(15.7%) patients had a revised diagnosis at 1 year follow-up, and 7 (4%) vs. 12 (11%) were re-referred, respectively. For demographics, clinical, US, and laboratory characteristics see Table 1 where median values and inter-quartile range (IQR) for all parameters.

**Conclusion:** Adding routine US examination to the first clinical visit reduces time to diagnosis markedly, lowers the number of clinical visits needed thereby reducing the time patients spent away from work, and freeing time for visits in the FTC to be used for other patients.

### Table 1.

Comparative cohort | US cohort | P
--- | --- | ---
(n=109) | (n=163) |
**Age** | Median [IQR] | 55.5 [42;69] | 53 [40;67] | 0.44
Mean ± SD | 54.7 ±16.1 | 53.2 ±17.2 |
**Time to diagnosis days** | Median [IQR] | 12.4 [10;42] | 0 [0;25] | <0.01
Mean ± SD | 30.6 ±32.2 | 12.4 ±17.3 |
**Visits in FTC** | Median [IQR] | 3 [2;3] | 2 [1;2] | <0.01
Mean ± SD | 2.8 ±1.1 | 2.1 ±1.3 |
**US assessments in the FTC** | Median [IQR] | 1 [0;1] | 1 [1;1] | <0.01
Mean ± SD | 0.8 ±0.7 | 1.1 ±0.27 |
**Swollen joint count (0-28)** | Median [IQR] | 0 [0;1] | 0 [0;2] | 0.19
Mean ± SD | 1.1 ±2.1 | 1.8 ±3.1 |
**Tender joint count (0-28)** | Median [IQR] | 1 [0;5] | 1 [0;5] | 0.06
Mean ± SD | 3.1 ±3.7 | 3.1 ±5.2 |
**Grey-scale US sum** | Median [IQR] | 1 [0;3] | 4 [1;8] | <0.01.
**score (0-7)** | Mean ± SD | 2.8 ±5.9 | 3.3 ±7.9 |
**Colour Doppler US sum** | Median [IQR] | 0 [0;0] | 0 [0;2] | <0.01
Mean ± SD | 1.2 ±4.0 | 2.8 ±5.9 |
**CRP (mg/l)** | Median [IQR] | 4 [1;16.5] | 3 [17;52;12] | 0.42
Mean ± SD | 13.4 ±23.1 | 9.6 ±14.6 |

Note: For clinical visits, CRP, US sum scores, tender and swollen joints counts the lower limit (LL) is always 0.

P: p-value for Mann-Whitney U test for comparing independent data; *US sum score for both hands.*

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**POS0261**

**DIAGNOSTIC PERFORMANCE AND CLINICAL UTILITY OF TWO REFERRAL RULES FOR INFLAMMATORY ARTHRITIS**

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**Background:** The Rotterdam Early Arthritis Cohort (REACH) rule [1] and Clinical Arthritis Rule (CARE) [2] are both evidence-based and easy-to-use methods developed to identify the presence of inflammatory arthritis (IA) in patients suspected by their general practitioner (GP). However, the clinical utility of both models in daily clinical practice in an independent primary care setting has not yet been established. While developed for recognizing IA, we believe that it is also important that the broader spectrum of inflammatory rheumatic diseases (IRDs) is correctly classified from primary care, to facilitate appropriate referral towards outpatient rheumatology clinics.

**Objectives:** The primary objective was to determine the diagnostic performance and clinical utility of the REACH and CARE referral rules in identifying IA in an independent population of unselected suspected patients from primary care. Although not specifically developed to recognize the entire spectrum of IRDs, the CARE shows a good performance in doing so. When evaluating clinical utility, we see that both rules have a net benefit in recognizing IA as well as IRDs compared to usual care, however the CARE shows superiority over the REACH. By using the CARE, over half of all suspected patients can be withheld from expensive outpatient rheumatology care, implied by the high specificity of 70%. These results support the idea that incorporating these easy-to-use methods into primary care could lead to providing patients the right care at the right place and improving value based health care.

**REFERENCES:**


Disclosure of Interests: None declared

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**POS0262**

**IDENTIFYING EROSIVE DISEASE FROM RADIOLOGY REPORTS OF VETERANS WITH INFLAMMATORY ARTHRITIS USING NATURAL LANGUAGE PROCESSING**

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**Background:** The presence of erosive disease influences diagnosis, management, and prognosis in inflammatory arthritis (IA). Research of IA in large data sets is limited by a lack of methods for identifying erosions.

**Objectives:** To develop methods for identifying articular erosions in radiology reports from veterans with IA.

**Methods:** Included veterans had ≥2 ICD codes for ankylosing spondylitis (AS), psoriatic arthritis (PsA), rheumatoid arthritis (RA) between 2005–2019, in Veterans Affairs Corporate Data Warehouse. Chart review & annotation of radiology notes produced the reference standard, & identified erosion terms that informed classification rule development. A rule-based natural language processing (NLP) model was created & revised in training snippets. The NLP method was validated in an independent reference sample of IA patients at the snippet & patient levels.

Conclusion: Both the REACH and CARE model showed a good diagnostic performance for detecting IA in an independent population of unselected suspected patients from primary care. Although not specifically developed to recognize the entire spectrum of IRDs, the CARE shows a good performance in doing so. When evaluating clinical utility, we see that both rules have a net benefit in recognizing IA as well as IRDs compared to usual care, however the CARE shows superiority over the REACH. By using the CARE, over half of all suspected patients can be withheld from expensive outpatient rheumatology care, implied by the high specificity of 70%. These results support the idea that incorporating these easy-to-use methods into primary care could lead to providing patients the right care at the right place and improving value based health care.
Method development

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Number &amp; example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiology notes</td>
<td>a. Select note titles potentially relevant to IA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Extract notes with titles potentially related to IA</td>
</tr>
<tr>
<td>2</td>
<td>Possible meaningful terms</td>
<td>a. Collect list of root terms that may indicate erosion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Query radiology notes for root term variations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Select possible terms (i.e. erosion, erode)</td>
</tr>
<tr>
<td>3</td>
<td>Annotation</td>
<td>a. Extract snippets* containing possible meaningful terms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Classify snippets according to:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Meaningful term, 2) Relevance to joint, 3) Attribution to IA, 4) Affirmation testing</td>
</tr>
<tr>
<td>4</td>
<td>Rule development</td>
<td>a. Identify meaningful terms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Exclude erosive processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Exclude articular erosive processes not attributed to IA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Classify as affirmed/negated (erosion present/absent)</td>
</tr>
<tr>
<td>5</td>
<td>NLP training</td>
<td>Design &amp; revise NLP model until accuracy ±90%</td>
</tr>
<tr>
<td>6</td>
<td>NLP testing</td>
<td>Test NLP model</td>
</tr>
<tr>
<td>7</td>
<td>Pt classification</td>
<td>a. Develop rules for classifying pts with discordant snippets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Build reference sample (pts classified as erosive or non-erosive via chart review)</td>
</tr>
<tr>
<td>8</td>
<td>NLP validation</td>
<td>Validate NLP model in reference sample at snippet level</td>
</tr>
<tr>
<td>9</td>
<td>Method validation</td>
<td>Validate methods (NLP+pt classification) at pt level</td>
</tr>
</tbody>
</table>

Results: In 168,667 veterans with IA, the mean age was 63.1 & 90.3% were male. Method development involved radiology note & erosion term selection, rule development, NLP model building, & method validation. The NLP model accuracy was 94.6% at the snippet level & 90.0% at the patient level, for all IA patients.

Conclusion: The methods accurately identify erosions from radiology reports of veterans with IA. They may facilitate a broad range of research involving cohort identification & disease severity stratification.

REFERENCES:

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POS0263 CLINICAL RELEVANCE OF DFS70 ANTIBODIES – A MULTICENTRE STUDY

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Background: Anti-Dense Fine Speckled 70 (DFS70), also known as lens epithelium-derived growth factor (LEDGF) is a common finding when ANA are positive (1.7% in the whole population and 4.6% in the ANA-positive samples). DFS70 antibodies are rare in SARD, especially in the absence of clinical evidence or concomitant anti-extractable nuclear antigen (ENA) antibodies.

Objectives: Our study aimed to understand the meaning of anti-DFS70 antibodies and characterize the clinical and serological features of patients with anti-DFS70 positivity.

Methods: We performed a retrospective observational study of consecutive patients followed up at 9 Portuguese Rheumatology Centres observed from January 2018 until April of 2020 with anti-DFS70 antibodies positivity. Descriptive statistics were presented as mean ± standard deviation or as median and interquartile range if non-normally distributed. Sensitivity and specificity were calculated. Positive and negative predictive values were calculated between patients with and without SARD-specific autoantibodies. Associations between DFS70 with other disease-specific antibody and clinical manifestations were tested using Chi-Square or Fischer’s Exact Test, as appropriate.

Results: 120 patients were included, 99 (82.5%) were female with a mean age of 47.8 ± 18.2 years. 96.7% of the patients had ANA titters ≥1:160 (32.5% 1:160; 38.3% 1:320; 16.7% 1:640; 7.5% 1:1280 and 1.7% 1:2560) and 3.3% ≤1:160. The main clinical reasons for ANA determination was arthralgia (44.2%), arthritis (11.6%) and Raynaud Phenomenon (RP) (10%). The main analytical reason (7.5%) was an elevation of inflammatory parameters (C-Reactive Protein (CRP) or Erythrocyte Sedimentation Rate (ESR), leukopenia (3.3%) and anemia (2.5%). Concerning the immunology: 58.3% of patients didn’t have an associated antibody; 9.2% had a positive rheumatoid factor; 5.8% positive ds-DNA; 4.2% histone and 3.3% SS-A. 26 patients had more than one associated antibody. 30 (25%) patients were healthy; 43 (35.8%) patients had Systemic Autoimmune Rheumatic Diseases (SARD) and 47 patients (39.2%) had other diseases (non-SARD). Among patients with a SARD, 16 patients presented an isolated positive anti-DFS70 and 27 patients had other antibodies associated. There was found a positive association with non-SARD and arthralgia (p=0.001) and SARD with arthritis (p<0.001). There was an association with SARD and raised inflammatory parameters (p=0.045), but no association was found with anemia (p=1.000) or leukopenia (p=0.131). Comparative analysis is described in Table 1, with chi-square or Fischer tests, as appropriate.

The sensitivity of isolated DFS70 was 70.1% and specificity was 62.8%. The positive predictive value was 77.1% and the negative predictive value was 54.0%.