 (3%)	9 (3%)
T-cell	43 (10%)	15 (8%)	28 (11%)
IL17	1 (0%)	0 (0%)	1 (0%)
IL6	10 (2%)	7 (4%)	3 (1%)
JAK	60 (13%)	24 (13%)	36 (14%)
PDE4	4 (1%)	2 (1%)	2 (1%)
TNF	317 (70%)	130 (71%)	187 (70%)
Index Drug + csDMARD	367 (82%)	151 (82%)	216 (81%)
On Index Drug @ 24w*	392 (87%)	153 (83%)	239 (90%)

*indicates differences between groups that reach statistical significance of p<0.05.

TABLE 2: CDAI: baseline & 24 weeks post-index

Baseline CDAI	CDAI @ 24 weeks – No. Patients				CDAI @ 24 weeks – % Patients			
	low	moderate	severe	total	low	moderate	severe	total
moderate	134	93	13	240	56%	39%	5%	100%
severe	74	71	65	210	35%	34%	31%	100%
Total	208	164	78	450	46%	36%	17%	100%

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