the imaging gold standard to assess intestinal disease activity and to
detect complications in patients with IBD. Only few studies have been
conducted on adult patients with IBD in order to define the role of this
technique in assessing sacroiliitis, while no data are available on pediatric
patients.

**Objectives:** To study the prevalence of inflammatory sacroiliitis on MRI
performed for intestinal investigation in an IBD pediatric population.

**Methods:** This is a retrospective study conducted on patients suffering
from IBD followed in our gastroenterology department between 2010 and
2018 whose entero-RM (1.5 or 3 Tesla, Philips depending from year of
scanning) were blindly and independently scored by two readers experi-
enced in pediatric musculoskeletal imaging. Each sacroiliac joint was divi-
ded into 4 quadrants. Signs of sacroiliitis were identified according to the
ASAS criteria, with a particular attention to the presence of bone marrow
edema (using T2 weighted sequences with fat suppression), diffusion
restriction in DWI sequences (Diffusion Weighted Imaging) or DWIBS (Dif-
fusion Weighted Imaging with Background Suppression) and post-contras-
tographic uptake in dynamic acquisitions. Demographics, IBD characteristics, clinical, radiological, and laboratory data were recorded and a
dedicated Excel database was constructed. Results were elabor-
ated using descriptive statistics.

**Results:** 34 patients (10 F, 24 M, age at scanning range 5-20 yrs,
median 15) were included in the study, for a total of 59 entero-MRI eval-
uated (some patients were subjected to more than one scan). Two out of
34 patients were affected by Ulcerative Colitis, 32 by Crohn disease.
Joint examination resulted negative in all patients, and none complained
of arthritic symptoms including back pain.

In 5 IBD patients (4 CD, 1 UC) a monolateral slight degree of sacroiliitis
(grade 1) was radiologically identified. They were all males, without clini-
cal-laboratory-radiological inflammatory signs of intestinal activity, with
the exception of a patient who presented signs of intestinal and sacroiliac
inflammation at his first entero-MRI, while 18 months later, at his MRI
control under pharmacological treatment, signs of sacroiliac were still
present in the absence of intestinal signs of inflammation.

**Conclusion:** Asymptomatic sacroiliitis was observed in about 15% of our
IBD patients. Sacroiliac involvement therefore can be underdiagnosed in
these patients. Entero-MRI with specific sequences could be a good tool
to detect early signs of sacroiliac inflammation.

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**VALIDATION OF NORDIC JUVENILE IDIOPATHIC ARTHRITIS CLINICAL PREDICTION MODELS IN A CANADIAN COHORT**

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**Background:** Validation of clinical prediction tools for juvenile idiopathic arthritis (JIA) in populations different than those in which they were first
developed is essential to understand their applicability across healthcare
settings.

**Objectives:** To determine if clinical prediction tools to predict 1) non-
achievement of remission off medication and 2) functional disability, devel-
oped in the Nordic cohort1 can be directly applied to JIA patients in the
Canadian Research in Arthritis in Canadian Children emphasizing Out-
comes (ReACCh-Out) cohort; and to assess performance of the prediction
tools if model parameters are fine-tuned to the Canadian cohort.

**Methods:** Since the Nordic models were developed to predict outcomes 8
years after disease onset but the follow-up of the ReACCh-Out cohort
was shorter, we chose to cross-validate the tools in a subpopulation of
513 subjects at the 3 years follow-up (3.75 years after onset). Attainment
of remission off medications was determined by a panel of 3 pediatric
rheumatologists as previously described2 and functional disability was
defined as a Childhood Health Assessment Questionnaire Disability Index
(CHAQ)>0. Missing data was handled with multiple imputation by chained
equations and prediction ability was assessed with c-index and Receiver
Operator Characteristic (ROC) curves. The Nordic models were first evalu-
ated exactly as published on the entire Canadian cohort. Then we fine-
tuned the model coefficients using repeated runs of cross-validation in
the Canadian cohort. This way, fine-tuned models were tested in patients
not included in the fine-tuning process while also minimizing the standard
error of prediction.

**Results:** In total, 408 of 506 evaluable patients (81%) were not on remis-
sion and 137 of 361 evaluable patients (38%) had functional disability at
the 3-year visit. The Nordic model for predicting non-achievement of
remission had a c-index of 0.68 (95%CI 0.62-0.74) when directly applied,
and a c-index of 0.74 (0.70-0.78) when it was fine-tuned for the Cana-
dian population. The latter values are comparable to those reported in
the Nordic cohort (median AUC 0.78, IQR 0.72-0.82). Table 1 shows
fine-tuned coefficient values along-side the original values. The Nordic
model for predicting functional disability had a c-index of 0.57 (0.50-0.63)
when directly applied, and fine-tuning failed to improve its performance, a
c-index of 0.53 (0.43-0.63). Figure 1 shows ROC curves for fine-tuned
models in the multiple splits.

**Conclusion:** After fine-tuning of coefficients, the Nordic model for predic-
tion of non-achievement of remission had similar prediction ability in
Canadian patients with JIA. We could not confirm the validity of the Nor-
dic model for prediction of functional disability in Canadian patients.

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**Table 1. Prediction models for non-remission off medications 3.75 years after JIA onset**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Original Nordic</th>
<th>Fine-tuned Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.58 (SE 0.44)</td>
<td>0.26</td>
</tr>
<tr>
<td>Cumulative active joint count</td>
<td>0.04 (SE 0.05)</td>
<td>0.13</td>
</tr>
<tr>
<td>ESR in mm/h</td>
<td>0.03 (SE 0.02)</td>
<td>-0.01</td>
</tr>
<tr>
<td>CRP in mg/dL</td>
<td>-0.07 (SE 0.09)</td>
<td>0.12</td>
</tr>
<tr>
<td>Morning stiffness &gt; 15 min</td>
<td>1.16 (SE 0.45)</td>
<td>0.36</td>
</tr>
<tr>
<td>Physician global assessment</td>
<td>0.16 (SE 0.46)</td>
<td>0.15</td>
</tr>
<tr>
<td>ANA positive</td>
<td>1.25 (SE 0.50)</td>
<td>-0.02</td>
</tr>
<tr>
<td>HLA-B27 positive</td>
<td>1.37 (SE 0.54)</td>
<td>0.84</td>
</tr>
<tr>
<td>Ankle joint arthritis</td>
<td>1.10 (SE 0.49)</td>
<td>0.67</td>
</tr>
</tbody>
</table>

SE= Standard Error

**Figure 1. ROC curves for the multiple fine-tuning splits**

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