

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

Results from the Rheumatic Diseases Portuguese Register, Reuma.pt

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### Abstract

**Introduction:** DAS28, CDAI and SDAI are frequently used indexes to assess disease activity in rheumatoid arthritis (RA) patients. Cutoffs were defined to differentiate the states of disease activity that a patient can experience: remission or low, moderate and high disease activity. DAS28 intervals for these disease activity states are, respectively, [0, 2.6], [2.6, 3.2], [3.2, 5.1] and ]5.1, +∞[. CDAI intervals are [0, 2.8], ]2.8, 10], ]10, 22] and ]22, +∞[, and SDAI intervals are [0, 3.3], ]3.3, 11], ]11, 26] and ]26, +∞[. Taking into account the CDAI and SDAI cutoffs, new cutoffs for DAS28 have been proposed: [0, 2.4], ]2.4, 3.6], ]3.6, 5.5] and ]5.5, +∞[.

**Objective:** To assess disease activity states classified by DAS28, CDAI and SDAI, and to analyze their concordance in a Portuguese population.

**Methods:** Patients with RA under biological therapy and followed up in the Reuma.pt were included in this analysis. A total of 1635 patients and 7316 visits were analyzed, 2285 of which were previous to the onset of biological agents, 2998 visits were within 2 years of starting biological treatment and 2033 visits occurred 2 or more years after initiation of biological treatment. Overall Pearson's correlation coefficients (PCCs) were calculated for the 3 indexes. Chi-square tests were performed to analyze visits distributions for all disease activity states and indexes. PCCs were also calculated to test the concordance of DAS28 4v with both CDAI and SDAI indexes, varying each one of them along their scales with 0.1 intervals.

**Results:** A strong concordance was found between the 3 indexes throughout the 7316 visits:  $r=0.881$  for DAS28/CDAI,  $r=0.876$  for DAS28/SDAI and  $r=0.973$  for the CDAI/SDAI correlation (all PCCs with  $p<0.001$ ). However, when the different disease activity states were analyzed, both chi-square tests and PCCs revealed that the respective cutoffs were non-concordant. The hypothesis that the distributions were the same was rejected for all the compared cutoffs. For example, the correspondence between the new proposed cutoffs for DAS28 with CDAI ( $p=5.08966E-55$ ) and SDAI ( $p=6.3064E-34$ ) cutoffs was strongly rejected. For these DAS28 cutoffs (2.4, 3.6 and 5.5), the best correlation with CDAI was obtained at the cutoffs of 4, 10.1 and 26, and with SDAI at the cutoffs of 4.7, 11.1 and 28.1. The hypothesis that these 3 distributions are the same was not rejected ( $p = 0.991$ ). For the original DAS28 cutoffs (2.6, 3.2 and 5.1), the best correlation with SDAI was obtained at the cutoffs of 5.6, 8.8 and 23.8. The hypothesis that these 2 distributions are the same was not rejected ( $p = 0.999$ ). We also found that when considering all visits with DAS28 < 2.6, average patient global (PG) assessment score was 1.92 (on a scale of 0 to 10) and the average weight of PG was 11.16% for DAS28, 52.93% for CDAI and 45.61% for SDAI. According to the 2011 ACR/EULAR boolean definition of remission in RA, PG should not be higher than 1.

**Conclusions:** DAS28, CDAI and SDAI cutoffs do not translate the same clinical information for patients registered in the Reuma.pt. Since disease perception is influenced by several factors (e.g., culture) and PG weight in CDAI and SDAI indexes is considerably higher than in DAS28, established CDAI and SDAI cutoffs probably should not be universally applied.