

# Predicting unfavorable long-term outcome in Juvenile Idiopathic Arthritis: Results from the Nordic cohort study

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**Objectives:** To develop prediction rules that may guide early treatment decisions based on baseline clinical predictors of long-term unfavorable outcome in juvenile idiopathic arthritis (JIA).

**Methods:** In the Nordic JIA cohort we assessed baseline disease characteristics as predictors of the following outcomes eight years after disease onset. Non-remission off medication according to Wallace criteria, functional disability assessed by Childhood Health Assessment Questionnaire (CHAQ) and Physical Summary Score (PhS) of the Child Health Questionnaire, and articular damage assessed by the Juvenile Arthritis Damage Index-Articular (JADI-A). Multivariable models were constructed, and cross-validations were performed by repeated partitioning of the cohort into training sets for developing prediction models and validation sets to test predictive ability.

**Results:** Of the 427 children 246 (57.6%) were not in remission off medication at the final study visit. Functional disability was present in 113/352 (32.1%) assessed by CHAQ, 40/208 (19.2%) by PhS, and joint damage was found in 30/227 (13.2%). Model performance was acceptable for making predictions of long-term outcome. In validation sets, the area under the curves (AUCs) in the receiver operating characteristics (ROCs) were 0.77 (IQR 0.73-0.83) for non-remission off medication, 0.70 (IQR 0.64-0.77) for functional disability assessed by CHAQ, 0.70 (IQR 0.61-0.77) for functional disability by PhS, and 0.81 (IQR 0.75-0.88) for joint damage using JADI-A.

**Conclusions:** The feasibility of making long-term predictions of JIA outcome based on early clinical assessment is demonstrated. The prediction models have acceptable precision and requires only easily available baseline variables. Further testing in other cohorts are warranted.