Ann Rheum Dis 000 (2026) 1–6

Contents lists available at ScienceDirect

Annals of the Rheumatic Diseases

journal homepage: https://www.sciencedirect.com/journal/annals-of-the-rheumatic-diseases

Viewpoint

The positive perspective paradigm: proposal of a model to mitigate the impact of chronic inflammatory arthritis through comprehensive and early intervention

Michaël Doumen[1,2,*], Laure Gossec[3,4], Mwidimi Ndosi[5], Peter C. Taylor[6], Marc Thelissen[7], René Westhovens[1,2], Patrick Verschueren[1,2]

[1] *Department of Development and Regeneration, KU Leuven, Leuven, Belgium*
[2] *Rheumatology, University Hospitals Leuven, Leuven, Belgium*
[3] *INSERM, Institut Pierre Louis d'Epidémiologie et de Santé Publique, Team Pepites, Sorbonne Université, Paris, France*
[4] *Rheumatology, AP-HP, Pitié-Salpêtrière Hospital, Paris, France*
[5] *School of Health and Social Wellbeing, University of the West of England, Bristol, UK*
[6] *Botnar Research Centre, Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Headington, Oxford, UK*
[7] *Patient Research Partner, ReumaNet VZW, Zaventem, Belgium*

ARTICLE INFO

Article history:
Received 2 July 2025
Received in revised form 23 December 2025
Accepted 2 January 2026

ABSTRACT

Many people with chronic inflammatory arthritis (IA) experience significant disease impact, even with well-controlled disease activity. For rheumatoid arthritis (RA), 20% to 50% of patients in remission still report pain, disability, fatigue, or negative illness perceptions, leading to poorer long-term outcomes. However, evidence shows that long-term patient-reported outcomes improve when remission is achieved early, and that this is at least partly explained by a positive influence on psychological factors like illness perceptions. Based on these insights and a narrative literature review, we propose a conceptual framework to support clinical practice and further research in the prevention of the long-term impact of chronic IA, using the example of RA. Building on Leventhal's Model of Self-Regulation, the 'positive perspective paradigm' postulates that the early stages of a chronic inflammatory disease present an optimal time window where appropriate intervention might positively influence one's health perspective, in turn contributing to reduced long-term disease impact. Through the model, we discuss how pharmacological control of inflammation can be integrated with patient education and psychosocial support, emphasising early intervention and positive communication whenever possible. We hypothesise that these interventions have both direct effects on the long-term impact of chronic IA and indirect effects through a positive influence on the patient's health perspective. Fostering a positive perspective is thus the focal point of the model. By proposing this paradigm, we aim to provide a foundation for further validation in independent cohorts or other chronic inflammatory conditions, with the ultimate goal of implementing it to reduce long-term disease impact and promote well-being.

*Correspondence to Dr. Michaël Doumen, Rheumatology, KU Leuven University Hospitals, Leuven, Belgium.
E-mail address: michael.doumen@uzleuven.be (M. Doumen).
Handling editor Josef S. Smolen.

https://doi.org/10.1016/j.ard.2026.01.001

INTRODUCTION

Major advances have been made in the management of chronic inflammatory arthritis (IA). However, this does not always translate into less disease impact from the patient's perspective. For rheumatoid arthritis (RA), which we will use as a primary example, 20% to 50% of patients in remission experience persisting pain and disability, and fatigue appears even more common [1–3]. Similarly, 1-in-5 patients with RA fail to achieve (Boolean) remission because of an elevated patient global assessment, mainly driven by residual symptoms [4]. In the Care in early RA (CareRA) strategy trial, 20% of patients in remission still experienced negative illness perceptions and suboptimal psychosocial well-being [5], and this group of patients was subsequently less likely to sustain remission. Finally, less than 1-in-4 patients in CareRA achieved a sustained improvement in fatigue despite appropriate disease-modifying antirheumatic drugs (DMARDs) [6].

All of the preceding findings are particularly relevant because the first priority for people suffering from RA is symptom relief and a return to normal life [7]. The question is thus what can be done to prevent persistent disease impact in IA. We start from a narrative literature review to propose a theoretical model, with strong patient involvement, that could support this goal in clinical practice and research. The search was conducted in PubMed on 28 April 2025, based on free-text search terms and—when available—MeSH terms related to 'inflammatory arthritis', 'rheumatoid arthritis', 'remission', 'illness perceptions', 'patient-reported outcomes', and 'disease impact'. With our proposed model, the 'positive perspective paradigm', we aim to provide a foundation for clinical implementation and validation in independent cohorts or other chronic inflammatory conditions.

Adjustment to chronic disease

Even today, RA remains a chronic disease impacting many aspects of life. It requires individuals to adjust to a 'new normal', including the disease's physical, emotional, and social impact. This process has been conceptualised in Leventhal's Model of Self-Regulation [8]. This model postulates that when confronted with a health threat, such as a chronic illness, people develop cognitive and emotional representations about this illness, so-called illness perceptions, which influence how they cope with it. Coping is often defined as one's intentional efforts to minimise the negative impact of the illness on their well-being [9]. Adjustment according to Leventhal is iterative, with illness perceptions influenced by one's personal and sociocultural background, by the evolution over time and by the perceived impact of coping procedures. For example, early after diagnosis, patients with chronic IA are already more likely to report negative illness perceptions when they are younger, have lower socioeconomic status, or report a higher symptom burden [10]. However, these illness perceptions are not static personality traits, but can evolve over time [11]. In addition to pharmacological management, these insights are crucial to achieving well-being, given the influence of illness perceptions, psychological factors, and coping procedures on patient outcomes [12–14]. How one can prevent persistent disease impact, thus, partly depends on how we can positively influence patients' adjustment to their diagnosis.

Early control of inflammation

When managing RA, it is well established that prompt initiation of DMARDs is key [15]. The critical time in early disease when its progression might be more effectively modified is known as the 'window of opportunity'. However, recent evidence suggests that within this time window, rather than merely initiating treatment, we should also strive for a clinically meaningful treatment response. Table [5,6,11,16–24] provides a nonexhaustive overview of relevant studies that illustrate this concept. Early remission has long been associated with better clinical outcomes, including more sustained remission and reduced radiographic progression [25,26]. However, recent studies have also shown an association between early treatment response and improved long-term patient-reported outcomes (PROs) like physical functioning, fatigue, and work participation [6,16,17,19,27]. Notably, this also seems to apply to other rheumatic diseases, including juvenile idiopathic arthritis [28] and psoriatic arthritis [20].

Regarding potential mechanisms through which prompt control of inflammation might exert these positive effects, psychosocial factors seem crucial. In the CareRA trial, the beneficial impact of early remission on long-term PROs appeared primarily driven by psychological factors, including more positive illness perceptions, rather than by direct effects on inflammation [18]. Similarly, people with clinically suspect arthralgia, a potential preclinical stage of RA, who received methotrexate in the TREAT-EARLIER trial experienced more symptom relief and developed more optimistic illness perceptions than those who received a placebo, and this persisted after stopping methotrexate [22]. However, offering DMARDs at this early stage conjointly led to more pessimistic perceptions regarding the disease's emotional and physical consequences, perhaps because a need for treatment implies a more serious diagnosis.

Psychosocial support and patient education

Together, these findings illustrate the importance of emphasising a positive message throughout patient education, from the early diagnostic phase onwards. The European Alliance of Associations for Rheumatology (EULAR) defines patient education as a planned interactive learning process to support and enable people to manage their life with chronic IA and optimise their health and well-being [29]. Incorporating positive communication in this process, both verbally and nonverbally, is central to the paradigm we propose. Although it is challenging to define what such 'positive communication' precisely entails, evidence shows modest but consistent beneficial effects on outcomes like pain when healthcare provider-patient communication is more empathic or more strongly promotes positive expectations about health outcomes [30,31].

Indeed, although RA might traditionally have been described as a destructive disease, recent developments imply that patient education can now reflect a more positive outlook. For example, even today, the drug information sheets available to patients are generally dominated by adverse events without emphasising the much greater likelihood of treatment benefit. As needs-based patient education can improve self-efficacy and treat-to-target implementation [21,23,24], positive communication may help people with RA develop a more hopeful perspective on their health, particularly early in the disease.

The positive perspective paradigm

Building on the aforementioned insights (summarised in Table), we propose a conceptual framework (Fig) to describe how pharmacological treatment, as well as patient education and psychosocial support, could be strategically integrated to reduce the long-term impact of chronic inflammatory diseases, using RA as a model. Our

Table
Data supporting the principles of the positive perspective paradigm

Principle	Supporting data
1. Early and optimal control of inflammation reduces long-term patient-reported disease impact.	- IMPROVED trial (RA): early remission (<4 mo) was associated with lower HAQ scores after 5 y [16]. - ARCTIC trial (RA): early remission (<6 mo) was associated with lower odds of clinically relevant fatigue after 2 y [17]. - CareRA trial (RA): early remission (<4 mo) was associated with higher self-efficacy after 2 y and with less fatigue over 5 y, assessed longitudinally [6,18]. - CareRA2020 trial (RA): early responders (wk 8-32) to initial remission-induction DMARDs reported lower RAID scores over 2 y, assessed longitudinally [19]. - DEPAR cohort (PsA): early Minimal Disease Activity (<1 y) was associated with improved HR-QoL, fatigue, pain, HAQ, anxiety and depression scores over 2 y, assessed longitudinally [20].
2. The beneficial effects of early control of inflammation on long-term disease impact are partly explained by a positive influence on patients' health perspective.	- RAMS cohort (RA): illness perceptions improved in around 20% of patients over the first year of methotrexate treatment, and negative illness perceptions were associated with worse scores for HAQ, pain and fatigue, assessed longitudinally [11]. - CareRA trial (RA): ○ The beneficial effect of early remission on 2-y self-efficacy was fully mediated by psychosocial factors, including more positive illness perceptions [18]. ○ The longitudinal relationship between disease activity and fatigue was fully mediated by psychosocial factors, including mental health [6]. ○ The longitudinal relationship between disease activity and psychosocial well-being was complex and bidirectional [5]. - TREAT-EARLIER trial (CSA): patients treated with methotrexate (vs placebo) experienced more symptom relief and hence developed more optimistic illness perceptions regarding symptoms, consequences, disease duration, and treatment efficacy, which were sustained after treatment cessation [22].
3. Patients should be offered psychosocial support and patient education as soon as the diagnosis is made, with a focus on positive communication.	- Needs-based patient education, either digitally or face-to-face, improves self-efficacy both in established and newly diagnosed RA [21,23]. - Various educational interventions can improve T2T implementation in RA management [24]. - TREAT-EARLIER trial & Rotterdam CSA cohort (CSA): despite its positive effects (see above), offering treatment to patients with CSA resulted in more perceived emotional and physical consequences of the disease [22], illustrating that a positive message is key.

ARCTIC, Aiming for Remission in Rheumatoid Arthritis: a Randomised Trial Examining the Benefit of Ultrasound in a Clinical Tight Control Regime; CareRA, Care in early RA; CSA, clinically suspect arthralgia; DEPAR, Dutch southwest Early Psoriatic Arthritis cohort; HAQ, Health Assessment Questionnaire; HR-QoL, health-related quality of life; IMPROVED, induction therapy with MTX and prednisone in rheumatoid or very early arthritic disease; RA, rheumatoid arthritis; PsA, psoriatic arthritis; DMARD, disease-modifying antirheumatic drug; MTX, methotrexate; RAID, rheumatoid arthritis impact of disease; RAMS, Rheumatoid Arthritis Medication Study.
The supporting data listed here are the result of a narrative literature review conducted on April 28, 2025, and represent a nonexhaustive overview of evidence to inform the positive perspective paradigm.

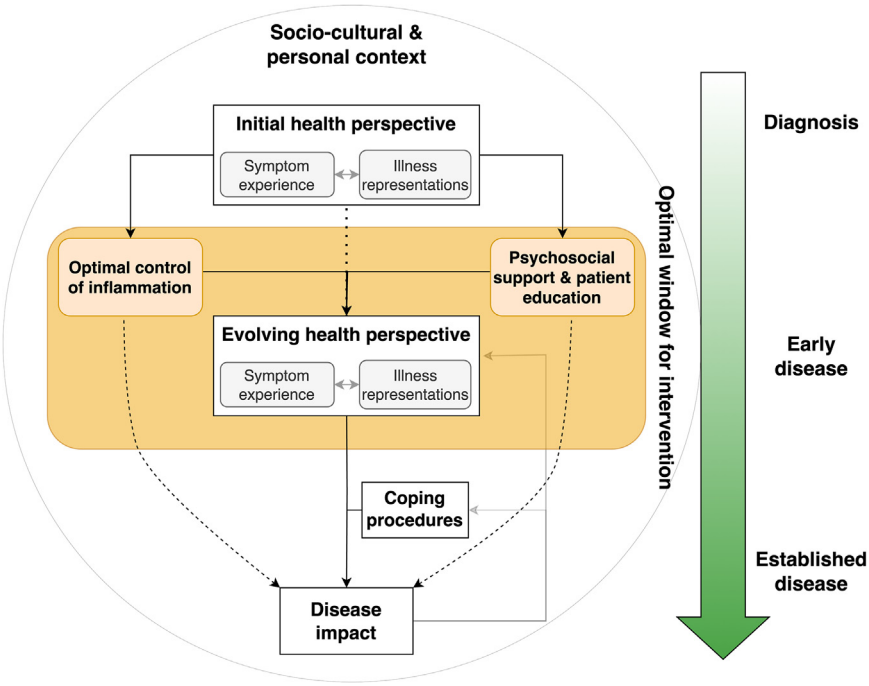

Figure. Schematic overview of the positive perspective paradigm. The positive perspective paradigm postulates that the early stages of a chronic inflammatory disease present an optimal time window where appropriate intervention might positively influence one's health perspective, in turn contributing to reduced long-term disease impact. Specifically, we propose that such an intervention should involve the prompt control of inflammation with appropriate pharmacotherapy, as well as tailored patient education and psychosocial support with a focus on positive communication from the time of diagnosis. The main hypothesis of the model is that both these types of interventions will lead to less patient-experienced disease impact both directly and through positive effects on patients' health perspective.

'positive perspective paradigm' builds on the foundations of Leventhal's model but adds a focus on how timely intervention could positively affect a person's evolving health perspective. In this context, we consider one's health perspective to encompass both cognitive and emotional illness representations and the way a person experiences their symptoms. As in Leventhal's model, this perspective is influenced by a personal and sociocultural context, and might evolve through changes in this context, the disease, or the results of coping. Given the evidence discussed above, we postulate that the early stages of a chronic inflammatory disease present an optimal time window where appropriate intervention might positively influence one's health perspective, in turn contributing to reduced long-term disease impact. In keeping with RA treatment recommendations [15], clinicians should aim to promptly achieve control of inflammation with pharmacotherapy. In parallel, we propose that patients should be offered psychosocial support and patient education from diagnosis, while emphasising positive communication whenever possible. Although both these interventions also have direct effects on disease impact, the aforementioned research suggests that these effects are at least partly explained by positively influencing the patient's health perspective. For instance, the experience of prompt symptom control appears to reinforce optimistic illness perceptions that in turn are essential for attenuating long-term disease impact. Fostering a positive perspective is therefore the focal point of our model.

Towards the future

The positive perspective paradigm aims to offer a novel viewpoint on how early interventions, both pharmacological and non-pharmacological, can help shape a patient's long-term experience of chronic disease. The model intends to provide a foundation for further validation in independent cohorts or other chronic inflammatory conditions beyond RA. Longitudinal and interventional studies should further investigate how a patient's evolving health perspective can be positively influenced by both timely pharmacological treatment and patient education or psychosocial support. Ideally, future studies should aim to further disentangle how both these interventions affect long-term disease impact, both directly and through their impact on patients' health perspective, for instance via mediation analyses. In addition, the role of positive communication in this process warrants further investigation. For example, this could be approached by studying how fostering positive expectations for treatment efficacy affects illness perceptions in chronic inflammatory conditions, similarly to what has been reported in the context of pain relief [32]. In parallel, we believe the ongoing evolution around preclinical RA and similar conditions warrants further research into the potential negative effects of earlier diagnosis and treatment on illness perceptions.

In clinical practice, we encourage the use of PROs to facilitate identification of the aspects of life that are most impacted for individuals living with IA. By using such information, the positive perspective paradigm might serve as a guiding framework for healthcare providers to contextualise a patient's evolving health perspective through the biological, psychological, and social factors that shape it. When applied consistently across the multidisciplinary team, this model can strengthen shared understanding, promote continuity of care, and ensure that psychosocial needs are addressed alongside biomedical priorities.

Moreover, as medicine increasingly incorporates algorithm-driven decision-making and artificial intelligence to optimise treatment strategies, a conceptual model centred on the patient's personal experience of illness provides both a counterpart and a complement to this evolution. The positive perspective paradigm might help to balance biomedical advances in precision medicine with a patient-centred approach and to ensure that these aspects continue to play a role in the personalised medicine of the future. In this regard, we consider it essential that our model was developed in strong collaboration with a patient research partner. By providing a basis for validation and clinical implementation, the positive perspective paradigm aims to contribute to a more holistic vision of chronic disease management, addressing not just how we treat disease, but how we support patients in living well with it.

Competing interests

MD reports a relationship with Research Foundation Flanders that includes: funding grants. LG reports a relationship with AbbVie Inc that includes: funding grants. LG reports a relationship with Eli Lilly and Company that includes: funding grants. LG reports a relationship with Novartis that includes: funding grants. LG reports a relationship with AbbVie Inc that includes: consulting or advisory. LG reports a relationship with Alfasigma SpA that includes: consulting or advisory. LG reports a relationship with Amgen Inc that includes: consulting or advisory. LG reports a relationship with Bristol-Myers Squibb Company that includes: consulting or advisory. LG reports a relationship with Celltrion Pharm, Inc that includes: consulting or advisory. LG reports a relationship with Janssen Pharmaceuticals Inc that includes: consulting or advisory. LG reports a relationship with Eli Lilly and Company that includes: consulting or advisory. LG reports a relationship with MoonLake Immunotherapeutics Ltd that includes: consulting or advisory. LG reports a relationship with Novartis that includes: consulting or advisory. LG reports a relationship with Pfizer that includes: consulting or advisory. LG reports a relationship with STADA Arzneimittel AG that includes: consulting or advisory. LG reports a relationship with UCB Pharma SpA that includes: consulting or advisory. PCT reports a relationship with Alfasigma SpA that includes: funding grants. MN reports a relationship with Vifor Pharma Inc that includes: funding grants. MN reports a relationship with Sanofi that includes: funding grants. MN reports a relationship with Pfizer that includes: consulting or advisory. PCT reports a relationship with AbbVie Inc that includes: consulting or advisory. PCT reports a relationship with Eli Lilly and Company that includes: consulting or advisory. PCT reports a relationship with UCB Pharma SpA that includes: consulting or advisory. PCT reports a relationship with Roche that includes: consulting or advisory. PCT reports a relationship with Biogen Inc that includes: consulting or advisory. PCT reports a relationship with Janssen Pharmaceuticals Inc that includes: consulting or advisory. PCT reports a relationship with Fresenius Kabi USA LLC that includes: consulting or advisory. PCT reports a relationship with Alfasigma SpA that includes: consulting or advisory. PCT reports a relationship with Gilead Sciences Inc that includes: consulting or advisory. PCT reports a relationship with Nordic Pharma Ltd that includes: consulting or advisory. PCT reports a relationship with Takeda UK Ltd that includes: consulting or advisory. PCT reports a relationship with AnaptysBio Inc that includes: consulting or advisory. PCT reports a relationship with ACELYRIN Inc that includes: consulting or advisory. PCT reports a relationship with Immunovant Inc that includes: advisory board membership. PCT reports a relationship with MoonLake Immunotherapeutics Ltd that includes: advisory board membership. PCT reports a relationship with Sanofi that includes: advisory board membership. PV reports a relationship with Alfasigma SpA that includes: funding grants. PV reports a

relationship with AbbVie Inc that includes: speaking and lecture fees. PV reports a relationship with Fresenius Kabi USA LLC that includes: consulting or advisory. PV reports a relationship with Eli Lilly and Company that includes: consulting or advisory. PV reports a relationship with Boehringer Ingelheim Ltd that includes: consulting or advisory. PV reports a relationship with Citryll BV that includes: consulting or advisory. All other authors declare they have no competing interests.

Acknowledgements

The authors thank Delphine Bertrand, Elias De Meyst, Sarah Marent, and Sofia Pazmino for their participation in the discussions that gave rise to the model.

Contributors

MD was responsible for conceptualisation, methodology, and writing—original draft. LG was responsible for conceptualisation and writing—review and editing. MN was responsible for conceptualisation and writing—review and editing. PCT was responsible for conceptualisation and writing—review and editing. MT was responsible for conceptualisation and writing—review and editing. RW was responsible for conceptualisation and writing—review and editing. PV was responsible for conceptualisation and writing—review and editing.

Funding

This work did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Patient consent for publication

Not applicable.

Ethics approval

Not applicable.

Provenance and peer review

Not commissioned; externally peer reviewed.

Patient and public involvement

A patient research partner (MT) contributed to the conceptualisation of the model and reviewed the manuscript as co-author.

Orcid

Michaël Doumen: http://orcid.org/0000-0001-6073-7635

REFERENCES

[1] Gwinnutt JM, Norton S, Hyrich KL, Lunt M, Combe B, Rincheval N, et al. Exploring the disparity between inflammation and disability in the 10-year outcomes of people with rheumatoid arthritis. Rheumatology (Oxford) 2022;61:4687–701.

[2] Druce KL, Bhattacharya Y, Jones GT, Macfarlane GJ, Basu N. Most patients who reach disease remission following anti-TNF therapy continue to report fatigue: results from the British Society for Rheumatology Biologics Register for Rheumatoid Arthritis. Rheumatology (Oxford). 2016;55(10):1786–90.

[3] Michaud K, Pope J, van de Laar M, Curtis JR, Kannowski C, Mitchell S, et al. Systematic literature review of residual symptoms and an unmet need in patients with rheumatoid arthritis. Arthritis Care Res (Hoboken) 2021;73(11):1606–16.

[4] Ferreira RJO, Welsing PMJ, Jacobs JWG, Gossec L, Ndosi M, MacHado PM, et al. Revisiting the use of remission criteria for rheumatoid arthritis by excluding patient global assessment: an individual meta-analysis of 5792 patients. Ann Rheum Dis 2021;80(3):293–303.

[5] Doumen M, De Cock D, Pazmino S, Bertrand D, Joly J, Westhovens R, et al. Psychosocial burden predicts sustained remission in early rheumatoid arthritis: unraveling the complex interplay of well-being and disease activity. Arthritis Care Res (Hoboken) 2023;75(4):758–67.

[6] Doumen M, Pazmino S, Bertrand D, De Cock D, Joly J, Westhovens R, et al. Longitudinal trajectories of fatigue in early RA: the role of inflammation, perceived disease impact and early treatment response. Ann Rheum Dis 2022;81(10):1385–91.

[7] Van der Elst K, Mathijssen EGE, Landgren E, Bremander A, De Groef A, Lindqvist E, et al. What do patients prefer? A multinational, longitudinal, qualitative study on patient-preferred treatment outcomes in early rheumatoid arthritis. RMD Open 2020;6:e001339.

[8] Leventhal H, Phillips LA, Burns E. The Common-Sense Model of Self-Regulation (CSM): a dynamic framework for understanding illness self-management. J Behav Med 2016;39(6):935–46.

[9] Gellman MD, Turner JR. Encyclopedia of Behavioral Medicine [Internet]. New York, NY: Springer New York; 2013. [cited 2025 Nov 18]. Available from: http://link.springer.com/10.1007/978-1-4419-1005-9.

[10] Lindgren LH, de Thurah A, Thomsen T, Hetland ML, Aadahl M, Vestergaard SB, et al. Sociodemographic and clinical variables associated with negative illness perception in patients newly diagnosed with rheumatoid arthritis, axial spondyloarthritis, or psoriatic arthritis-a survey based cross-sectional study. Rheumatol Int 2024 June 1;44(6):1119–31.

[11] Gwinnutt JM, Norton S, Hyrich KL, Lunt M, Barton A, Cordingley L, et al. Changes in the illness perceptions of patients with rheumatoid arthritis over the first year of methotrexate therapy. Rheumatology (Oxford) 2021;60(5):2355–65.

[12] Groarke A, Curtis R, Coughlan R, Gsel A. The role of perceived and actual disease status in adjustment to rheumatoid arthritis. Rheumatology (Oxford) 2004;43(9):1142–9.

[13] Matcham F, Norton S, Scott DL, Steer S, Hotopf M. Symptoms of depression and anxiety predict treatment response and long-term physical health outcomes in rheumatoid arthritis: secondary analysis of a randomized controlled trial. Rheumatology (Oxford) 2016;55(2):268–78.

[14] Folkman S, Moskowitz JT. Coping: pitfalls and Promise. Annu Rev Psychol 2004 Feb 1;55(1):745–74.

[15] Smolen JS, Landewé RBM, Bergstra SA, Kerschbaumer A, Sepriano A, Aletaha D, et al. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs: 2022 update. Ann Rheum Dis 2023;82(1):3–18.

[16] Akdemir G, Heimans L, Bergstra SA, Goekoop RJ, Van Oosterhout M, Van Groenendael JHLM, et al. Clinical and radiological outcomes of 5-year drug-free remission-steered treatment in patients with early arthritis: IMPROVED study. Ann Rheum Dis 2018;77(1):111–8.

[17] Holten K, Paulshus Sundlisater N, Lillegraven S, Sexton J, Nordberg LB, Moholt E, et al. Fatigue in patients with early rheumatoid arthritis undergoing treat-to-target therapy: predictors and response to treatment. Ann Rheum Dis 2022;81(3):344–50.

[18] Doumen M, De Cock D, Pazmino S, Bertrand D, Joly J, Westhovens R, et al. Treatment response and several patient-reported outcomes are early determinants of future self-efficacy in rheumatoid arthritis. Arthritis Res Ther 2021;23:269.

[19] Doumen M, Bertrand D, Joly J, De Meyst E, Pazmino S, Westhovens R, et al. AB0525 Early responders to remission-induction treatment with methotrexate and bridging glucocorticoids report lower Rheumatoid Arthritis Impact of Disease (RAID) over 2 years: secondary analysis of the CareRA2020 trial. Ann Rheum Dis 2024;83(Suppl 1):1537.

[20] Snoeck Henkemans SVJ, de Jong PHP, Luime JJ, Kok MR, Tchetverikov I, Kasiem FR, et al. Importance of quick attainment of minimal disease activity for a positive impact on lives of patients with psoriatic arthritis. RMD Open 2022;8:e002706.

[21] Ndosi M, Johnson D, Young T, Hardware B, Hill J, Hale C, et al. Effects of needs-based patient education on self-efficacy and health outcomes in people with rheumatoid arthritis: a multicentre, single blind, randomised controlled trial. Ann Rheum Dis 2016;75(6):1126–32.

[22] Van Griethuysen SRG, Dumoulin QA, Van Mulligen E, Van Der, Helm-van Mil AHM. Can treatment expectations or treatment itself in patients with arthralgia suspicious for progression to rheumatoid arthritis improve illness perceptions? Rheumatology (Oxford) 2025;64(6):3444–50.

[23] Knudsen LR, Ndosi M, Hauge EM, Lomborg K, Dreyer L, Aaboe S, et al. Effectiveness of a novel digital patient education programme to support self-management of early rheumatoid arthritis: a randomized controlled trial. Rheumatology (Oxford) 2024;63(9):2547–56.

[24] Gossec L, Bessette L, Xavier RM, Favalli EG, Östör A, Buch MH. Barriers to, facilitators of, and interventions to support treat-to-target implementation in rheumatoid arthritis: a systematic review. Arthritis Care Res (Hoboken) 2024;76(12):1626–36.
[25] Verstappen M, Niemantsverdriet E, Matthijssen XME, le Cessie S, van der Helm-van Mil AHM. Early DAS response after DMARD-start increases probability of achieving sustained DMARD-free remission in rheumatoid arthritis. Arthritis Res Ther 2020;22:276.
[26] Kedra J, Lafourcade A, Combe B, Dougados M, Hajage D, Fautrel B. Positive impact on 10-year outcome of the window of opportunity for conventional synthetic DMARDs in rheumatoid arthritis: results from the ESPOIR cohort. RMD Open 2022;8:e002040.
[27] Verschueren P, Esselens G, Westhovens R. Predictors of remission, normalized physical function, and changes in the working situation during follow-up of patients with early rheumatoid arthritis: an observational study. Scand J Rheumatol 2009;38(3):166–72.
[28] Ong MS, Ringold S, Kimura Y, Schanberg LE, Tomlinson GA, Natter MD, et al. Improved disease course associated with early initiation of biologics in polyarticular juvenile idiopathic arthritis: trajectory analysis of a childhood arthritis and rheumatology research alliance consensus treatment plans study. Arthritis Rheumatol 2021;73(10):1910–20.
[29] Zangi HA, Ndosi M, Adams J, Andersen L, Bode C, Boström C, et al. EULAR recommendations for patient education for people with inflammatory arthritis. Ann Rheum Dis 2015;74(6):954–62.
[30] Di Blasi Z, Harkness E, Ernst E, Georgiou A, Kleijnen J. Influence of context effects on health outcomes: a systematic review. Lancet 2001 Mar 10;357(9258):757–62.
[31] Howick J, Moscrop A, Mebius A, Fanshawe TR, Lewith G, Bishop FL, et al. Effects of empathic and positive communication in healthcare consultations: a systematic review and meta-analysis. J R Soc Med 2018 July 1;111(7):240–52.
[32] Peerdeman KJ, van Laarhoven AIM, Keij SM, Vase L, Rovers MM, Peters ML, et al. Relieving patients' pain with expectation interventions: a meta-analysis. Pain 2016 June;157(6):1179–91.