G. Health hazards of smoking and alcohol use
H. Harms of discontinuing treatment when they felt well

Results: A total of 450 patients included spondyloarthritis 150(34%), rheumatoid arthritis 200(45%), psoriatic arthritis 45(10%), and others 25(5.5%). The following observations were made:
1. Self-reported adherence to medication was in 250 (55%) patients; 200(45%) patient were non-adherent to treatment
2. 382/450 (85%) patients believed that while on DMARDs they cannot contemplate pregnancy.
3. 322/450(71%) patients felt that more expensive medicines e.g. bDMARDs needed among health care providers. We should encourage patients to express their views about medicines as well as disease in order to optimize and personalize the information process. This can stimulate concordance and adherence to medication and follow up. These myths are deeply rooted in our society, single sitting counseling is not enough, and reinforcement is needed.

Conclusion: Increased awareness of the patient’s beliefs about medicines is needed among health care providers. We should encourage patients to express their views about medicines as well as disease in order to optimize and personalize the information process. This can stimulate concordance and adherence to medication and follow up. These myths are deeply rooted in our society, single sitting counseling is not enough, and reinforcement is needed.

Conflicts of Interest: no
Disclosure of Interests: None declared
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Table 1. The T2T results at baseline and in final follow up.

<table>
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<th>Baseline/Final</th>
<th>n</th>
<th>%</th>
<th>x &lt;= 1.3</th>
<th>x &gt; 1.3</th>
<th>x &lt;= 2.1</th>
<th>x &gt; 2.1</th>
<th>x &lt;= 3.5</th>
<th>x &gt; 3.5</th>
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<tbody>
<tr>
<td>follow-up</td>
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The rate of T2T achievers were 27.95% (315/1,127) at baseline, and improved significantly to 41.08% (463/1,127) after 6 months follow up, p<0.01. Among T2T achievers at baseline, 65.40% (206/315) maintained T2T, 34.60% (109/315) relapsed. Of patients who didn’t achieve T2T at baseline, only 31.65% (257/812) achieved T2T after 6 months follow up.

The impact of the online interaction between patients and physicians and the frequency of self-assessment for ASAS on T2T has been analyzed. Compared with 544 patients who didn’t interact online with their physicians and self-assessed less than 3times, 104 patients with online interaction and monthly assessments achieved significant higher improvement rate of T2T (9.19% vs 23.08%, p<0.01). The more frequent of the self-assessments being performed by patients, the higher improvement of T2T rate will be. The improvement of T2T rate(%) was positively correlated with times of self-assessment for ASAS(x) independently. The regression equation as “y = 0.0304x + 0.0521”, r = 0.9107, p<0.01 (Figure 1).

Conclusion: Significant improvement was observed under applying SSDM through empowering AS patients. After proactive disease management via SSDM for more than 6 months, patients with ASAS<=1.3 score at baseline had a significantly higher retention rate of inactive disease activity. The patients who performed more frequent self-assessments had lower probability of relapse and higher rate of T2T. Online interaction between patients and physicians contributed to the improvement rate of T2T. SSDM is a valuable tool for long term follow up through empowering patients.

Acknowledgements: SSDM was developed by Shanghai Gothic Internet Technology Co., Ltd.

Disclosure of Interests: None declared
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Figure 1. The correlation between the improvement of T2T rate(s) and the times of self-assessment for ASAS(x).
Background: Flare, relapse from status of treat-to-target (T2T, DAS28=c<3.2), is hard predicted. We try to make it predictable by applying machine learning to a database from smart system of disease management (SSDM). SSDM is an interactive mobile disease management APPs.

Objectives: To develop and validate machine learning algorithms for flare prediction in RA.

Methods: Patients were trained using SSDM and input their data, including demographic, comorbidities (COMBs), lab test, medications and monthly self-assessments, including DAS28, HAQ, SF-36, Hospital Anxiety and Depression Scale (HADS). The data was uploaded to cloud and synchronized to the mobile of authorized rheumatologists. The COMBs were by ICD-9, and medications were listed as cDMARDs, Bio (BioDMARDs), NSAIDs, Steroid, FS (food supplements), MC (medicine for COMBs), TCM (Traditional Chinese Medicine), and combinations.

Results: From Jan of 2015 to Jan of 2020, 8811 RA patients, 85% female and 15% male, used to reach T2T. 4556 were flare-free and 4255 suffering at least one flare. The average 160 attributes were extracted from each flare-free patient at time of reaching T2T, and each flare patients at time of 3 months before the flare. Patients were randomly assigned as model setup (training) group (70%) and validation (testing) group30%

For training, data were processed using Python with statistical analyses in R. In R, random forests were implemented. Logistic regression via glm in base R. The random forest comprises a set of decision trees. "Splits" in the decision trees reflect binary (i.e., yes/no) respect to attributes. Bootstraping was used to assess, quantify, and adjust for model optimism. Model performance was evaluated using AUC, precision and recall metrics. Brier scores for accuracy of probabilistic predictions ranged from 0 to 1 (0 is perfect discrimination).

The testing showed model performance for prediction windows are 0.78 for AUC (95% CI), 0.71 for Recall (sensitivity), 0.195 for Brier score, and 0.68 for precision (true positive 893, false positive 417, false negative 367, true negative 966).

Based on weighing in the random forest, the top 10 pro-flare attributes were CRR, swollen joint count (SJC), tender joint count (TJC), HAQ, DAS28, morning stiffness, gout, MCTD, OA, duration; while top 10 anti-flare attributes were cDMARDs+Bio, cDMARDs+steroid+NSAIDs, stable on HAQ, on morning stiffness, on TJC, on ESR, income at 100-200k (Fig.1). The top weighing COMBs for pro-flaring were gout (0.81), MRD (0.75), OA (0.56), AS (0.48). The monotherapies with either Bio or NSAIDs, or steroid, or TCM was pro-flare; while with cDMARD was anti-flare (-0.21).

Conclusion: The attempt to develop a machine learning algorithm for RA flare prediction is successful. The discrimination was acceptable. The attributes of both pro-flare and anti-flare are identified, which may inspire the proactive intervention.

Acknowledgments: SSDM was developed by Shanghai Gothic Internet Technology Co., Ltd.

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Background: Specialist services are heavily reliant on a consultant reviewing a patient and discussing management options. However this can significantly delay treatment pathway owing to lack of sufficient consultant appointments. Clinical nurse specialists (CNSs) are an integral part of a multidisciplinary team employed to provide effective care for the diverse needs of patients with chronic conditions such as osteoporosis.

Objectives: We designed an innovative proof-of-concept osteoporosis service with patients only consulting a metabolic bone CNS and a consultant providing remote oversight. The aim of the project was to improve the efficiency of the service by eliminating consultant appointments and reducing unnecessary hospital visits whilst continuing to deliver a high-quality and safe service.

Methods: A new pathway was implemented where a consultant rheumatologist and a CNS virtually triaged post menopausal women over the age of 65 into the service. A dedicated proforma provided the template for the CNS to undertake new patient telephone consultation. Relevant investigations were requested during the telephone clinic and treatment related information was despatched to help with shared decision making. All patients were then reviewed in a consultant-CNS virtual MDT. Appropriate parental treatment option was agreed and confirmed to each individual. The CNS worked through a safety checklist and provided further advice and support to the patient as necessary. Using the database, we compared the timelines for patient journey to conventional pathway, obtained the number of consultant follow-up appointments saved by implementing this service and calculated total savings.

Disclosure of Interests: Julie Begum: None declared, Joanne Fourmy: None declared, Muhammad Khurram Nisar Grant/research support from: Muhammad Khurram Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Celgene, Novartis and UCB. Consultant of: Muhammad Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Celgene, Novartis and UCB. Speakers bureau: Muhammad Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Celgene, Novartis and UCB.

Objectives: To estimate the direct cost associated to SLE in contributory healthcare scheme in Colombia. To estimate prevalence and characterize SLE population affiliated in the contributory healthcare scheme in Colombia. To estimate the direct healthcare cost in patients with and without SLE and the effect of being diagnosed with SLE in the total direct cost during a period of two years.

Background: Treatment burden of Systemic Lupus Erythematosus (SLE) is considered high. There are no studies in Colombia that includes the estimation of an incremental cost associated to SLE.

Objectives: To estimate the direct cost associated to SLE in contributory healthcare scheme in Colombia. To estimate prevalence and characterize SLE population affiliated in the contributory healthcare scheme in Colombia. To estimate the direct healthcare cost in patients with and without SLE and the effect of being diagnosed with SLE in the total direct cost during a period of two years.