

## Baricitinib

Baricitinib (Olumiant®) is a selective and reversible Janus kinase (JAK) 1 and 2 inhibitor, licensed as an anti-inflammatory treatment for rheumatoid arthritis and atopic dermatitis. JAK-inhibitors are thought to control high levels of cytokines and inflammation, seen in patients with severe SARS-CoV-2 infection

Data from the RECOVERY trial demonstrates that baricitinib reduces the risk of death when given to hospitalised patients with severe COVID-19. See [here](#) for further information.

Patients must meet all the eligibility criteria and none of the exclusion criteria. Patients hospitalised due to COVID-19 are eligible<sup>1</sup> to be considered for baricitinib if the following criteria are met:

### Eligibility criteria

- COVID-19 infection is confirmed by microbiological testing or where a multidisciplinary team has a high level of confidence that the clinical and/or radiological features suggest that COVID-19 is the most likely diagnosis;

AND

- Viral pneumonia syndrome<sup>2</sup> is present

AND

- Aged 2 years and over<sup>3</sup>

AND

- Receiving supplemental oxygen or respiratory support<sup>4</sup> for the treatment of COVID-19;

AND

- Receiving dexamethasone or an equivalent corticosteroid<sup>5</sup> unless contraindicated.

### Exclusion criteria and cautions

Baricitinib should not be administered in the following circumstances:

- Known hypersensitivity to baricitinib;
- eGFR < 15ml/min/1.73m<sup>2</sup> (If the individual being treated is < 9 years, this exclusion criteria should be eGFR < 30ml/min/1.73m<sup>2</sup>)<sup>6</sup>
- Receiving dialysis or haemofiltration;<sup>6</sup>
- Absolute neutrophil count (ANC) less than 0.5 x 10<sup>9</sup> cells/L;<sup>6</sup>
- Active tuberculosis;
- Pregnancy or breastfeeding (see below for further information)

## Caution should be exercised when considering treatment in patient's with co-existing infection that may be worsened by baricitinib treatment

Please refer to the [Summary of Product Characteristics \(SmPC\) for baricitinib](#) for other special warnings and precautions for use, although some may not be relevant for use in the acute setting, as the licensed indications address longterm use for chronic conditions.

<sup>1</sup> The decision to initiate treatment with baricitinib should be made by the receiving consultant, with support from multi-disciplinary colleagues in cases of uncertainty

<sup>2</sup> Viral pneumonia syndrome. In general, as per the RECOVERY trial protocol, viral pneumonia should be suspected when a patient presents with: ▪ typical symptoms (e.g. influenza-like illness with fever and muscle pain, or respiratory illness with cough and shortness of breath); AND ▪ compatible chest X-ray findings (consolidation or ground-glass shadowing); AND ▪ alternative causes have been considered unlikely or excluded (e.g. heart failure, bacterial pneumonia).

<sup>3</sup> Baricitinib can be considered in children (age 2 to 17 years inclusive) with severe COVID19, guided by clinical judgement and multi-disciplinary team assessment. Although the RECOVERY trial included this age group, it should be noted that this cohort was too small to reach statistical significance, the summary of product characteristics (SmPC) is only for adults, and there are limited data on both clinical effectiveness and safety in children. Use in all ages is off-label.

<sup>4</sup> Defined as: high-flow nasal oxygen, continuous positive airway pressure (CPAP) or non-invasive ventilation, or invasive mechanical ventilation.

<sup>5</sup> Patients are expected to be on a corticosteroid as the current standard of care, except where there is a strong contraindication against its use

<sup>6</sup> Please note that the drug criterion used here in this policy is taken directly from the RECOVERY trial, and the same criterion differs in the SmPC. The key reason for the difference is that the SmPC is written for long-term use in a low-risk condition, whereas this policy is for a short course in a high-risk condition in an acute clinical context (where the balance of benefits and risks is different). Please see the SmPC for further information. Clinical judgement should be exercised as appropriate

## Dosing table

| eGFR (ml/min/1.73m <sup>2</sup> ) | Adults and Children ≥ 9 years old | Children Aged 2 – 8 years old | Duration                               |
|-----------------------------------|-----------------------------------|-------------------------------|--|
| eGFR > 60                         | 4mg OD                            | 2mg OD                        | 10 days (or until discharge if sooner) |
| eGFR 30 – 60                      | 2mg OD                            | 2mg alternate days            |  |
| eGFR 15 -30                       | 2mg alternate days                | Do not prescribe              |  |
| eGFR < 15                         | Do not prescribe                  | Do not prescribe              |  |

*N.B. There are limited safety data on the use of baricitinib in people with severe acute or chronic renal impairment. Prescribers should use clinical judgement and exercise caution with regards to dosing in those with unstable renal function in the context of acute kidney injury.*

Co-administration of an Organic Anion Transporter 3 (OAT3) inhibitor with a strong inhibition potential, such as probenecid also requires a dose reduction to 2mg OD (all ages). Please check the [SmPC](#) and [Liverpool COVID-19 Interactions \(covid19-druginteractions.org\)](https://www.liverpool.ac.uk/covid19-druginteractions.org/) for other interactions.

## Co-administration with tocilizumab / sarilumab

Use of baricitinib in the treatment of COVID-19 should be considered as 'additive' to the use of an IL-6 inhibitor (tocilizumab or sarilumab), rather than an alternative. Either baricitinib or an IL-6 inhibitor may be commenced first if the eligibility criteria is met and the response evaluated before considering the need to add in the other agent. Simultaneous co-

administration of baricitinib and an IL-6 inhibitor should not be routinely considered but may be necessary based on clinical judgement in the situation of illness requiring critical care support or where a patient has deteriorated despite treatment.

### Patients already on Baricitinib

Individuals who are being considered for treatment under this policy, who are already taking baricitinib for a licenced indication at the dose of 4mg per day, should not receive additional baricitinib doses. However, if such individuals are already taking baricitinib at a dose of 2mg per day, the dose may be increased for the recommended treatment interval as described in this policy provided all eligibility criteria are met and provided the increased dose is deemed clinically appropriate (which includes the patient not being within the dose reduction categories described).

### Pregnancy and women of childbearing potential

Baricitinib should not be used during pregnancy

The [SmPC](#) for baricitinib currently states that: “The JAK/STAT pathway has been shown to be involved in cell adhesion and cell polarity which can affect early embryonic development. There are no adequate data from the use of baricitinib in pregnant women. Studies in animals have shown reproductive toxicity (see section 5.3). Baricitinib was teratogenic in rats and rabbits. Animal studies indicate that baricitinib may have an adverse effect on bone development in utero at higher dosages.

Olumiant [baricitinib] is contraindicated during pregnancy (see section 4.3). Women of childbearing potential have to use effective contraception during and for at least 1 week after treatment. If a patient becomes pregnant while taking Olumiant [baricitinib] the parents should be informed of the potential risk to the foetus.”

For women who are breast-feeding, the [SmPC](#) for baricitinib states: “It is unknown whether baricitinib/metabolites are excreted in human milk.

Available pharmacodynamic/toxicological data in animals have shown excretion of baricitinib in milk (see section 5.3). A risk to newborns/infants cannot be excluded and Olumiant [baricitinib] should not be used during breast-feeding. A decision must be made whether to discontinue breast-feeding or to discontinue Olumiant [baricitinib] therapy taking into account the benefit of breast-feeding for the child and the benefit of therapy for the woman.”

### References

- CMO letter and clinical commissioning policy: Baricitinib for patients hospitalised due to COVID-19 [CAS-ViewAlert \(mhra.gov.uk\)](#)
- Clinical guide – patients hospitalised due to COVID-19 [CAS-ViewAlert \(mhra.gov.uk\)](#)
- Baricitinib SPMC - [Olumiant 2 mg Film-Coated Tablets - Summary of Product Characteristics \(SmPC\) - \(emc\) \(medicines.org.uk\)](#)