



# Reuma.pt

Registo Nacional de Doentes Reumáticos  
Rheumatic Diseases Portuguese Register

## DAS28, CDAI and SDAI cutoffs do not translate the same information

Results from the Rheumatic  
Diseases Portuguese  
Register, Reuma.pt

Fernando Martins  
CPR 2012

# Authors

Fernando Martins, Helena Canhão, Augusto Faustino,  
João Eurico Fonseca on behalf of the Reuma.pt  
Board Coordination, Portuguese Society of  
Rheumatology:

Ana Rita Cravo, Cátia Duarte, Cláudia Vaz, Elsa  
Sousa, Graça Sequeira, Herberto Jesus, Inês Cunha,  
Jorge Garcia, José António Costa, J. A. Melo Gomes,  
José António Silva, J. Vaz Patto, Luís Cunha Miranda,  
Margarida Cruz, Margarida Oliveira, Maria José  
Santos, Maura Couto, Miguel Bernardes, Patrícia  
Nero, Patrícia Pinto, Paula Valente, Pedro Abreu, Rui  
André Santos, Rui Melo, Teresa Bravo, Teresa Nóvoa,  
Walter Castelão

# Introduction

- Routine use of objective measures to assess rheumatoid arthritis disease activity constitutes nowadays standard practice for rheumatology clinics
- DAS28 is the most widely used instrument
- CDAI and SDAI were later developed and have recently gained more relevance
- **Do these indexes translate the same clinical information?**

# Cutoff values for different disease activity states

Index	Disease activity state	Original definition	Newly proposed definition
SDAI	Remission	$\leq 5$	$\leq 3.3$
	Low disease activity	$\leq 20$	$\leq 11$
	Moderate disease activity	$\leq 40$	$\leq 26$
	High disease activity	$> 40$	$> 26$
CDAI	Remission	-	$\leq 2.8$
	Low disease activity	-	$\leq 10$
	Moderate disease activity	-	$\leq 22$
	High disease activity	-	$> 22$
DAS28	Remission	$\leq 2.6$	$\leq 2.4$
	Low disease activity	$\leq 3.2$	$\leq 3.6$
	Moderate disease activity	$\leq 5.1$	$\leq 5.5$
	High disease activity	$> 5.1$	$> 5.5$

**The Simplified Disease Activity Index (SDAI) and the Clinical Disease Activity Index (CDAI)**

D. Aletaha & J. Smolen

Best Pract Res Clin Rheumatol. 2007 Aug;21(4):663-75

# Portuguese population

- 1 635 patients with rheumatoid arthritis and followed up in the Reuma.pt
- 7316 visits
  - 2285 visits (31.23 %) previous to the onset of biological agents
  - 2998 visits (40.98 %) were within 2 years of starting biological treatment
  - 2033 visits (27.79 %) occurred 2 or more years after initiation of biological treatment

# Indexes concordance

	Pearson's correlation <sup>(*)</sup>	p-value
DAS28 / CDAI	$r = 0.881$	$< 0.0001$
DAS28 / SDAI	$r = 0.876$	$< 0.0001$
CDAI / SDAI	$r = 0.973$	$< 0.0001$

<sup>(\*)</sup>  $r \geq 0.7$  means strong positive association

# Cutoffs discordance

	Remission	Low	Moderate	High
DAS28	[0, 2.6[	[2.6, 3.2]	]3.2, 5.1]	]5.1, +∞[
<b>DAS28'</b>	<b>[0, 2.4]</b>	<b>]2.4, 3.6]</b>	<b>]3.6, 5.5]</b>	<b>]5.5, +∞[</b>

	Remission		Low		Moderate		High	
DAS28	1946	26.60%	1102	15.06%	2855	39.02%	1413	19.31%
<b>DAS28'</b>	<b>1573</b>	<b>21.50%</b>	<b>2216</b>	<b>30.29%</b>	<b>2511</b>	<b>34.32%</b>	<b>1016</b>	<b>13.89%</b>
CDAI	1041	14,23%	2762	37,75%	2131	29,13%	1382	18,89%
SDAI	1076	14,71%	2673	36,54%	2358	32,23%	1209	16,53%

- Chi-square tests revealed that the respective cutoffs were non-concordant

## Visits with DAS28 < 2.6

	Avg.	DAS28	CDAI	SDAI
DAS28 tender joint count	0.31	12.98%	8.59%	7.40%
DAS28 swollen joint count	0.33	6.71%	9.18%	7.91%
Patient assessment (0 – 100)	19.20	11.16%	52.93%	45.61%
Physician assessment (0 – 100)	10.63		29.30%	25.25%
Sedimentation rate	10.80	69.16%		
CRP (mg/l)	5.82			13.82%

### 2011 ACR/EULAR boolean definition of remission in RA

Tender joint count, swollen joint count (on 28 joint counts), CRP (in mg/dl), and patient global assessment scores (on a scale of zero to 10) are all less than or equal to one.



# Portuguese CDAI and SDAI cutoffs

- Chi-square and PCCs were calculated for DAS28 original and proposed cutoffs
  - Using all visits
  - Using all visits and all scores calculated with physician assessment instead of patient assessment
  - Using 10 subsets with 30% of all visits (randomly selected)
  - Varying each one of the indexes along their scales (partly) with 0.1 intervals
- 2.446.506 PCCs were calculated
- 2.686.506 chi-square tests were performed

# CDAI and SDAI cutoffs for DAS28 proposed cutoffs (2.4, 3.6, 5.5)

	Cutoff1	Cutoff2	Cutoff3
CDAI original	2.8	10	22
Using physician assessment	3.3	9.8	26.8
Using all visits	4	10.1	26.1
Using randomly selected visits	4.1	10	26.1
Consensus cutoffs for the previous 2 criteria (*)	4.1	10	26.1

	Cutoff1	Cutoff2	Cutoff3
SDAI original	3.3	11	26
Using physician assessment	4.1	11.1	29.5
Using all visits	4.7	11.1	28.4
Using randomly selected visits	4.8	11.1	28.4
Consensus cutoffs for the previous 2 criteria (*)	4.8	11.2	28.4

(\*) Correlating all 3 indexes

# CDAI and SDAI cutoffs for DAS28 original cutoffs (2.6, 3.2, 5.1)

	Cutoff1	Cutoff2	Cutoff3
CDAI original			
Using physician assessment	4.1	7.6	22.2
Using all visits	5	8	22.1
Using randomly selected visits	5	7.9	21.8
Consensus cutoffs for the previous 2 criteria (*)	4.9	7.9	21.8

	Cutoff1	Cutoff2	Cutoff3
SDAI original			
Using physician assessment	5.1	8.4	24.3
Using all visits	5.6	8.8	23.8
Using randomly selected visits	5.6	8.8	23.7
Consensus cutoffs for the previous 2 criteria (*)	5.5	8.8	23.7

(\*) Correlating all 3 indexes

## Conclusions

- DAS28, CDAI and SDAI cutoffs do not translate the same clinical information for patients registered in the Reuma.pt
- PG weight in CDAI and SDAI indexes is considerably higher than in DAS28
- PG is influenced by several factors such as psychological, social, cultural, spiritual, education level, etc.
- Established CDAI and SDAI cutoffs probably should not be universally applied

# The end

- Reuma.pt was developed with the support of



- Thank you for your attention!

- Questions?

