

Efficacy and Safety of Abatacept, Adalimumab, and Etanercept in Pediatric Patients with Juvenile Idiopathic Arthritis

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I have no actual or potential conflicts of interest to disclose.

Objectives

1. Describe the efficacy of abatacept, adalimumab, and etanercept for the treatment of juvenile idiopathic arthritis based on the Physician's Global Assessment
2. Evaluate reported adverse effects to determine the safety of abatacept, adalimumab, and etanercept
3. Propose future directions for the use of these agents, based on their comparative efficacy and tolerability

Monroe Carell Jr. Children's Hospital at Vanderbilt



- Academic teaching and tertiary hospital
- 267 inpatient beds
- 15,000+ inpatient visits annually
- 330,000+ outpatient visits annually

Juvenile Idiopathic Arthritis (JIA)

- Heterogeneous group of several disease subtypes
- Characterized by the onset of arthritis prior to the age of 16 years
- Symptoms persist for more than 6 weeks

Classification of JIA

Oligoarticular

- One to four joints during the first six months

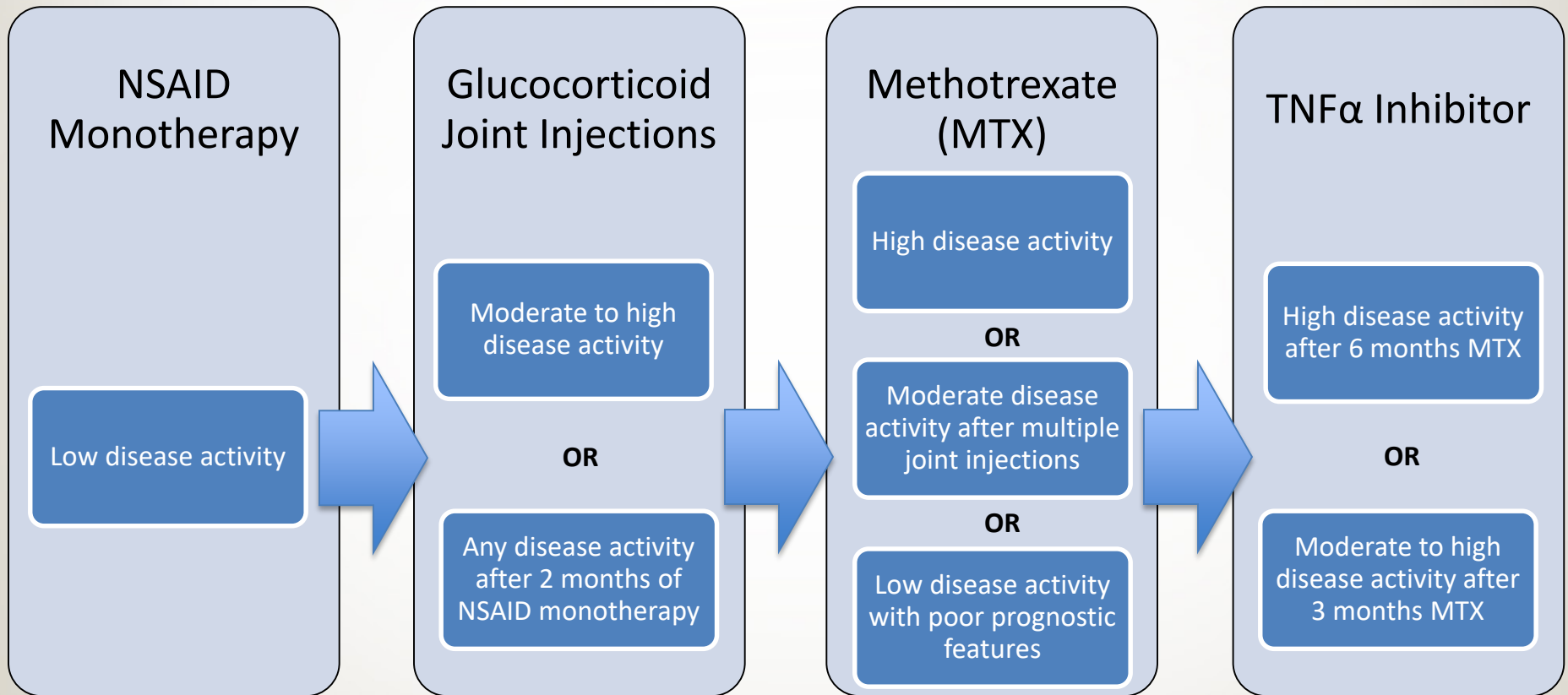
Polyarticular

- Five or more joints during the first six months

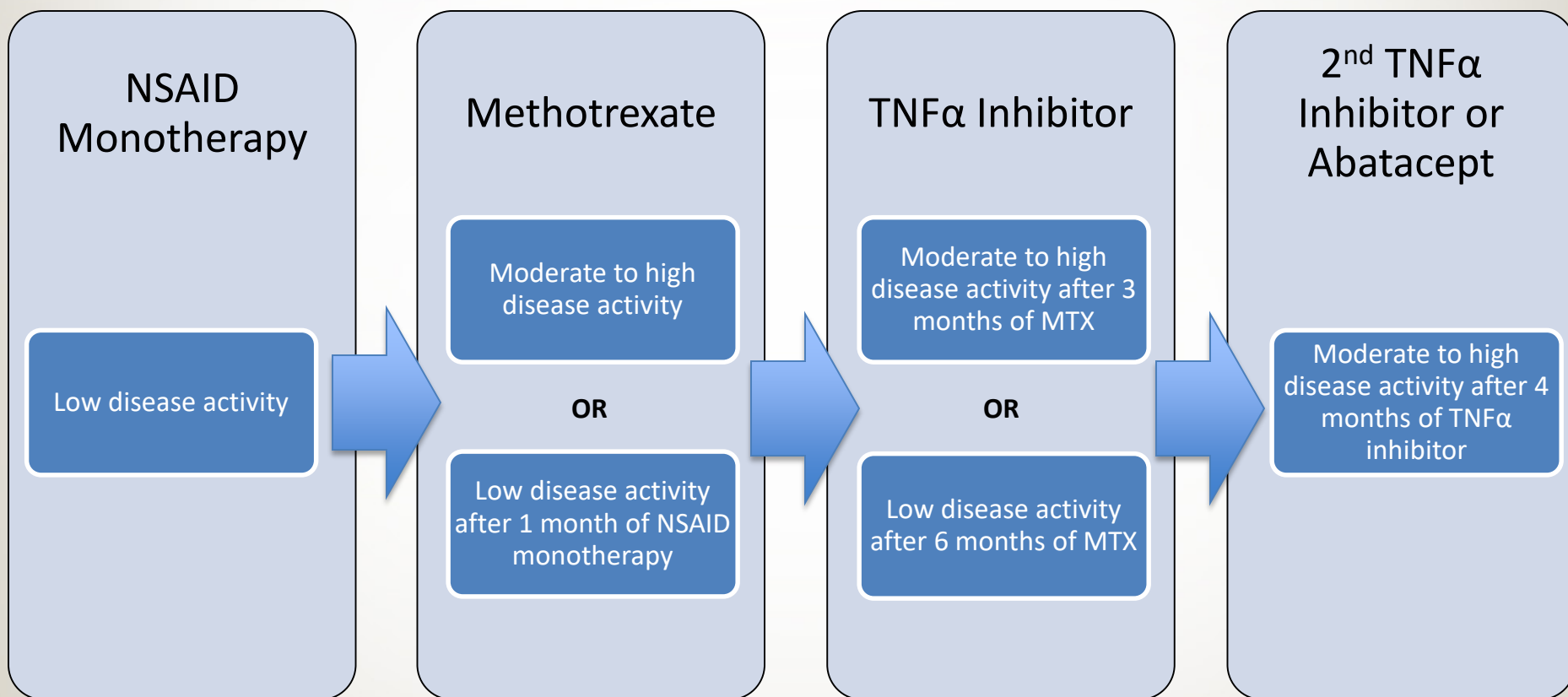
Systemic

- One or more joints with fever of at least two weeks that is daily for at least three days

Treatment of Oligoarticular JIA



Treatment of Polyarticular JIA



Treatment of Systemic JIA

NSAID with
Glucocorticoid
Joint Injections

All patients

Methotrexate

Disease activity after 1
month of NSAID with
glucocorticoid joint
injections

TNF α inhibitor
or Anakinra

Moderate to high
disease activity after 3
months of MTX

Abatacept

Moderate to high
disease activity after 4
months of TNF α
inhibitor

Current Body of Literature

Study	Outcomes
Gartlehner G et al.	Adjusted indirect comparisons indicate no significant differences in efficacy between TNF α drugs
Horneff G et al.	Adalimumab, etanercept and tocilizumab showed comparable efficacy towards polyarticular JIA
Shepherd J et al.	Exploratory adjusted indirect comparison suggests that the four biologic DMARDs are similar

Study Objective

To assess the efficacy of abatacept, adalimumab, and etanercept in pediatric JIA patients through changes in the Physician's Global Assessment (PGA)

Outcomes

Primary

- Efficacy of abatacept, adalimumab, and etanercept in pediatric JIA patients based on PGA

Secondary

- Change in:
 - Inflammatory markers
 - Joints with active disease
 - Joints with limitation of motion
 - Corticosteroid dose after initiation of therapy
- Adverse effects
- Adherence among patients who fill with Vanderbilt Specialty Pharmacy
- Reason for discontinuation

Methods

Design

- IRB-approved, single-center, retrospective, chart review

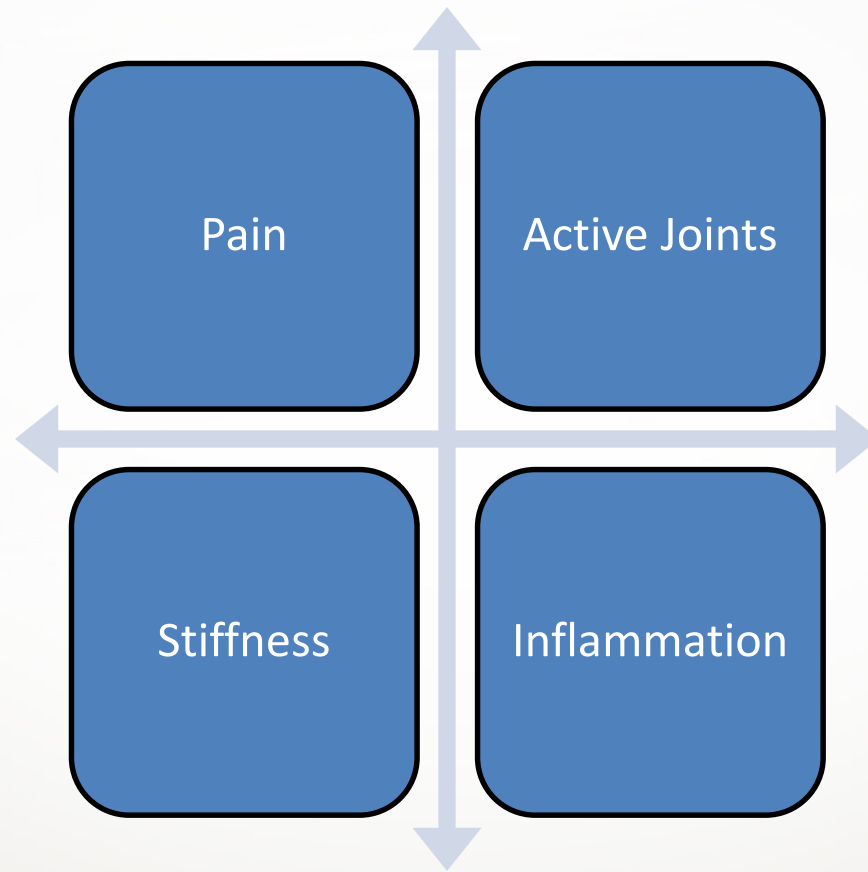
Inclusion Criteria

- All pediatric JIA patients started on abatacept, adalimumab, or etanercept from December 1st, 2015 to August 31st, 2018

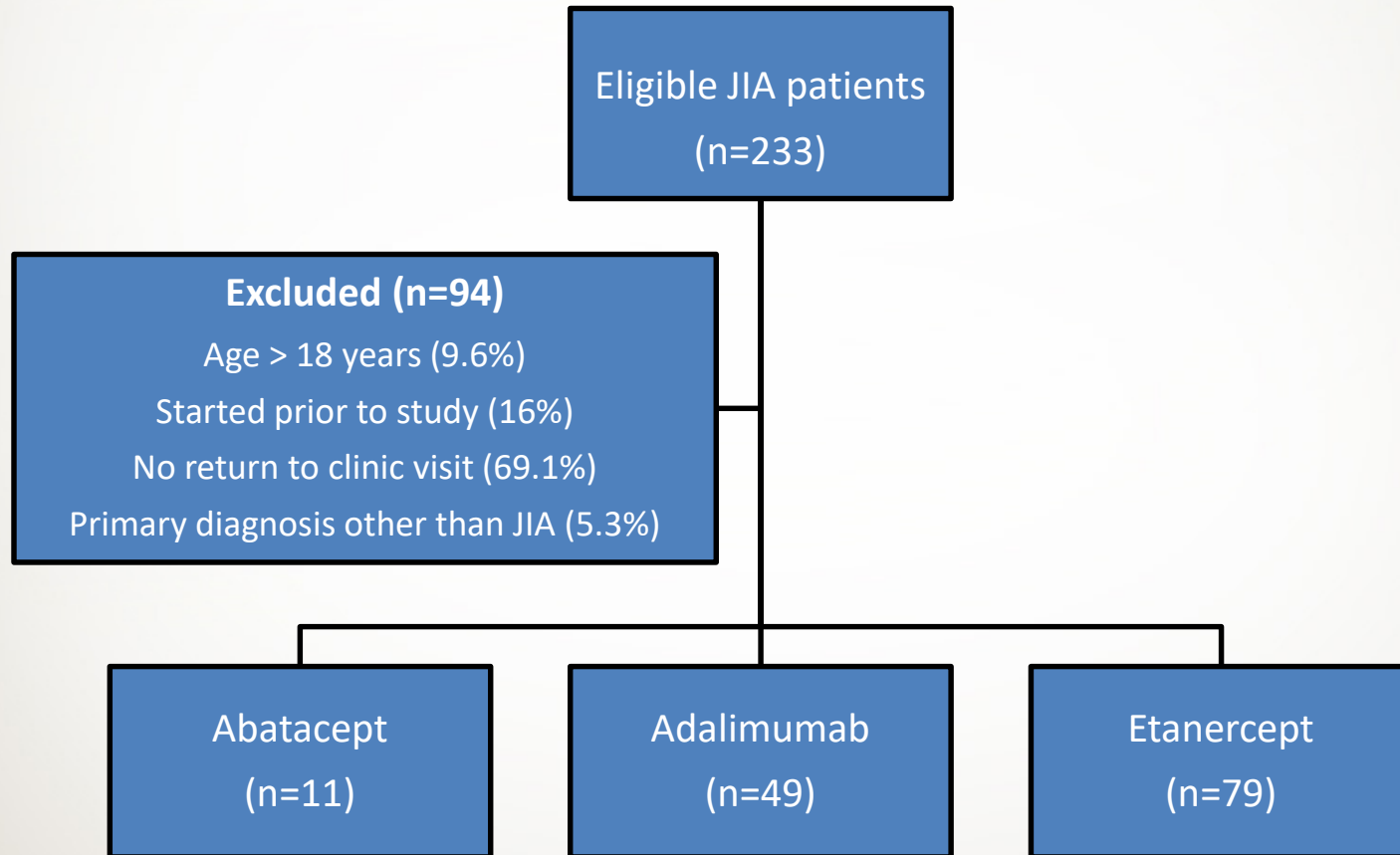
Exclusion Criteria

- No return to clinic visit within 4 to 6 months after initiation of biologic
- Age >18 years at time of initiation of biologic
- Primary diagnosis other than JIA for initiation of biologic

Physician's Global Assessment



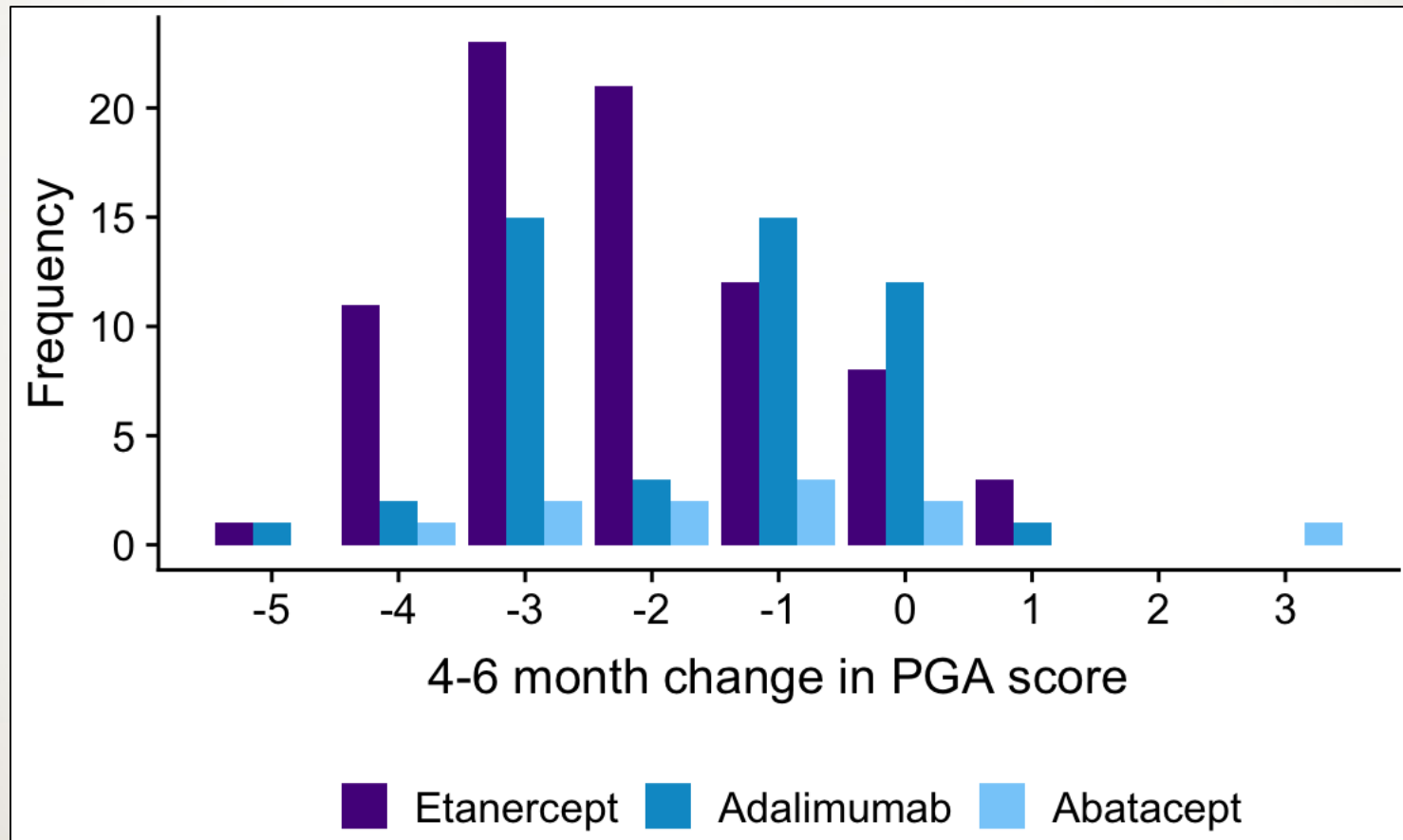
Study Population



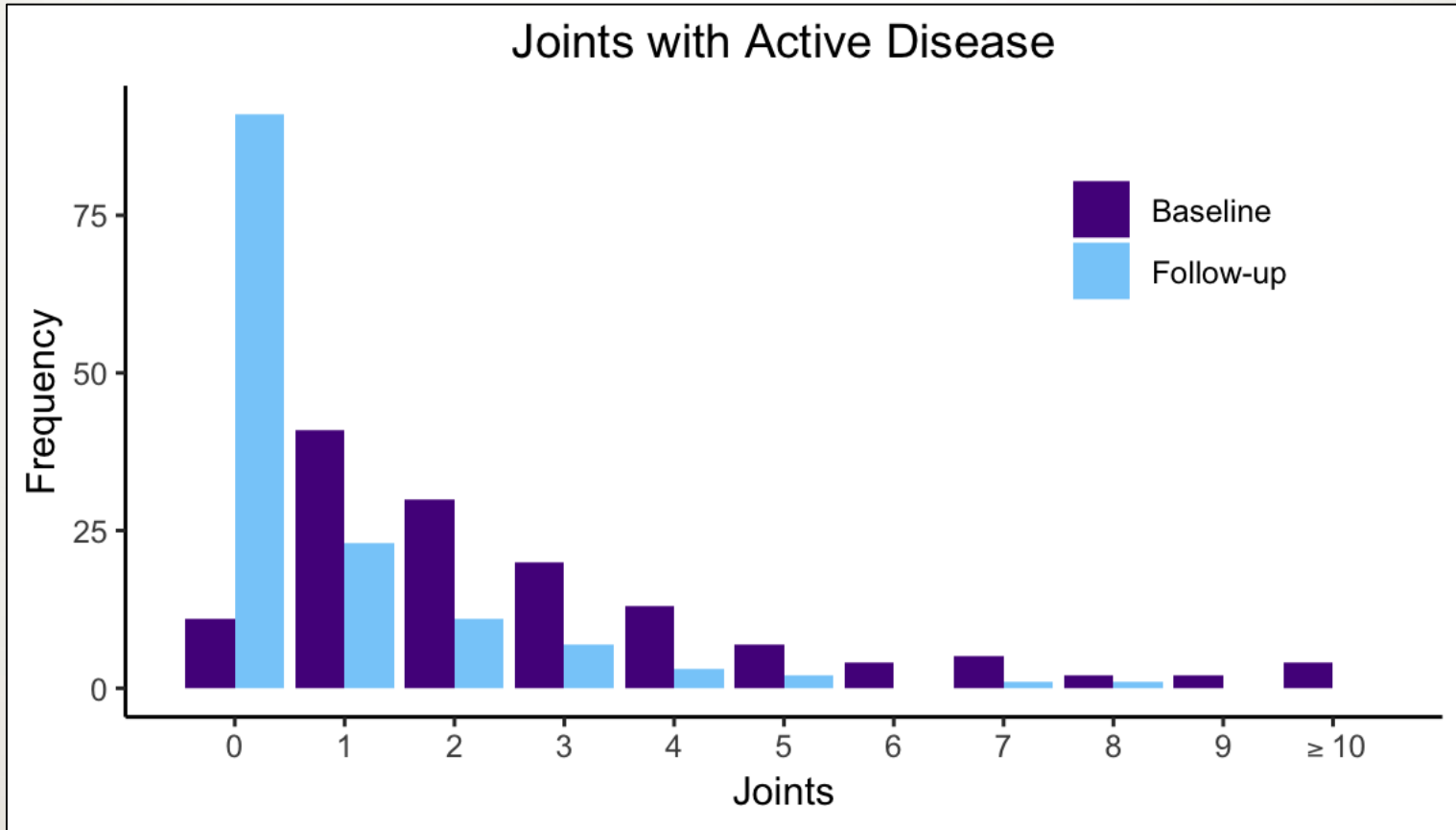
Demographics

	Abatacept	Adalimumab	Etanercept
Age (years), median	13.7	13.9	12.1
Female, n (%)	8 (73%)	36 (73%)	56 (71%)
Caucasian, n (%)	7 (64%)	38 (78%)	60 (76%)
JIA type, n (%)			
Oligoarticular	5 (45%)	18 (37%)	33 (42%)
Polyarticular	6 (55%)	30 (61%)	45 (57%)
Systemic	0 (0%)	1 (2%)	1 (1%)
Duration of JIA, n (%)			
< 2 years	5 (45%)	25 (51%)	62 (78%)
≥ 2 years	6 (55%)	24 (49%)	17 (22%)
Prior biologic, n (%)	2 (18%)	23 (47%)	5 (6%)
Time on therapy (days), median	322	343	419

Primary Outcome: Change in PGA



Joints with Active Disease



Adverse Events

	Abatacept	Adalimumab	Etanercept	p-value*
Injection site reactions/pain, n (%)	1 (9%)	15 (31%)	19 (24%)	0.31
Infections, n (%)	0 (0%)	2 (4%)	1 (1%)	
None, n (%)	10 (91%)	33 (67%)	59 (75%)	0.26

*p-value < 0.05 indicates statistical significance

Biologic Discontinuation

	Abatacept	Adalimumab	Etanercept
Biologic discontinued, n (%)	4 (36.4%)	6 (12.2%)	35 (44.3%)
Major side effect, n (%)	0 (0%)	1 (2%)	3 (3.8%)
Non-compliance, n (%)	0 (0%)	1 (2%)	6 (7.6%)
No response to therapy, n (%)	4 (36.4%)	4 (8.2%)	26 (32.9%)
Full course completed, n (%)	0 (0%)	0 (0%)	2 (2.5%)
Insurance change/mandate, n (%)	1 (9.1%)	0 (0%)	0 (0%)

Limitations

- Retrospective, single-center analysis
- Low number of abatacept patients
- Large number of patients excluded based on time to follow up visit
- PGA scoring based on limited chart information

Conclusions

- Majority of patients saw an improvement in their PGA score
- Adverse events were similar across all three biologics
- Most common reason for biologic discontinuation was no response to therapy

Future Directions

- Change in adverse effects with adalimumab citrate free formulation
- Trends in future biologic use and prescribing practice
- Emphasis of PGA scoring in provider notes

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References

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