

**NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE****Single Technology Appraisal****Upadacitinib for treating moderate to severe rheumatoid arthritis****Final scope****Final remit/appraisal objective**

To appraise the clinical and cost effectiveness of upadacitinib within its marketing authorisation for previously treated moderate to severe active rheumatoid arthritis.

**Background**

Rheumatoid arthritis is an inflammatory autoimmune disease that typically affects the synovial tissue of the small joints of the hands and feet but can affect any synovial joint, causing swelling, stiffness, pain and progressive joint destruction. It is a systemic disease and can affect the whole body, including the lungs, heart and eyes. Rheumatoid arthritis is usually a chronic relapsing condition which has a pattern of flare-ups followed by periods of lower disease activity; however, for some people, the disease is constantly progressive. Rheumatoid arthritis has a severe impact on quality of life and it is estimated that approximately one-third of people stop work within 2 years because of the disease, and this prevalence increases thereafter. Severity of disease can be classified into 4 categories, based on the disease activity score (DAS28) scoring system. A DAS28 greater than 5.1 indicates high disease activity or severe disease, between 3.2 and 5.1 indicates moderate disease activity, less than 3.2 indicates low disease activity, and less than 2.6 indicates disease remission.

The prevalence of rheumatoid arthritis in the UK is estimated to be 0.44% in males and 1.16% in females<sup>1</sup>; which is approximately 441,000 people in England (119,000 males and 322,000 females)<sup>1,2</sup>. There are approximately 17,500 people diagnosed with rheumatoid arthritis every year in England<sup>2,3,4</sup>. It can develop at any age, but the peak age of onset in the UK is between 45 and 75 years<sup>4</sup>.

There is no cure for rheumatoid arthritis and treatment aims to improve quality of life and to prevent or reduce joint damage. The main aim of management in early disease is to suppress disease activity and induce disease remission, prevent loss of function, control joint damage, maintain pain control and enhance self-management. For people with newly diagnosed rheumatoid arthritis, NICE guideline [100](#) ('Rheumatoid arthritis in adults: management') recommends conventional disease modifying anti-rheumatic drugs (DMARDs; including methotrexate, leflunomide and sulfasalazine) monotherapy as first-line treatment, ideally beginning within 3 months of the onset of persistent symptoms. When disease remission or low disease activity has not been achieved with DMARD monotherapy it is recommended that additional

cDMARDs (oral methotrexate, leflunomide, sulfasalazine or hydroxychloroquine) are used in combination. Where the disease has not responded to intensive combination therapy with conventional DMARDs, NICE Technology appraisal guidance [375](#), [466](#), [480](#) and [485](#) recommend biological DMARDs (adalimumab, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab, abatacept and sarilumab) or other immunomodulatory therapies (baricitinib and tofacitinib) each in combination with methotrexate for severe rheumatoid arthritis only. For those people with severe rheumatoid arthritis who cannot take methotrexate because it is contraindicated or because of intolerance, the guidance recommends that adalimumab, etanercept, certolizumab pegol, tocilizumab, baricitinib, sarilumab or tofacitinib monotherapy can be used.

Where the disease has not responded adequately or in the case of intolerance to other DMARDs, including at least one TNF inhibitor (a therapy subset of biological DMARDs), rituximab in combination with methotrexate is recommended for severe active disease only (NICE Technology appraisal guidance [195](#)). Where rituximab is contraindicated or withdrawn because of an adverse event, biological DMARDs (adalimumab, etanercept, infliximab, abatacept, golimumab, tocilizumab, certolizumab pegol and sarilumab) or other immunomodulatory therapies (tofacitinib and baricitinib) each in combination with methotrexate are recommended as options (NICE Technology appraisal guidance [195](#), [225](#), [247](#), [415](#), [466](#), [480](#) and [485](#)). Where rituximab therapy cannot be given because methotrexate is contraindicated or has been withdrawn due to an adverse event, biological DMARDs (adalimumab, etanercept, certolizumab pegol and sarilumab) or other immunomodulatory therapies (tofacitinib and baricitinib) each as a monotherapy, can be used (NICE Technology appraisal guidance [195](#), [415](#), [466](#), [480](#) and [485](#)).

### The technology

Upadacitinib (brand name unknown, AbbVie) is a Janus-kinase (JAK) 1 inhibitor that blocks the JAK-signal transducer and activator of transcription (STAT) pathway and inflammatory responses. It is administered orally.

Upadacitinib does not currently have a marketing authorisation in the UK for rheumatoid arthritis. It has been studied in clinical trials compared with, and in combination with, conventional DMARDs and as monotherapy in adults whose disease did not respond adequately to conventional or biological DMARDs. It has also been studied in separate clinical trials in people on a stable dose of cDMARDs, compared with either abatacept or adalimumab (biological DMARDs).

<b>Intervention(s)</b>	Upadacitinib (as monotherapy or in combination with other conventional DMARDs, including methotrexate)
<b>Population(s)</b>	Adults with moderate to severe, active rheumatoid arthritis whose disease has responded inadequately to, or who are intolerant of one or more disease modifying anti-rheumatic

	drugs (DMARDs), including conventional or biologic DMARDs
<b>Comparators</b>	<p>For moderate active rheumatoid arthritis that has not responded adequately to therapy with conventional DMARDs:</p> <ul style="list-style-type: none"> <li>• Combination therapy with conventional DMARDs (including methotrexate and at least one other DMARD, such as sulfasalazine and leflunomide)</li> <li>• Conventional DMARD monotherapy with dose escalation</li> <li>• Best supportive care (only where conventional DMARDs are not appropriate because of contraindication or intolerance)</li> </ul> <p>For severe active rheumatoid arthritis that has not responded adequately to therapy with conventional DMARDs only:</p> <ul style="list-style-type: none"> <li>• Biological DMARDs in combination with methotrexate (adalimumab, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab, abatacept or sarilumab)</li> <li>• Adalimumab, etanercept, certolizumab pegol, tocilizumab or sarilumab (each as monotherapy)</li> <li>• Tofacitinib or baricitinib (monotherapy or in combination with methotrexate)</li> </ul> <p>For severe active rheumatoid arthritis that has not responded adequately to therapy with DMARDs including at least one TNF inhibitor:</p> <ul style="list-style-type: none"> <li>• Rituximab in combination with methotrexate</li> <li>• Adalimumab, etanercept, certolizumab pegol or sarilumab (each as monotherapy)</li> </ul> <p>Tofacitinib or baricitinib (each as monotherapy) When rituximab is contraindicated or withdrawn due to adverse events:</p> <ul style="list-style-type: none"> <li>• Adalimumab, etanercept, infliximab, abatacept tocilizumab, certolizumab pegol, golimumab or sarilumab, each in combination with methotrexate</li> <li>• Tofacitinib or baricitinib each in combination with methotrexate</li> </ul> <p>When the disease has not responded adequately to therapy with rituximab in combination with methotrexate:</p> <ul style="list-style-type: none"> <li>• Tocilizumab, sarilumab in combination with methotrexate</li> </ul>

<b>Outcomes</b>	<p>The outcome measures to be considered include:</p> <ul style="list-style-type: none"> <li>• disease activity</li> <li>• physical function</li> <li>• joint damage, pain</li> <li>• mortality</li> <li>• fatigue</li> <li>• radiological progression</li> <li>• extra-articular manifestations of disease</li> <li>• adverse effects of treatment</li> <li>• health-related quality of life.</li> </ul>
<b>Economic analysis</b>	<p>The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>If the technology is likely to provide similar or greater health benefits at similar or lower cost than technologies recommended in published NICE technology appraisal guidance for the same indication, a cost-comparison may be carried out.</p> <p>The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective.</p> <p>The availability of any commercial arrangements for the intervention, comparator technologies and subsequent treatment technologies will be taken into account. The availability and cost of biosimilar products should be taken into account.</p>
<b>Other considerations</b>	<p>If the evidence allows the following subgroups will be considered. These include people with moderate disease activity (DAS28 between 3.2 and 5.1) and severe active disease (DAS28 greater than 5.1).</p> <p>Guidance will only be issued in accordance with the marketing authorisation. Where the wording of the therapeutic indication does not include specific treatment combinations, guidance will be issued only in the context of the evidence that has underpinned the marketing authorisation granted by the regulator.</p>

<p><b>Related NICE recommendations and NICE Pathways</b></p>	<p><b>Related Technology Appraisals:</b></p> <p><a href="#">Sarilumab for moderate to severe rheumatoid arthritis</a> (2017) NICE Technology Appraisal 485. Review Date November 2020</p> <p><a href="#">Tofacitinib for moderate to severe rheumatoid arthritis</a> (2017) NICE Technology Appraisal 480. Review Date October 2020</p> <p><a href="#">Baricitinib for moderate to severe rheumatoid arthritis</a> (2017) NICE Technology Appraisal 466. Review Date August 2020.</p> <p><a href="#">Certolizumab pegol for treating rheumatoid arthritis after inadequate response to a TNF-alpha inhibitor</a> (2016) NICE Technology Appraisal 415. Review Date October 2019</p> <p><a href="#">Adalimumab, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab and abatacept for rheumatoid arthritis not previously treated with DMARDs or after conventional DMARDs only have failed</a> (2016) NICE Technology Appraisal 375 (previously TA130, TA186 and TA280). Review Date January 2019</p> <p><a href="#">Tocilizumab for the treatment of rheumatoid arthritis</a> (2012) NICE Technology Appraisal 247. Guidance on static list.</p> <p><a href="#">Golimumab for the treatment of rheumatoid arthritis after the failure of previous diseasemodifying anti-rheumatic drugs.</a> (2011) NICE Technology Appraisal 225. Guidance on static list.</p> <p><a href="#">Adalimumab, etanercept, infliximab, rituximab and abatacept for the treatment of rheumatoid arthritis after the failure of a TNF inhibitor.</a> (2010) NICE Technology Appraisal TA195. Guidance on static list.</p> <p><b>Terminated appraisals:</b></p> <p><a href="#">Sirukumab for previously treated moderate to severe active rheumatoid arthritis</a> NICE technology appraisals guidance [ID1002] (suspended appraisal)</p> <p><a href="#">Rituximab for the treatment of rheumatoid arthritis after the failure of conventional disease-modifying anti-rheumatic drugs</a> NICE technology appraisals guidance [ID333] (suspended appraisal)</p>
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	<p><b>Related Guidelines:</b></p> <p><a href="#">Rheumatoid arthritis in adults: the management of rheumatoid arthritis in adults</a> (2015) NICE guideline CG79. Review date to be confirmed.</p> <p><b>Related Quality Standards:</b></p> <p><a href="#">Rheumatoid arthritis in over 16s</a> (2017) NICE Quality Standard QS33.</p> <p><b>Related NICE Pathways:</b></p> <p><a href="#">‘Rheumatoid arthritis’</a> (2015). NICE pathway</p>
<p><b>Related National Policy</b></p>	<p>NHS England (2017) <a href="#">Manual for Prescribed Specialised Services 2017/18</a>. Adult highly specialist rheumatology services [section 5, page 24-26]</p> <p>Department of Health and Social Care, NHS Outcomes Framework 2016-2017 (published 2016): Domains 1-5. <a href="https://www.gov.uk/government/publications/nhs-outcomes-framework-2016-to-2017">https://www.gov.uk/government/publications/nhs-outcomes-framework-2016-to-2017</a></p> <p>National Service Frameworks for Older People: <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/198033/National_Service_Framework_for_Older_People.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/198033/National_Service_Framework_for_Older_People.pdf</a></p>

## References

- 1 Symmons D et al. (2002) [The prevalence of rheumatoid arthritis in the United Kingdom: new estimates for a new century](#). Rheumatology 41 (7): 793-800.
2. Office for National Statistics (2016) [‘Population Estimates by Age and Sex’](#). Accessed June 2018.
3. Symmons D et al. (2012) [The incidence of rheumatoid arthritis in the UK: comparisons using the 2010 ACR/EULAR classification criteria and the 1987 ACR classification criteria. Results from the Norfolk Arthritis Register](#). Annals of the Rheumatic Diseases 72: 1315-1320.
4. Arthritis Research UK (2018) [Musculoskeletal Calculator](#). Accessed June 2018.