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SCIENCE MEDICINES HEALTH

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EMA confirms measures to minimise risk of serious side effects with Janus kinase inhibitors for chronic inflammatory disorders

On 23 January 2023, EMA's human medicines committee (CHMP) endorsed the measures recommended by the Pharmacovigilance Risk Assessment Committee (PRAC) to minimise the risk of serious side effects with Janus kinase (JAK) inhibitors used to treat several chronic inflammatory disorders. These side effects include cardiovascular conditions, blood clots, cancer and serious infections.

These medicines should be used in the following patients only if no suitable treatment alternatives are available: those aged 65 years or above, those at increased risk of major cardiovascular problems (such as heart attack or stroke), those who smoke or have done so for a long time in the past and those at increased risk of cancer.

JAK inhibitors should be used with caution in patients with risk factors for blood clots in the lungs and in deep veins (venous thromboembolism, VTE) other than those listed above. Further, the doses should be reduced in patient groups who are at risk of VTE, cancer or major cardiovascular problems, where possible.

The recommendations follow a review of available data, including the final results from a clinical trial¹ of the JAK inhibitor Xeljanz (tofacitinib) and preliminary findings from an observational study involving Olumiant. The review also included advice from an expert group of rheumatologists, dermatologists, gastroenterologists and patient representatives.

The review confirmed Xeljanz increases the risk of major cardiovascular problems, cancer, VTE, serious infections and death due to any cause when compared with medicines belonging to the class of TNF-alpha inhibitors. EMA has now concluded that these safety findings apply to all approved uses of JAK inhibitors in chronic inflammatory disorders (rheumatoid arthritis, psoriatic arthritis, juvenile idiopathic arthritis, axial spondyloarthritis, ulcerative colitis, atopic dermatitis and alopecia areata).

The product information for JAK inhibitors used to treat chronic inflammatory disorders will be updated with the new recommendations and warnings. In addition, the educational material for patients and healthcare professionals will be revised accordingly.

¹ Ytterberg SR, et al. Cardiovascular and cancer risk with tofacitinib in rheumatoid arthritis. *New Engl J Med* 2022;386(4):316-326. doi: [10.1056/NEJMoa2109927](https://doi.org/10.1056/NEJMoa2109927)



Information for patients

- Janus kinase (JAK) inhibitors used to treat chronic inflammatory disorders have been found to increase the risk of major cardiovascular problems (such as heart attack or stroke), cancer, blood clots in the lungs and in deep veins, serious infections and death when compared with TNF alpha inhibitors.
- These JAK inhibitors (Xeljanz, Cibinqo, Olumiant, Rinvoq and Jyseleca) are used to treat one or more of the following chronic inflammatory disorders: rheumatoid arthritis, psoriatic arthritis, juvenile idiopathic arthritis, axial spondyloarthritis, ulcerative colitis, atopic dermatitis and alopecia areata.
- If you are aged 65 years or above, have an increased risk of major cardiovascular problems or cancer or if you smoke or have done so for a long time in the past, you should only be prescribed these medicines if there are no suitable treatment alternatives for you.
- If you have certain risk factors, your doctor may reduce the dose of your JAK inhibitor or switch treatment depending on your inflammatory disorder and the JAK inhibitor you are taking to treat it.
- If, at any stage during your treatment, you experience chest pain or tightness (which may spread to arms, jaw, neck and back), shortness of breath, cold sweat, light headedness, sudden dizziness, weakness in arms and legs or slurred speech, contact your doctor immediately.
- Examine your skin periodically and let your doctor know if you notice any new growths on the skin.
- If you have any questions about your treatment, speak to your doctor.

Information for healthcare professionals

- An EMA review has found that, compared with TNF-alpha inhibitors, Janus kinase (JAK) inhibitors used to treat chronic inflammatory disorders (rheumatoid arthritis, psoriatic arthritis, juvenile idiopathic arthritis, axial spondyloarthritis, ulcerative colitis, atopic dermatitis and alopecia areata) are linked to a higher risk of major adverse cardiovascular events (MACE), venous thromboembolism (VTE), malignancy, serious infections and all-cause mortality.
- The review included the final results from an open-label clinical trial (ORAL Surveillance study)² of the JAK inhibitor Xeljanz (tofacitinib) in patients with rheumatoid arthritis and cardiovascular risk factors which found a higher risk of these events with Xeljanz than with TNF-alpha inhibitors.
- Preliminary findings from an observational study (B023) involving another JAK inhibitor, Olumiant (baricitinib), also suggest an increased risk of MACE and VTE in patients with rheumatoid arthritis treated with Olumiant compared with those treated with TNF-alpha inhibitors.
- EMA concluded that the identified risks apply to all JAK inhibitors approved for the treatment of chronic inflammatory disorders.
- These medicines (Xeljanz, Cibinqo, Olumiant, Rinvoq and Jyseleca) should only be used in the following patients if no suitable treatment alternatives are available: those aged 65 years or above, those who are current or past long-time smokers, those with a history of atherosclerotic cardiovascular disease or other cardiovascular risk factors, or those with other malignancy risk

² Ytterberg SR, et al. Cardiovascular and cancer risk with tofacitinib in rheumatoid arthritis. *New Engl J Med* 2022;386(4):316-326. doi: [10.1056/NEJMoa2109927](https://doi.org/10.1056/NEJMoa2109927)

factors. Cautious use is also recommended in patients with known risk factors for VTE other than those listed above.

- If JAK inhibitors are needed in patients with these risk factors, a lower dose may be recommended, depending on the medicine, the indication and the specific risk factor.
- Healthcare professionals should discuss the risks associated with JAK inhibitors with their patients.
- It is recommended that healthcare professionals carry out periodic examinations of their patients' skin to check for skin cancer, particularly for patients at risk for skin cancer.
- A letter will be sent to all healthcare professionals expected to prescribe these medicines to inform them of the outcome of the review. Full treatment recommendations will be included in the updated summary of product characteristics and the educational material for the respective products.

More about the medicines

The Janus kinase inhibitors subject to this review are Cibinqo (abrocitinib), Jyseleca (filgotinib), Olumiant (baricitinib), Rinvoq (upadacitinib) and Xeljanz (tofacitinib). These medicines are used to treat several chronic inflammatory disorders (rheumatoid arthritis, psoriatic arthritis, juvenile idiopathic arthritis, axial spondyloarthritis, ulcerative colitis, atopic dermatitis and alopecia areata). The active substances in these medicines work by blocking the action of enzymes known as Janus kinases. These enzymes play an important role in the process of inflammation that occurs in these disorders. By blocking the enzymes' action, the medicines help reduce the inflammation and other symptoms of these disorders.

Some JAK inhibitors (Jakavi and Inrebic) are used to treat myeloproliferative disorders; the review did not include these medicines. The review also did not cover the use of Olumiant in the short-term treatment of COVID-19, which was under [assessment](#) by EMA at the time.

More about the procedure

The review of JAK inhibitors in the treatment of inflammatory disorders was initiated at the request of the European Commission (EC) under [Article 20 of Regulation \(EC\) No 726/2004](#).

The review was carried out by the Pharmacovigilance Risk Assessment Committee (PRAC), the Committee responsible for the evaluation of safety issues for human medicines, which made a set of recommendations on 27 October 2022. The PRAC recommendations were sent to the Committee for Medicinal Products for Human Use (CHMP), responsible for questions concerning medicines for human use, which adopted the Agency's opinion. Following further review of its recommendation of October 2022, the PRAC issued an update on 12 January 2023 to further align dosing recommendations for the medicines concerned by the procedure. The PRAC's revised recommendations were sent to the CHMP, which adopted the Agency's opinion. The CHMP's opinion was forwarded to the European Commission, which issued a final legally binding decision applicable in all EU Member States on 10 March 2023.