NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Evaluation

Inhaled treprostinil for treating pulmonary hypertension caused by interstitial lung disease ID6459

Draft scope

Draft remit/evaluation objective

To appraise the clinical and cost effectiveness of inhaled treprostinil within its marketing authorisation for treating pulmonary hypertension caused by interstitial lung disease.

Background

Pulmonary hypertension is characterised by high blood pressure in the pulmonary arteries, the blood vessels that supply the lungs. The walls of the pulmonary arteries become thick and stiff, and cannot expand as well to allow blood through. The reduced blood flow makes it harder for the right side of the heart to pump blood through the arteries. If the right side of your heart has to continually work harder, it can gradually become weaker. This can lead to heart failure. Symptoms include shortness of breath, tiredness, feeling faint or dizzy, chest pain (angina), a racing heartbeat (palpitations), swelling (oedema) in the legs, ankles, feet or abdomen. The symptoms often get worse during exercise, which can limit people's ability to take part in physical activities.

Pulmonary hypertension can be caused by interstitial lung disease. This is a group of lung disorders that cause scarring (fibrosis) of the lung tissue, which make the lungs stiff, hampering their ability to transfer oxygen to the bloodstream and making it harder to breath. The most common form is idiopathic pulmonary fibrosis.

Between 2,000 and 4,000 new patients are diagnosed with interstitial lung disease in England each year.[1] Most have either sarcoidosis or idiopathic pulmonary fibrosis.

Up to 86% of people with interstitial lung disease may also have pulmonary hypertension.**Error! Reference source not found.** But the accuracy of this figure depends on the definition of pulmonary hypertension, the underlying type of interstitial lung disease and the diagnostic assessment to diagnose pulmonary hypertension.

Conventional treatment of pulmonary hypertension can include anticoagulant medicines (for example warfarin), diuretics, home oxygen therapy, and digoxin. Targeted treatments are:

- endothelin receptor antagonists: ambrisentan, bosentan and macitentan
- phosphodiesterase 5 inhibitors: sildenafil and tadalafil
- prostaglandins/prostanoids: epoprostenol, selexipag, intravenous/inhaled iloprost, intravenous treprostinil
- soluble guanylate cyclase stimulators: such as riociguat
- calcium channel blockers: nifedipine, diltiazem, nicardipine and amlodipine

The technology

Inhaled treprostinil (Tyvaso, Ferrer International) does not currently have a marketing authorisation in the UK for treating pulmonary hypertension caused by interstitial lung disease. It has been studied in a clinical trial compared with placebo in people with pulmonary hypertension associated with interstitial lung disease.

Treprostinil has a marketing authorisation to treat:

- idiopathic or heritable pulmonary arterial hypertension to improve exercise tolerance and symptoms of the disease in patients classified as New York Heart Association functional class 3
- adult patients with World Health Organization functional class 3 or 4 and inoperable chronic thromboembolic pulmonary hypertension (CTEPH), or persistent or recurrent CTEPH after surgical treatment, to improve exercise capacity.

Intervention(s)	Inhaled treprostinil
Population(s)	Adults with a confirmed diagnosis of pulmonary hypertension caused by interstitial lung disease
Subgroups	If the evidence allows the following subgroups will be considered: • different types of interstitial lung disease, for example idiopathic interstitial pneumonia, sarcoidosis, extrinsic allergic alveolitis • combined pulmonary fibrosis and emphysema.
Comparators	Established clinical management without inhaled treprostinil: • endothelin receptor antagonists: ambrisentan, bosentan and macitentan • phosphodiesterase 5 inhibitors: sildenafil and tadalafil • prostaglandins/prostanoids: epoprostenol, selexipag, intravenous/inhaled iloprost, intravenous treprostinil • soluble guanylate cyclase stimulators: such as riociguat • calcium channel blockers: nifedipine, diltiazem, nicardipine and amlodipine • anticoagulant medicines, for example warfarin • diuretics • home oxygen therapy • digoxin

Outcomes	The outcome measures to be considered include: • exercise capacity (for example 6-minute walking distance) • time to clinical worsening • hospitalisations • overall survival • transplant-free survival • haemodynamic assessment (e.g. cardiac index, cardiac output, right atrial pressure, pulmonary arterial pressure and pulmonary vascular resistance) • adverse effects of treatment • health-related quality of life.
Economic analysis	The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year. 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. Costs will be considered from an NHS and Personal Social Services perspective. The availability and cost of biosimilar and generic products should be taken into account.
Other considerations	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.
Related NICE recommendations	**Related technology appraisals:** Nintedanib for treating idiopathic pulmonary fibrosis when forced vital capacity is above 80% predicted (2023) NICE technology appraisal guidance 864. Nintedanib for treating progressive fibrosing interstitial lung diseases (2021) NICE technology appraisal guidance 747. Pirfenidone for treating idiopathic pulmonary fibrosis (2018) NICE technology appraisal guidance 504. Nintedanib for treating idiopathic pulmonary fibrosis (2016) NICE technology appraisal guidance 379.

	Related technology appraisals in development: Sotatercept for treating pulmonary arterial hypertension. NICE technology appraisal guidance [ID6163]. Publication expected October 2025. **Related NICE guidelines:** Idiopathic pulmonary fibrosis in adults: diagnosis and management (2013; updated 2017) NICE guideline CG163. **Related interventional procedures:** Balloon pulmonary angioplasty for chronic thromboembolic pulmonary hypertension (2016) NICE interventional procedures guidance 554 **Related quality standards:** Idiopathic pulmonary fibrosis in adults (2015) NICE quality standard 79.
Related National Policy	The NHS Long Term Plan (2019) NHS Long Term Plan NHS England (2023) Prescribed specialised services manual (version 6) Chapter 4 Adult specialist respiratory Services Chapter 14 Adult Specialist pulmonary hypertension services NHS England (2018) Interstitial Lung Disease Service Adult Service Specification 17009/S NHS England (2015) Commissioning Policy: targeted Therapies for use in Pulmonary Hypertension in adults Ref A11/P/c NHS England (2014) Clinical Commissioning Policy: National policy for the treatment of pulmonary hypertension in adults NHS Commissioning Board (2013) Clinical Commissioning Policy: targeted Therapies for Pulmonary Hypertension Function Class 11 Ref NHSCB/A11/P/a NHS England (2013) 2013/14 NHS standard contract for pulmonary hypertension: centres (adult) Ref A11/S/a NHS England (2013) 2013/14 NHS standard contract for pulmonary hypertension: shared care (adult) Ref A11/S/b

Questions for consultation

Where do you consider inhaled treprostinil will fit into the existing care pathway for pulmonary hypertension caused by interstitial lung disease?

What treatments for pulmonary hypertension caused by interstitial lung disease might inhaled treprostinil replace in clinical practice? Which treatments would continue as supportive care, used alongside inhaled treprostinil?

Please select from the following, will inhaled treprostinil be:

A. Prescribed in primary care with routine follow-up in primary care
B. Prescribed in secondary care with routine follow-up in primary care
C. Prescribed in secondary care with routine follow-up in secondary care

D. Other (please give details):

For comparators and subsequent treatments, please detail if the setting for prescribing and routine follow-up differs from the intervention.

Would inhaled treprostinil be a candidate for managed access?

Do you consider that the use of inhaled treprostinil can result in any potential substantial health-related benefits that are unlikely to be included in the QALY calculation?

Please identify the nature of the data which you understand to be available to enable the committee to take account of these benefits.

NICE is committed to promoting equality of opportunity, eliminating unlawful discrimination and fostering good relations between people with particular protected characteristics and others. Please let us know if you think that the proposed remit and scope may need changing in order to meet these aims. In particular, please tell us if the proposed remit and scope:

- could exclude from full consideration any people protected by the equality legislation who fall within the patient population for which inhaled treprostinil will be licensed;
- could lead to recommendations that have a different impact on people protected by the equality legislation than on the wider population, e.g. by making it more difficult in practice for a specific group to access the technology;
- could have any adverse impact on people with a particular disability or disabilities.

Please tell us what evidence should be obtained to enable the committee to identify and consider such impacts.

NICE intends to evaluate this technology through its Single Technology Appraisal process. (Information on NICE's health technology evaluation processes is available at https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-technology-appraisal-guidance/changes-to-health-technology-evaluation).

References

1. NHS England (2019). Interstitial Lung Disease (Adults) Service Specification. Accessed October 2024.

2. Dhont S, Zwaenepoel B, Vandecasteele E, et al. (2022) Pulmonary hypertension in interstitial lung disease: an area of unmet clinical need. ERJ Open Research 8: 00272-2022.