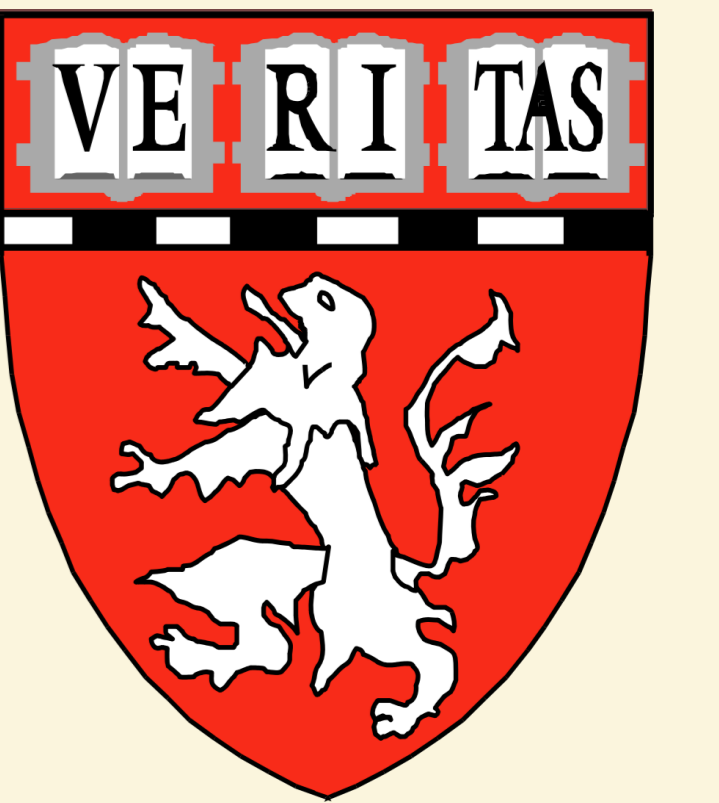




# The Relationship Between Time in Remission and Functional Status in Rheumatoid Arthritis

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## Introduction

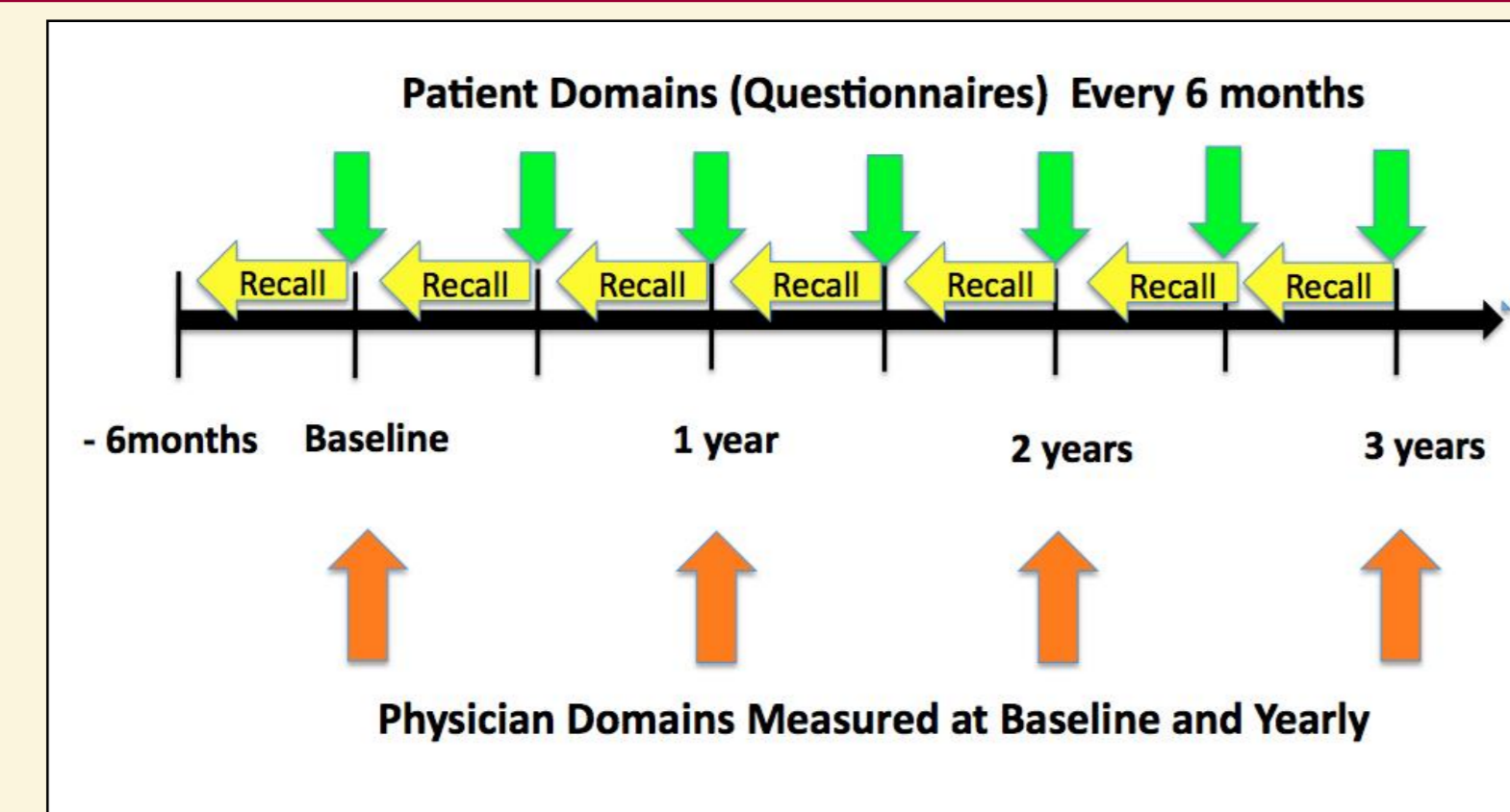
- The current treatment goal in patients with rheumatoid arthritis (RA) is disease remission to prevent pain, reduce joint damage and improve functional status.
- Although it is presumed that patients with RA in sustained remission have a more favorable outcome, data are lacking regarding time in remission and change in functional outcome.

## Aim

To describe change in functional outcome in relation to the number of annual examination in remission in RA patients.

## Methods

BRASS is a prospective, observational, single-center cohort of patients diagnosed with RA.



Annually collected disease activity variables were analyzed and the proportion of patients in a state of remission was determined by the following criteria:

DAS28-CRP <2.6 and <2.3, SDAI <3.3, CDAI <2.8, and 2011 ACR/EULAR remission criteria.

The primary outcomes were repeated measurements of the difference between baseline mdHAQ and follow-up mdHAQ (delta mdHAQ) for each yearly follow-up visit. General linear mixed models were used to examine the association between time in remission and change in functional status.

For a secondary analysis we examined the relationship between remission and the minimal clinical important improvement (MCII) in mdHAQ (set at -0.3). In the secondary analysis, subjects with mdHAQ<0.5 at baseline were excluded since improvement is unlikely.

## Results

**Table 1:** Patient and disease characteristics at entrance BRASS cohort of all 665 patients not in DAS28-CRP<2.6 at baseline remission

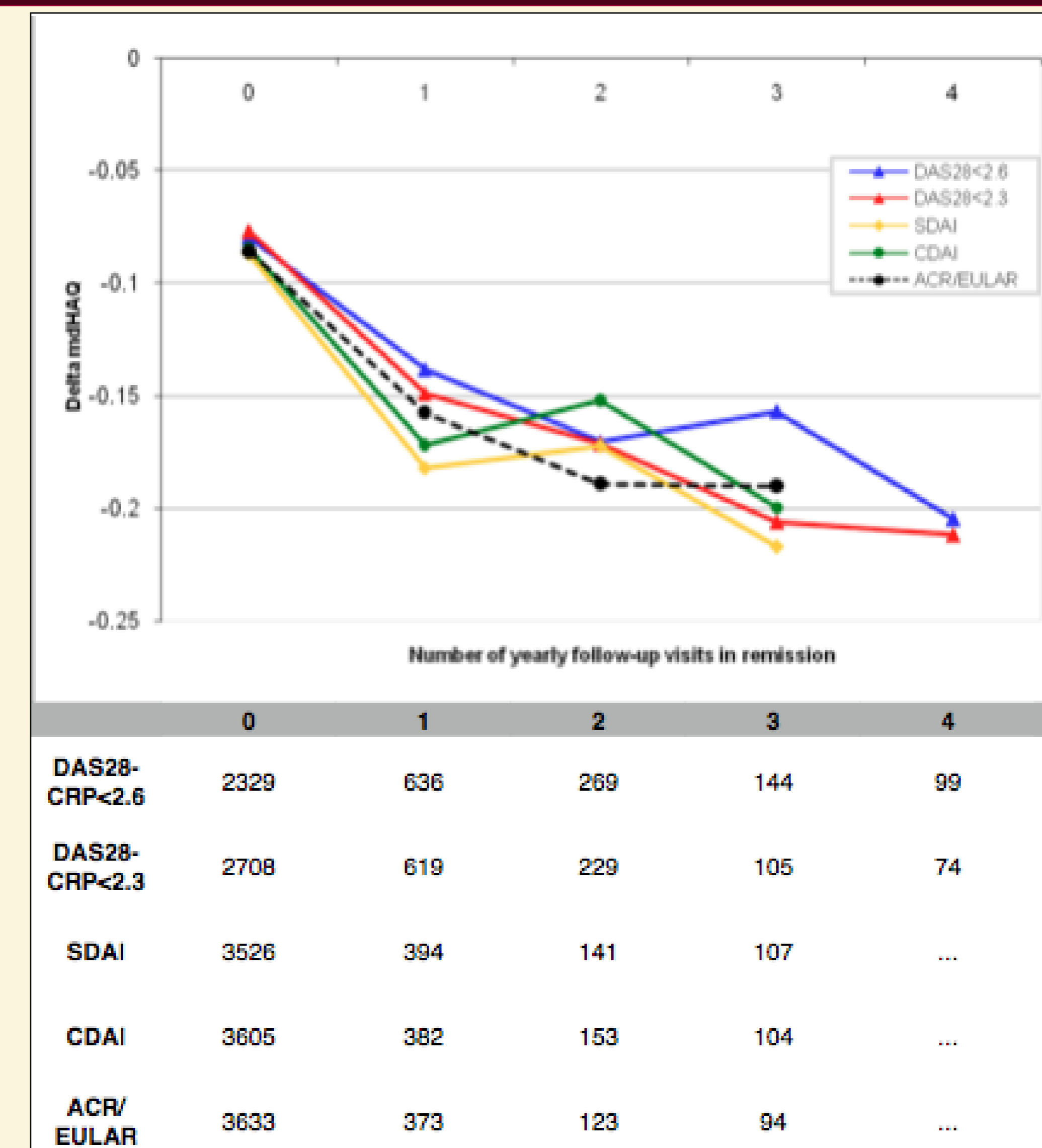
	N(%)	Median (25%-75%)		
Female	549 (83)	Age (years)	59	(45-67)
Positive anti-CCP or RF status	346 (72)	Disease duration (years)	12	(4-24)
Any stiffness	511 (77)	Stiffness duration (minutes)	30-60	(10-90)
Smoking	53 (9)	CRP (mg/L)	4.1	(1.5-11.3)
NSAIDs	404 (61)	Total follow-up time in BRASS	5.0	(3.8-6.0)
Corticosteroids	231 (35)			
MTX	311 (47)			
Non-biologic DMARDs (not MTX)	206 (31)			
Biologics	234 (35)			

## Results

**Figure 1;** This figure illustrates the change in mdHAQ with respect to follow-up visits in remission.

The change in mdHAQ is calculated as the difference between baseline and specified number of follow-up visits in remission. For example, patients in DAS28-CRP<2.6 remission ≥4 follow-up visits experienced a 0.21 improvement in mdHAQ per year compared with the improvement of 0.14 per year of patients with only 1 follow-up visit in remission.

The data at the bottom of the figure shows the number of follow-up visits with the specified number of visits in remission, allowing patients to contribute multiple observations. The ellipse (...) denotes the follow-up visits with <50 observations.

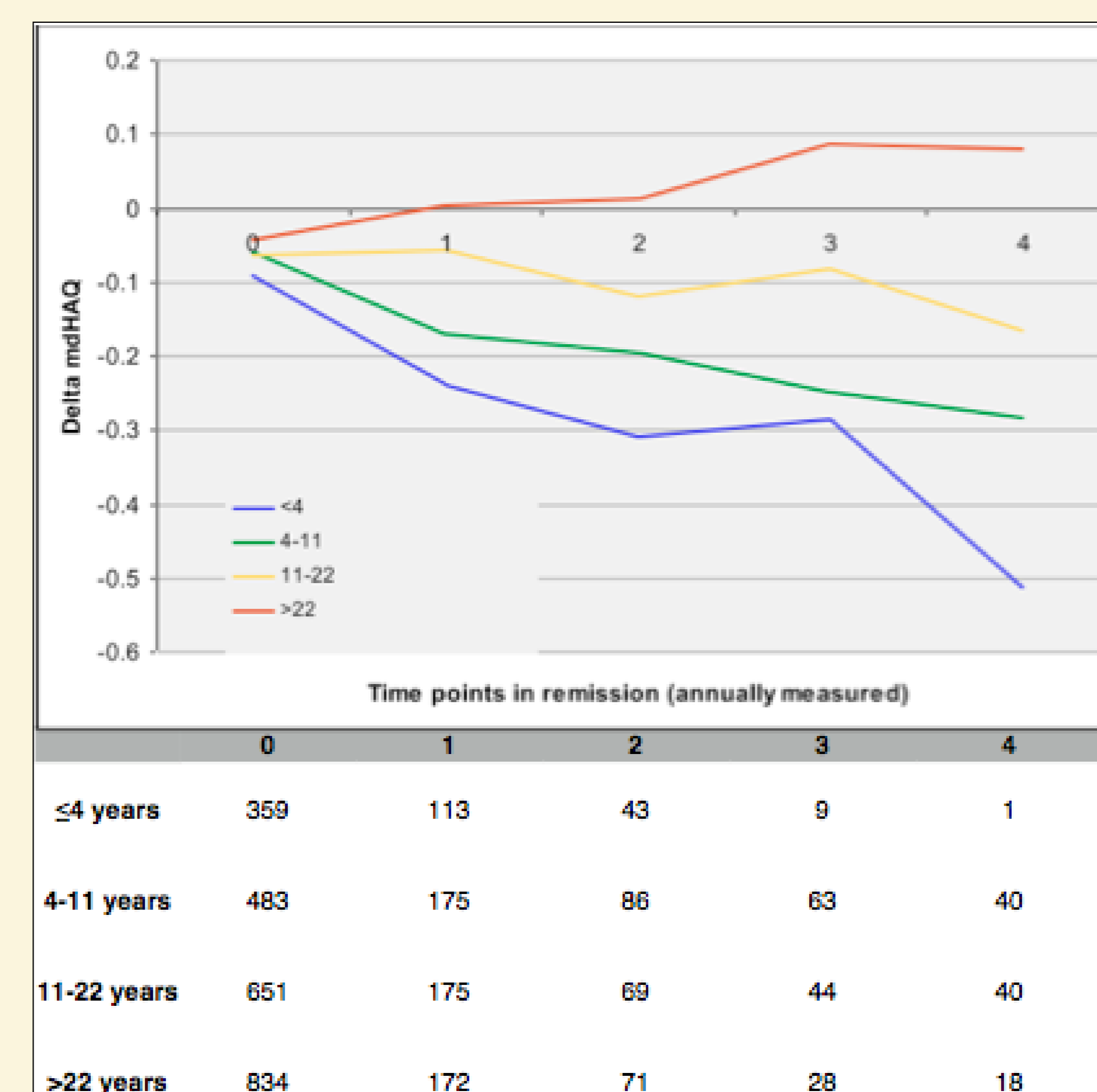


Patients in remission at ≥1 yearly follow-up examinations, regardless of the remission criteria, had a more favorable mdHAQ outcome compared to patients who never reached remission (DAS28-CRP<2.6, β= -0.30, p<0.001). More follow-up examinations in remission was associated with more favorable outcomes.

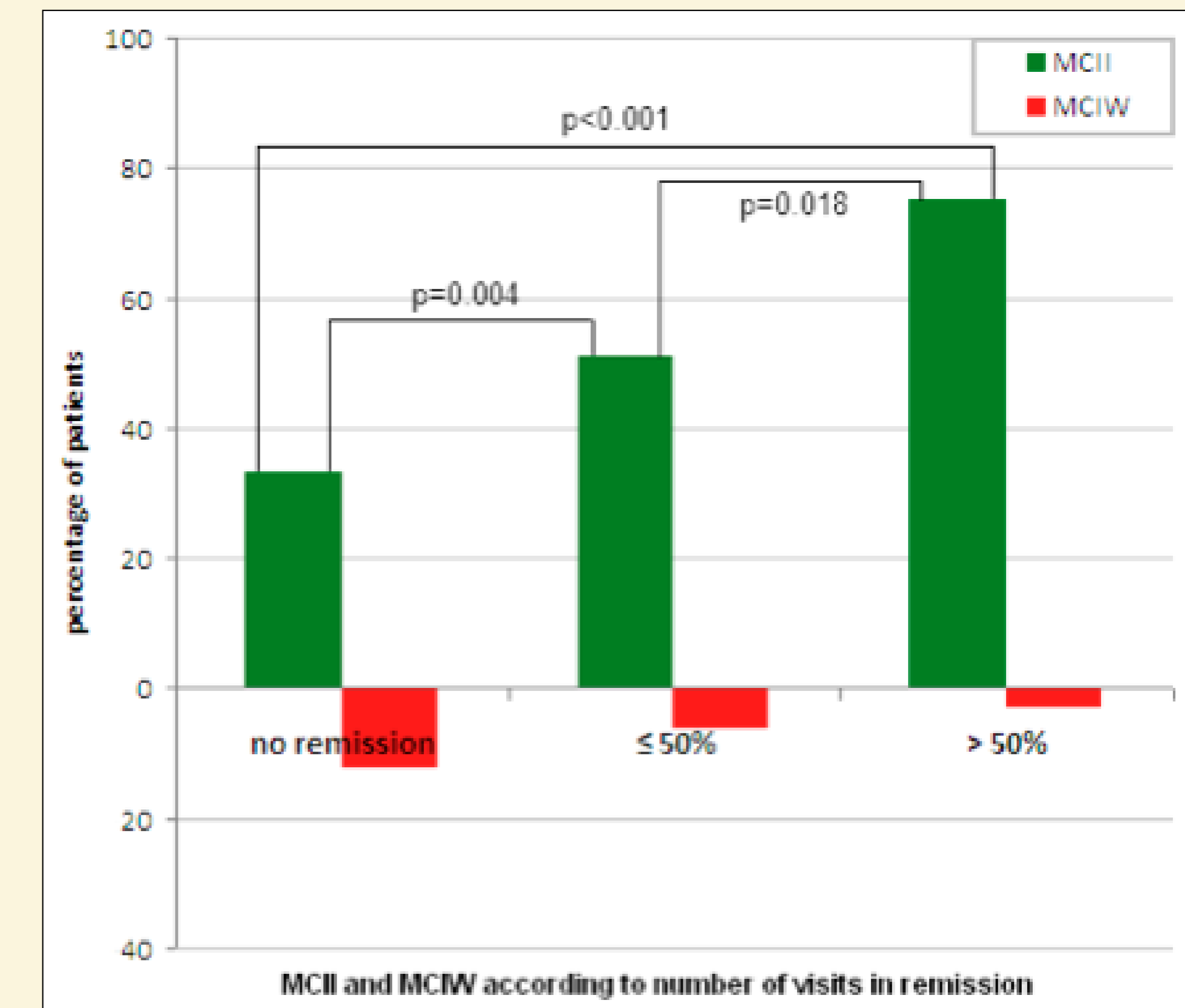
**Figure 2;** This figure demonstrates the change in mdHAQ stratified according to disease duration for remission defined according to DAS28-CRP<2.6.

As with Figure 1, it shows the number of follow-up visits in relation to the change in mdHAQ. The four curves show the data stratified according to quartile of disease duration.

The table shows the number of observations per follow-up visit, not the number of patients.



## Results



**Figure 3;** This figure shows percentage of patients meeting Minimal Clinical Important Difference (MCID) at 4 years follow-up (unadjusted analysis).

Groups were divided in patients with no visits in DAS28-CRP<2.6 remission, less than 50% of visits in remission and more than 50% of visits in remission.

There was a statistically significant difference between groups in reaching Minimal Clinical Important Improvement (MCII), but not Minimal Clinical Important Worsening (MCIW).

After 4 years follow-up, 75% of patients with >50% of time in DAS28-CRP<2.6 remission reached the MCII versus 51% (p=0.018) among patients in remission <50% of time versus 33% (p<0.001) among patients with no remission.

## Limitations

- Data from this study are from a single-center and most patients enter the cohort with longstanding disease.
- Although the BRASS cohort has very detailed information on all variables required to calculate remission, some missing values required imputation.

## Conclusions

- We found a strong relationship between time in remission and improvement in functional status, regardless of the remission definition applied.
- Patients with very long-term disease did not improve, which suggests that permanent damage may be adversely affecting their function and thus impacting their mdHAQ score.
- An important implication is that tight control to induce sustained remission is crucial for the best possible functional outcome in RA.

## Acknowledgements

Femke Prince acknowledges financial support from the Niels Stensen Foundation. BRASS is sponsored by Biogen IDEC, Inc. and Crescendo Bioscience.

