



Using Patient Reported Outcome Measures to Classify Disease Activity States in Rheumatoid Arthritis: A Comparison of Patient Activity Score (PAS) and Routine Assessment of Patient Index Data (RAPID)



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Background & Objective

Background: In RA the target for treatment is clinical remission or minimal disease activity. Patient involvement in monitoring their disease activity could enhance treatment by providing early warning when targets are not met, indicating the need for a physician visit to re-evaluate treatment. Several patient reported outcome measures of disease activity have been developed and validated.

Objective: To compare the agreement between patient and rheumatologist (MD) derived disease activity states using these measures.

Methods

Study Design: Cross sectional study.

Study Sample: All consecutive RA patients presenting for a follow-up visit to 7 participating rheumatology practices were invited to participate.

Inclusion criteria: Age 18 years or older; diagnosis of rheumatoid arthritis; under the care of a rheumatologist; and ability to read and write English.

Data Collection:

Consenting patients completed a questionnaire before their visit. MD joint count and lab values were obtained from their charts.

Disease Activity Indices:

We evaluated 4 patient reported disease activity measures: i) PASII; ii) RAPID3; iii) RAPID4 iv) modified-RAPID4 (using HAQII instead of MDHAQ). The following MD derived measures served as gold standards: i) CDAI; ii) SDAI; iii) DAS28. Disease states were categorized into remission, low, moderate or high, according to published cut points. Because change in treatment is recommended with moderate or high disease activity, we also compared two categories: remission or low vs. moderate or high.

Statistical Analysis:

Agreement between patient and MD derived disease states was evaluated using Agreement Coefficient 1 (AC1) for two category comparisons and Agreement Coefficient 2 (AC2), weighted with quadratic weights, to take into account how close the agreement is to perfect agreement, for four category comparisons. AC values > 0.62 were considered good agreement. Z tests were used to evaluate the significance of the difference between pairs of ACs to compare agreement between patient and MD derived disease states across instruments.

RAPID3 (Routine Assessment of Patient Index Data with 3 measures) = Multi-Dimensional Health Assessment Questionnaire (MDHAQ), Pain Visual Analogue Scale, Patient Global.

PASII: same as RAPID3 with HAQII instead of MD HAQ

RAPID4 (with 4 measures) = MDHAQ, Pain Visual Analogue Scale, patient global, Rheumatoid Arthritis Disease Activity Index (RADAI) joint count.

mRAPID4 (modified RAPID4) = same as RAPID 4 with HAQ II instead of MDHAQ

CDAI (Clinical Disease Activity Index) = Tender Joint Count, Swollen Joint Count, MD global, patient global

SDAI (Simplified Disease Activity Index) = Tender Joint Count, Swollen Joint Count, MD global, patient global, CRP

DAS-28: Disease Activity Scale with 28 joint count = Tender Joint Count, Swollen Joint Count, CRP, patient global

Results

Table 1. Agreement between patient and MD derived indices measured across two and four disease activity categories.

A COMPARISON ACROSS TWO CATEGORIES (REMISSION OR LOW VS. MODERATE OR HIGH)			
Patient Measures	Rheumatologist Measures		
	CDAI	SDAI	DAS28
	AC2 [95% CI]	AC2 [95% CI]	AC2 [95% CI]
PASII	* 0.67 [0.55, 0.79]	0.67 [0.54, 0.79]	* 0.47 [0.33, 0.62]
RAPID3	0.54 [0.40, 0.68]	0.60 [0.46, 0.73]	* 0.29 [0.14, 0.45]
RAPID4	* 0.60 [0.47, 0.73]	0.65 [0.52, 0.78]	* 0.39 [0.24, 0.54]
m-RAPID4	0.58 [0.45, 0.91]	0.64 [0.51, 0.77]	* 0.33 [0.18, 0.49]
B COMPARISON ACROSS FOUR CATEGORIES (REMISSION VS. LOW VS. MODERATE VS. HIGH)			
Patients Measures	Rheumatologist Measures		
	CDAI	SDAI	DAS28
	AC1 [95% CI]	AC1 [95% CI]	AC1 [95% CI]
PASII	* 0.86 [0.83, 0.90]	* 0.86 [0.82, 0.90]	* 0.67 [0.59, 0.75]
RAPID3	* 0.70 [0.63, 0.76]	* 0.73 [0.67, 0.79]	* 0.29 [0.13, 0.44]
RAPID4	* 0.77 [0.71, 0.83]	* 0.78 [0.72, 0.84]	* 0.43 [0.29, 0.56]
m-RAPID4	* 0.73 [0.66, 0.79]	* 0.75 [0.68, 0.81]	* 0.35 [0.20, 0.49]

AC1 = agreement coefficient 1; AC2 = quadratic weighted agreement coefficient 2

Bolded values (AC > 0.62) are considered good agreement

* Denotes significant differences in pairwise comparisons of ACs (comparing agreement across instruments)

When comparing ACs for two categories, significant differences were detected in the agreement between PASII and RAPID3 with CDAI, RAPID3 and 4 with CDAI, PASII and RAPID3 with DAS28, PASII and mRAPID4 with DAS28, RAPID3 and 4 with DAS28, and RAPID4 and m-RAPID4 with DAS28 (all p < 0.05). When comparing ACs for four category disease activity states, all pairwise comparisons were significantly different (all but one p < 0.001), except when comparing agreement between RAPID4 and m-RAPID4 with CDAI (p = 0.054), and between RAPID3 and m-RAPID4 with SDAI (p = 0.075).

Conclusion

- Our results suggest that patients can self-monitor disease activity.
- Agreement between diseases activity states derived from patient reported outcomes and those derived from physician assessments varied across instruments used. Overall, PASII seemed to show the best agreement with all physician derived measures.
- Given the similarities in the components of the measures compared, this difference may be due to cut points used to categorize disease states.

Acknowledgements: This research was funded by the Canadian Initiative for Outcomes in Rheumatology Care. Dr. Lacaille is supported by the Mary Pack Chair in Arthritis Research from UBC and The Arthritis Society of Canada.