Lung Cancer Vaccines

A summary of the UK situation in April 2024 written by the Medical and Scientific Advisory Panel. To be updated as further information becomes available.

The NHS Cancer Vaccine Launch Pad.

This new project has been specifically designed for patients with cancer to access vaccine trials at the earliest opportunity. You can read about it on the NHS England website. Oncologists/cancer specialists should be able to put patients in touch with the research nurses working on any relevant vaccine trials that are recruiting via this route. As yet there are no vaccines for ALK Positive Non-Small Cell Lung Cancer (NSCLC) in the immediate pipeline but this will be the best way to access trials as vaccines are developed.

“LungVax”

A new lung cancer vaccine is being developed in the UK by researchers from Oxford University, University College London and the Francis Crick Institute. It is a **ChAdOx2 vaccine** using a weakened version of a common cold virus (adenovirus) that has been genetically modified so that it can’t replicate in humans, and is similar to the technology used successfully in the Oxford-AstraZeneca COVID-19 vaccine. The vaccine is mid development and researchers have not yet started recruiting for the trial. Once they do, the first phase of the trial will be to determine safety and dosage.

Criteria for entry to the first trial will be patients with NSCLC diagnosed at Stage I/II within 6months post potentially curative surgical resection. Prevention of recurrence over the succeeding 5yrs will be the efficacy end point. Most trial patients are expected to be found in 55-75 year olds with a current or past smoking history who have been invited to take part in the NHS lung cancer screening roll out which is available in some parts of England and Wales. However, patients with early diagnosis of oncogene driven NSCLC followed by surgical resection aged 18yrs+ can be included in the trial.

If there's a significant reduction in recurrence in the vaccinated group, then the next trial will look at prevention in high risk individuals without lung cancer, again based on smoking history. Patients with Stage 4 Alk Positive and other oncogene driven NSCLCs who have no evidence of disease,(NED), or Stage 4 stable disease, will not be considered initially for trials of this vaccine. That may come later if results show significant prevention of recurrence post surgery and protection from lung cancer developing in high risk patients. It may take up to 8+years to get to this point. However, Prof Sarah Blagdon, who is running the trial, does think the vaccine has the potential to be effective against oncogene driven NSCLCs like ALK Positive.

https://www.lungcancercenter.com/news/lung-cancer-vaccine

The Mobilize Trial

The Mobilize trial is run in partnership between Imperial College London and Imperial College Healthcare NHS Trust, with the first patients in the UK receiving the treatment at the National Institute for Health and Care Research (NIHR) Imperial Clinical Research Facility at Hammersmith Hospital.

UK patients have received the experimental **mRNA** therapy – a type of immunotherapy treatment called mRNA-4359 – at Imperial College Healthcare NHS Trust as part of a phase 1/2 clinical trial. The trial aims to evaluate its safety and potential for treating melanoma, lung cancer and other 'solid tumour' cancers.

The treatment is designed using messenger RNA (mRNA) and works by presenting common markers of tumours to the patient's immune system. This should help to train patients' immune systems to recognise and fight cancer cells expressing these markers, but also potentially eliminate cells that may suppress the immune response. The primary aim of the study is to assess if this new mRNA therapy is safe and tolerated by patients, either when it's administered alone or in combination with an existing cancer drug called pembrolizumab – which is a type of immune checkpoint inhibitor. Researchers are also investigating whether the combination of treatments can actively shrink tumours in patients with certain types of lung and skin cancer.

The Trial will include NSCLC patients with known epidermal growth factor receptor (EGFR), anaplastic lymphoma kinase (ALK), proto-oncogen tyrosine-protein kinase reactive oxygen species (ROS1), or other actionable mutations for which there are approved targeted therapies. They must have received prior approved targeted therapy, (or have been offered and declined approved targeted therapy) and then progressed. Participants must have a tumour lesion amenable to biopsy and must have another lesion that can be followed for response.

https://trials.modernatx.com/study/?id=mRNA-4359-P101

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