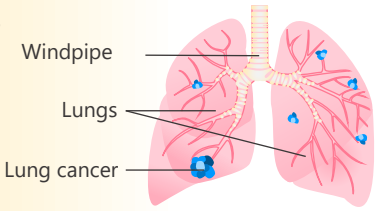
Immunotherapies for
ADVANCED NON-SMALL-CELL LUNG CANCER

ACE agency for care effectiveness

Around **1,800 people** are diagnosed with lung cancer **every year**, making it one of the **most common** cancers in Singapore.[1] Cancer that has spread outside of the lungs to other parts of the body is known as **advanced lung cancer**.

There are different types of lung cancer depending on which cells are affected. Non-small-cell lung cancer or **NSCLC** is the most common type.



How is advanced NSCLC treated?

Drug treatment options include:

- Chemotherapy +/- radiotherapy
- Immunotherapy +/- chemotherapy
- Targeted therapy

Four of these immunotherapy drugs work by blocking (inhibiting) the PD-1 or PD-L1 proteins, and are approved for patients with **advanced** NSCLC.

These PD-1/PD-L1 inhibitors may be given alone or with other cancer drugs that work differently, such as chemotherapy, bevacizumab or ipilimumab.

- Atezolizumab +/- bevacizumab
- Nivolumab +/- ipilimumab
- Pembrolizumab
- Tislelizumab

Legend: Slow drip into a vein, +/- with or without

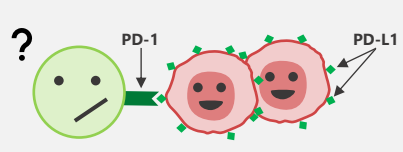
ACE reviewed all available clinical evidence and received inputs from doctors and patients.[2,3]

Published studies show that all 4 PD-1/PD-L1 inhibitors are **effective** for treating advanced NSCLC. Their side effects are generally similar.

- For **newly diagnosed** patients, **atezolizumab with or without bevacizumab**, **nivolumab with ipilimumab**, **pembrolizumab**, and **tislelizumab** are likely to be **as effective as each other** in **extending** the length of time patients can live.
- For patients whose cancer has **returned** after previous treatments and who **have not** used a PD-1/PD-L1 inhibitor before, **atezolizumab**, **nivolumab**, **pembrolizumab**, and **tislelizumab** are **effective** treatment options.

How does immunotherapy work?

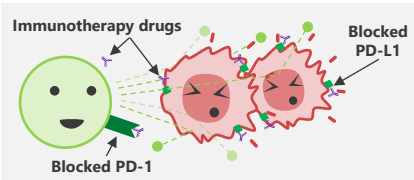
Immune system searches for and destroys abnormal cells such as cancer cells
Immune cells (green) attack and cancer cells (red) die. In very early stages, cancer is destroyed or kept under control.



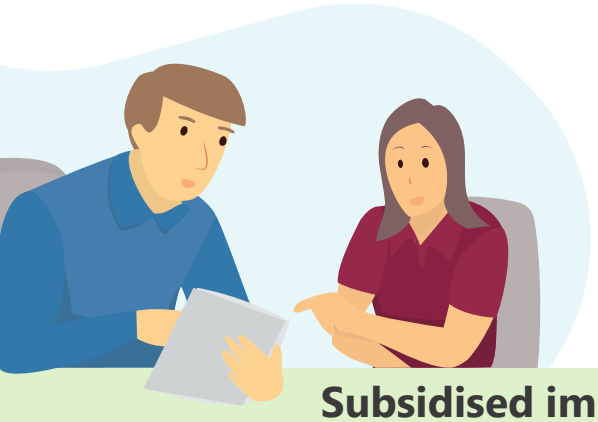
Cancer cells develop genetic changes to avoid detection by the immune system
Immune cells stop attacking and cancer cells live and grow. Cancer progresses and may spread to other parts of the body.

Some **lung cancer cells** have a protein called **PD-L1** on their surface. The PD-L1 protein helps cancer cells hide from the body's immune system. This protein interacts with another protein called **PD-1** found on **immune cells**.

When these two proteins **interact**, they **stop** the immune cells from **recognising** and attacking the cancer cells, effectively making the cancer cells **invisible** to the immune system. Scan the QR code to learn more.[4]



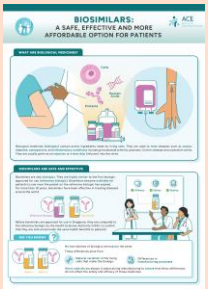
Immunotherapy drugs allow immune cells to recognise the cancer cells
These drugs can block the interaction between PD-1 and PD-L1, allowing the immune system to recognise and destroy the cancer cells.



Did you know?

Bevacizumab, ipilimumab, and PD-1/PD-L1 inhibitors are medicines that contain active ingredients made by living cells.

They are called biological medicines or **biologics**. **Biosimilars** are also biologics. **Click here** to learn more about them.[5]



Subsidised immunotherapies are available

Treatment cost to patients^

Most affordable → **Least affordable**

- ✓ Tislelizumab
- ✓ Atezolizumab
- ✓ Atezolizumab + bevacizumab biosimilar (Mvasi)
- ✓ Nivolumab
- ✓ Pembrolizumab
- ✗ Atezolizumab + bevacizumab (non-subsidised brands including Avastin)
- ✗ Nivolumab + ipilimumab

✓ Subsidised- Treatment costs are subsidised by 40% to 75% for eligible Singaporeans receiving outpatient treatment at public hospitals. Scan the QR code to learn more about the types of funding available for drugs and vaccines.[6]

✗ Not subsidised because their benefits do not justify their costs at the prices offered by the companies.

^MediShield Life and MediSave are available to help with some of the cost of these treatments.[7]

https://go.gov.sg/fsfunding

Key recommendations

Tislelizumab, **atezolizumab with or without bevacizumab biosimilar (Mvasi)**, **nivolumab**, and **pembrolizumab** are subsidised, making them affordable for patients with advanced NSCLC.

Discuss with your **doctor** which treatment is suitable for you, and your concerns. You can also speak to a **medical social worker** if you need further financial assistance, or you can reach out to **local patient support groups** if you want to meet people with similar experiences.[8]

Sources:
1. Health Promotion Board National Registry of Diseases Office. Singapore Cancer Registry Annual Report 2022. September 2024.
2. ACE Technology Guidance, Tislelizumab for treating locally advanced or metastatic non-squamous non-small-cell lung cancer without EGFR or ALK genomic tumour aberrations. August 2025
3. ACE Technology Guidance, Tislelizumab for treating non-small-cell lung cancer, oesophageal squamous cell carcinoma, and nasopharyngeal carcinoma. August 2025
4. www.youtube.com/watch?v=GIUu239FWMg
5. https://go.gov.sg/fsbiosim
6. https://go.gov.sg/fsfunding
7. Ministry of Health, Singapore. Cancer Drug List.
8. Lung Cancer Education and Advocacy for Patients (LEAP), and the Singapore Cancer Society.