HOUSE OF LORDS

Science and Technology Committee

Corrected oral evidence: Innovation in the NHS: personalised medicine and AI

Tuesday 19 May 2026

11.30 am

Watch the meeting

Members present: Lord Mair (The Chair); Lord Berkeley; Lord Booth; Lord Drayson; Lord Patel; Lord Ranger of Northwood; Lord Stern of Brentford; Lord Willis of Knaresborough; Baroness Willis of Summertown; Lord Winston.

Evidence Session No. 12 Heard in Public Questions 130 - 138

Witnesses

I: Dr Michalis Papadakis, CEO, Brainomix; Dr Phil L'Huillier, CEO, Scancell.

USE OF THE TRANSCRIPT

1. This is an uncorrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.
2. Any public use of, or reference to, the contents should make clear that neither Members nor witnesses have had the opportunity to correct the record. If in doubt as to the propriety of using the transcript, please contact the Clerk of the Committee.
3. Members and witnesses are asked to send corrections to the Clerk of the Committee within 14 days of receipt.

Examination of witnesses

Dr Michalis Papadakis and Dr Phil L'Huillier.

Q130 **The Chair:** Welcome to the second session today of the Science and Technology Select Committee. For this session, we are very pleased to have with us Dr Papadakis, who is the CEO of the company Brainomix; he is coming in online. We also have present here with us Dr Phil L'Huillier, who is the CEO of Scancell. We are very pleased to have you both.

I will start by asking the first question. Can you both set out briefly for us what your companies do, what their main innovations and products are, the journey that you have had so far towards wider use in the NHS, and what benefits they are bringing to patients?

Dr Michalis Papadakis: First, thank you for this very kind invite and this opportunity to share our experience of not just building an innovative company but deploying it at scale and, hopefully, improving patient outcomes.

Brainomix started as a spinout from the University of Oxford. We have been developing AI imaging technologies that analyse scans of patients with conditions such as stroke and lung conditions to help front-line clinicians with diagnosis and treatment decisions. Our most well-known and adopted innovation is our Brainomix 360 Stroke technology, which is an AI-powered imaging platform that analyses brain scans of patients after they have had a stroke to identify the location of the stroke and the blocked vessel that is causing the stroke. It also acts as a communication platform, connecting primary centres and comprehensive centres. Once a stroke patient is identified, we can create alerts that speed up the transfer of patients from the primary centre to the comprehensive one to receive a mechanical thrombectomy, which is a very powerful treatment that we have in treating strokes.

We have also been developing, over the past few years, a solution for patients who have lung fibrosis. Like stroke, it is a devastating condition. It has a life expectancy of three to five years, and it can take up to two years for patients to be diagnosed. Again, we have developed an AI-powered solution; in this case, it analyses chest CT scans to identify signs of fibrosis, scarring in the lungs to diagnose these patients earlier.

We have now been operating for more than 10 years. We have been very successful, after a long journey, in getting widespread adoption in the NHS. Globally, we have more than 500 sites. In terms of our install base, we have national adoption in other

healthcare systems, such as Hungary, as well as widespread adoption in Poland, national adoption across Wales and, soon, in Ireland. We have built a lot of experience of what it takes and what is required to be the technology that is then deployed at scale.

Briefly, as I say, the journey has been a long one. We had regulatory clearance for our stroke solution for more than 10 years. We were the first company globally to launch a stroke AI solution. In all transparency, when we started 10 years ago, as a UK company, we focused a lot on the NHS; I can give much more context on that. At the same time, although we tried a lot in the beginning, we realised that it is very difficult to penetrate the NHS and get any kind of adoption, so we focused across Europe on starting to generate some adoption and evidence. This helped us a lot because we were part of an initiative called the Angels Initiative, which aimed to improve the patient pathway for those who have strokes. We provided our technology as part of that, so we started generating some adoption and clinical evidence.

What was transformational for us was when, a few years ago, we were awarded an NHSX AI award. That enabled us to deploy our technology in 26 hospitals and trusts across the NHS and carry out the largest-scale evaluation of an AI imaging technology across the NHS. It was a three-year evaluation covering more than 450,000 patients. Critically, we demonstrated through this evaluation, which was published last year in *Lancet Digital Health*, that we can double the number of patients getting selected for a mechanical thrombectomy—the treatment for stroke—and save almost an hour in decision-making. In stroke, we know that time is brain: every second we save translates to better outcomes. We could even measure that, when hospital networks used our technology in routine care, they could treble the number of patients with full recovery; it went from 16% to 48%. This was a reflection of treating patients faster and treating more patients.

At this stage, we have more than 70 hospitals using our technology in the NHS in routine care. Our collaboration with Health Innovation Oxford & Thames Valley, as part of this analysis and the project that we did on a national scale, was vital to generating the evidence. This kind of evidence generation was a driver to demonstrate the clinical value of what we do. As I will try to highlight, an important gap and unmet need is in finding a road map for procurement and reimbursement. Despite all this evidence, we have adoption, but we need a clearer pathway to reimbursement.

The Chair: Thank you, Dr Papadakis; that was very helpful. Dr

L'Huillier, would you like to set out what your company is doing and what progress has been made so far?

Dr Phil L'Huillier: Good morning, everybody. Thank you for this opportunity to talk to the committee today. I am the CEO of Scancell plc, which is a UK company focused on the clinical stage development of active immunotherapies for the treatment of solid tumours. We develop therapeutics that give long-lasting, deep, durable responses to patients with advanced melanoma. We have a deep, rich pipeline of therapeutics that we are developing here, in collaboration with the NHS, across the clinical trial network.

Our lead programme, known as SCIB, treats advanced melanoma patients. We have shown that this product works as a monotherapy on its own in the adjuvant setting, where patients can get surgery to remove their tumour then take our therapy to protect them in the long term. More recently, we have been working on our therapy in combination with checkpoint therapies—the immunotherapies that have revolutionised many solid tumour therapies. We have shown dramatic clinical benefits for patients with metastatic melanoma. Currently, we have around 100 patients on study; 80% of those patients across the UK are benefiting from our melanoma therapy. This product is just finishing off what we call a phase 2B study, and we are starting to build the path towards a registrational phase 3 study. How many biotech companies in the UK take a programme into phase 3 development and remain a UK company? It is a very low number, so we are a pretty unique company.

We have other assets and therapies in our pipeline. We are also testing our second product in head and neck and renal—that is, kidney—cancer in the UK. At the moment, we have about 200 patients; 80% of those patients are benefiting from our therapy. We are doing all of the testing here in the UK, at the present time, across 16 clinical centre sites. The company is AIM listed and has been around for two decades. It was started by Professor Lindy Durrant, a professor of cancer immunology at the University of Nottingham. We still have a research base of around 30 people in Nottingham, as well as our headquarters in Oxford.

The Chair: Thank you very much. Baroness Willis, Dr Papadakis has pretty much answered the questions that you were going to ask him.

Q131 **Baroness Willis of Summertown:** There is one left. Dr Papadakis, you mentioned that you are deployed across 70 hospitals, but I am still trying to understand the key stages that you went through on the road to adoption. You mentioned moving

out into Europe, but what barriers did you have to overcome to get to where you are now?

The Chair: Dr Papadakis, you are muted.

Dr Michalis Papadakis: Sorry—I could not unmute myself. That is a very important question.

Let me summarise some key barriers to adoption. The first one, which is not specific to the NHS, is clinical trust in the adoption of AI; when we started, AI was at a much earlier stage. These are technologies that physicians are using to make, hopefully, life-saving decisions. Ensuring that the technologies have the rigour, evidence and ability to be trusted by physicians is the first barrier. It took a lot of effort to generate the evidence, create comfort and generate relationships with the physicians who then became clinical champions.

The second barrier is workflow integration—especially for a technology like ours, where we are embedding in the infrastructure of an NHS trust. The IT infrastructure and the patient pathway can become barriers. In the NHS, we have a lot of fragmentation in how IT sees such technologies. The ability to be receptive to integrating them in systems, and the fact that we are handling patient data and complying with the GDPR, create important and necessary challenges that need to be addressed.

The third barrier is the overall fragmentation in the NHS. Although we have an important scale in the NHS, every hospital and every trust that we had to address used a slightly different process. Whether we had to talk about governance or interact with IT or clinicians, it was not just about leveraging what we had done before—although, of course, there is a transfer of experience from trust to trust. Fragmentation is a big barrier to creating something that can scale up much faster.

The fourth barrier is the requirement to build the evidence and the health economics, especially from the NHS perspective. We need to demonstrate that we are improving outcomes in a cost-effective manner. We are very pleased that NICE endorsed our technologies, following all the data that we generated.

The fifth and most important barrier, which I touched on at the beginning, is the gap between pilots and adoption. There is a big incentive or infrastructure for technologies to be piloted in NHS trusts, but there is a chasm between the pilots translating into adoption at scale.

Baroness Willis of Summertown: You managed to get across

that chasm. What did you do that meant you could get across it, when so many others are failing at that point?

Dr Michalis Papadakis: There were a few things that were aligned in our favour. The first thing was getting the NHSX AI award. This was transformational because it enabled the funding for us to hand over our technology, and the licence of our technology, for clinical use in 26 trusts. In this way, we could carry out the evaluation that I mentioned before. In addition, with what we are doing in stroke, we are addressing a very big clinical unmet need. This is an important priority in the healthcare system that such an innovation can help.

The other thing in our favour was a government incentive to make stroke a priority. During Covid and the restrictions that we had during the lockdown, our technology could enable the interpretation of scans by physicians even if they were remote; at that stage, they could not be on-site much. We could remove a lot of the red tape, but that creates a big barrier when you introduce a technology such as this into routine care.

The Chair: Dr L'Huillier, we have just heard Dr Papadakis describe the barriers. Do you have any comments about the barriers that you faced?

Dr Phil L'Huillier: Yes; I will make a couple of comments. Notwithstanding the resource constraints of the NHS, I praise the clinical centres that we have worked with for providing us with timely data. It reflects the dedication of the staff in the clinical centres we have worked with, as well as their appreciation that we have a therapy that can bring benefit to patients. We have worked very well with 16 clinical centres across the UK.

The key barrier—you will have heard this before—is the national joined-up strategy to go from discovery to translational to clinical testing without all of the regulatory barriers and the very high cost, and then through clinical development to the commissioning and approval of the drug. That lack of a joined-up national strategy means that we have to be very hands-on. It is very slow and very costly for us.

Q132 **Lord Stern of Brentford:** This question is primarily for Dr Papadakis, but perhaps also for Dr L'Huillier. It is on data, specifically the use of health data across the NHS for training algorithms such as yours. Can you say—not simply from your own experience, although that is of course very important—how you see those problems more generally because that is clearly going to be a lasting issue?

Dr Michalis Papadakis: If I understand your question correctly, you are asking how we have used data to train algorithms and, importantly, what the value of data is in a broader context for not just developing and training technologies but further validating them and driving their adoption.

First, data is the oil of what drives the innovation. We need good-quality data to develop our AI algorithms, train them and further validate them. In a broad context, it is absolutely vital that this data is good-quality data. Data are becoming much more commoditised. For example, there are companies that provide, as a service, datasets on different indications for companies like ours to train our algorithms. At the same time, we have been privileged and fortunate, because of our academic heritage, to have more than 60 academic collaborations worldwide that give us access to important datasets.

The point I would highlight is that, in my view, the data—especially NHS data—is not just datasets for training algorithms. In my view, this asset that we have in the NHS can be used to enable development, validation and, ultimately, the continuous improvement of patient outcomes. Last week, the BioIndustry Association published a health data vision report that makes this point clearly: how do we turn this data into a clinically validated innovation that is adopted at scale? Right now, access to data is very fragmented, even for a company like ours if we want to access NHS data. It is done project by project; there is no standardisation. The health data research service—HDRS—initiative, with an incentive to create a portal where all NHS data are standardised and curated, will be absolutely transformative.

Ultimately, having access to this data and creating infrastructure that incentivises companies such as ours to take innovation from inception up to adoption—and having NHS infrastructure and data as the test bed to drive this—offers a great opportunity to transform the incentives for companies such as ours to focus our innovations on the NHS in the UK.

Dr Phil L'Huillier: I have similar experiences to those that were just presented, but I look to use patients' data to help us understand how patients, and which patients, respond to our therapy. Being able to compare our patients on therapy with the available NHS data on patients who are on other therapies or not on therapy would be helpful to us, but the fragmented nature of it makes it difficult and slow to access the data.

Q133 **Lord Patel:** I am sorry for being late. My question is generally

about cancer vaccines so I am addressing you, Dr L'Huillier. The 10-year cancer plan focuses a lot on the possibility of using cancer vaccines. I know that you have established a relationship with NHS to develop these vaccines. First, is the NHS likely to use this technology widely? What phase is it in currently? How likely is it to be available across the whole of the NHS? What is the cost likely to be? We will start there, then I will follow up.

Dr Phil L'Huillier: Thank you for those questions. I should first set out that Scancell's cancer vaccine technology is "off the shelf", so it is distinct from the personalised cancer vaccines that the likes of Moderna or BioNTech are developing. It is not personal when it comes to us, but we have none the less used NHS infrastructure. We have worked with the NHS Cancer Vaccine Launch Pad. In fact, we were the first UK company—and our product, SCIB, was the first UK-discovered and UK-developed medicine—to partner with that launch pad.

This is a unique resource. It is envied globally, bringing together Genomics England and NHS infrastructure, and it has been very helpful for us in evaluating our cancer vaccine in this context. It has provided access to patient analysis and profiling, as well as broader access to patients—not only patients in big clinical centres but patients in more regional centres, who would normally not get access to our types of experimental therapy. So it has worked well. I call it a young organisation; it needs to continue to be supported and resourced to work with companies such as ours.

Lord Patel: To clarify, you refer to your company dealing mostly with generic vaccines. Therefore, it is about specific tumours as opposed to personalised vaccines, where the genetic make-up of an individual's tumour is identified first, before a vaccine is developed. Is that correct?

Dr Phil L'Huillier: Yes. Our approach is what we call an "off the shelf" cancer vaccine. It is built on shared antigens that, in our case, most melanoma patients have. We put those into a DNA molecule and deliver that to the patient to generate the clinical benefit. It does not require the detailed sequencing and characterisation of each patient, as you say. It does not require the costly manufacturing and logistical processes.

I describe this technology to you because although, on the one hand, the individualised, personal approach will undoubtedly bring benefit to patients at some point, there are also cancer vaccine approaches that do not come with the individualised logistics and costs associated with them. I anticipate that, because it is "off the shelf", our therapy will be adopted more widely across health

systems globally because it is more accessible to the patient, it is more cost-effective to manufacture and it is readily available to the patient, when they are diagnosed, with the therapy.

Lord Patel: Is the new clinical trials regime likely to help run clinical trials in cancer vaccines?

Dr Phil L'Huillier: Most definitely but, as I described before, it will require the global strategy being joined up. The Cancer Vaccine Launch Pad provides part of the tools that are required to join up that national infrastructure so that individual centres can participate in these trials, be they individualised or "off the shelf" cancer vaccine therapy trials.

Lord Patel: Earlier, you commented on the data being important. I presume that the data you are talking about is the patient-related data specific to those patients' clinical details. Is that correct?

Dr Phil L'Huillier: You are absolutely right. There are two sets of data: the individual patient data, with the patient's demographics; and, once a patient goes on to therapy, the data on their response to therapy. Secondly, I was also referencing data alongside that for other patients who are receiving other therapies, which provide the potential to compare how well our therapy is benefiting a patient versus other therapies.

Lord Patel: Do you make your data available to the NHS for its databank?

Dr Phil L'Huillier: We publish the results of our studies at the point where we have a full enough dataset or at the finish of the study. We share our data with the clinical centres we are working with, then we publish at global conferences when the data is mature enough.

Lord Patel: Do you buy the data you use, which is obviously important for the development of any medicines—this applies to Dr Papadakis, too—or do you have it just given to you?

Dr Phil L'Huillier: We buy it in the sense that we are funding our clinical trials in the NHS. In other situations, we will buy access to data from databases globally.

Lord Patel: For instance, the NHS is planning to establish a health data research service. I presume that that would be an important service to both of you in making patient data available for developing drugs and research. Should that be on a commercial basis or a pro bono basis?

Dr Phil L'Huillier: First, the data needs to be curated well. The quality of the data is critical before you start to contemplate whether it is a commercial price, but it also needs to be joined up in a broad dataset. We now have to go to individual centres to collect small datasets and collate them. I would be comfortable with paying a commercial price for fast access to quality data and data at scale.

Lord Patel: I asked a question earlier, on which I wonder whether you can give me more detail. What is the cost of the generic, "off the shelf" cancer vaccine for melanoma, for instance?

Dr Phil L'Huillier: At the moment, we are doing our analysis. We are not in the commercial stage yet but, when we look at the commercial opportunity for us as a company, we currently compare that to the price of other existing immunotherapies such as Pembrolizumab or Nivolumab, which are in the order of $100,000 to $150,000 per patient per annum. That is the sort of pricing that I model to calculate the commercial value of what we are doing.

Lord Patel: Dr Papadakis, do you have any comments on the data aspect of my question?

Dr Michalis Papadakis: Yes. I would add a bit more detail on the health data research service, which you mentioned. As I said, it could be a transformational opportunity for the positions of the UK and the NHS in attracting innovation, to be built by UK companies, and attracting international companies.

I agree fully that the data need to be, first, good-quality data. They need to be longitudinal. They need to include different kinds of data—imaging, proteomic and genomic data—so that we can get a dataset that is difficult to find elsewhere. The power of the NHS is that, if this were standardised across it, the NHS could be unique globally.

I want to touch on your point about the commercialisation of such datasets. In my view, if these data are going to be a driving force for innovation in the UK, the cost of accessing data should not be the barrier. This data should not be seen just as a way to generate a revenue stream, with companies purely paying a fee to access it. Of course, that needs to be proportionate, but, especially for UK SMEs that might have limited capital and funds, with the right incentives and a UK-centric focus, getting and enabling access to data is how, in my view, the Government should see the HDRS initiative enabling companies such as ours to build innovations in the UK, test them and create adoption, using the data for validation and demonstrating the clinical value. Instead of looking at data

only in the context of training data and charging companies a fee to access it, as I mentioned before, if the data that we have in the NHS are centralised and curated properly, they can ultimately be a key asset in improving healthcare delivery across the NHS.

Q134 **Lord Drayson:** Focusing on the clinical pathways for the adoption of AI and cancer vaccines—I recognise that they are very different—it would be helpful for the committee if you could summarise whether or not there is clarity in the NHS on the clinical pathways for the adoption of AI applications. Dr Papadakis, AI was new when you founded Brainomix; it is less so now. Is there an established pathway in NHS procurement and reimbursement?

Dr Michalis Papadakis: My honest answer would be no. What we have done in stroke may be an exception, but your question is broader. In the UK, in the NHS, we have the right ingredients, but they are not connected in a single and predictable pathway. In my view, the NHS should not be a place—on your question about pathways and, ultimately, adoption—where AI is just piloted. It should have the right infrastructure and be a system where the best technologies are identified, validated and adopted at scale.

At this stage, we need to navigate not only what we discussed just now in terms of accessing data. Importantly, the regulatory process is still not clear for AI technologies—especially as AI is evolving to agentic models and foundation models. There is a lot, as I mentioned before, to be done on pathway integration and fragmentation in IT systems from trust to trust.

Again, I highlight the biggest unmet need in this pathway integration adoption: the lack of connecting the dots between all the steps I mentioned before and procurement and reimbursement. Unless a company such as ours has a clear pathway from regulatory clearance to procurement, end to end, it is difficult to see how the investment that we make as a company will ultimately translate to the clinical impact that we want to generate.

Lord Drayson: That is really helpful. You have given us a lot of insight into the barriers to wider adoption and efficient adoption across NHS trusts, but I want to probe you a bit more. You have made the point that, when NHSX existed, that was a transformational event for Brainomix. NHSX no longer exists. Today, who is responsible for championing the clarification of the pathway for the adoption of AI in the NHS?

Dr Michalis Papadakis: In all transparency, that is an excellent question. I am not sure that I have the answer. This is one of the unmet needs that I want to highlight. There is no clear champion or

clear pathway. It is difficult. If I do not have the answer, you can imagine whether other companies that are starting out—and making a choice on whether to build their innovation in the UK, in the US or somewhere else in Europe—have the clarity that is required for the company and its investors to invest the capital and focus on adopting and developing the technologies in the NHS.

Lord Drayson: That is really helpful. Dr L'Huillier, focusing on cancer vaccines, what is the picture in terms of clarity across the NHS?

Dr Phil L'Huillier: Our recent focus has been on regulation under the MHRA to get approval for running our studies. Although the MHRA has made good strides towards becoming agile and science-focused, I urge the committee to look hard at resourcing and at some of the other models out there.

I have had the parallel experience, with the FDA, of getting approval to run a global clinical trial. We submitted an application to the FDA two days before Christmas and got our IND cleared on 25 January. Even with the Christmas/new year holiday, we still got our approval within the 30-day window. The process is still running for me in the UK. Add on top of that the fact that the move we have to start to make as a company is to go to China because the regulation there, and the ability to go quickly from discovery medicine to clinical medicine, is enormously fast in that part of the world. We are increasingly lagging behind because of those other regulatory systems. Taking an experimental medicine from the lab—and doing so safely—to get initial clinical data, in order to show that we are bringing a benefit to patients, brings much more capital when you have clinical data for a product, but the barriers to doing that are regulatorily slow. Also, the level of evidence around the risk is just enormous.

Lord Drayson: To be absolutely clear—that makes total sense to me—you have very much been focused on the regulatory pathway because that is the stage of development you are at, but, as you say, you are unusual. You are a British company in phase 3—very well done—but you must be thinking about the challenge you will face, once you have that fantastic approval for your product, in getting it adopted by the NHS. Do you have visibility? Are you thinking now about how you would go about doing that? Is it clear to you to whom you need to sell, in effect, to get the product adopted for NHS patients?

Dr Phil L'Huillier: I must admit, a lot of my focus today is on the capital to conduct a global phase 3 study, including how and where

I will position the company to do that—we will come back to that—but we will have to go through the NICE process, once we have the clinical data from our phase 3, to get approval in the UK. At the moment, I operate on the basis of generating the evidence that is required to take that path.

Lord Drayson: Is it because the UK is, in effect, a very small part of the global market for your product that you do not have the visibility of the post-NICE process? You have obviously been successful in convincing your investors to back and fund a phase 3 trial.

Dr Phil L'Huillier: Not yet.

Lord Drayson: Okay. Well, I hope that you will be successful. You have to persuade them that you will get the product into the market and there will be a market for your product. We in this committee are focused on understanding why the NHS has been unable to adopt the innovations that our science base has developed. Can you give us some sense of how you and your investors see the UK in the context of the global market for innovative cancer vaccines?

Dr Phil L'Huillier: Yes. You have hit the nail on the head. The UK becomes a small part of a global market. What drives my investors, unfortunately, is hearing that the FDA has approved me going into clinical studies. Two weeks ago, the FDA gave us a fast-track designation, which gives us more access to conversations. Based on getting investment to conduct the study, we naturally have to focus on getting regulatory approval for our melanoma product—probably in the US first, then subsequently in the UK, Europe and Australia.

Lord Drayson: That is completely different to 10 or 20 years ago.

Dr Phil L'Huillier: Yes.

Lord Drayson: Twenty years ago, UK biotech went for regulatory approval here first, reduced the risk, added speed, then subsequently got FDA approval.

Dr Phil L'Huillier: I am sorry to interrupt you but being able to move quickly in getting approval for a UK-developed product in the UK would have enormous benefits for us as a company—as well as for the patients here, because taxpayers have funded our research. The same is true of getting global adoption and regulatory approval elsewhere, but, in fact, we have to take the opposite path and go to the US.

Lord Drayson: Obviously, the regulatory landscape has changed dramatically post Brexit, but do you get the sense—this a difficult question for you to answer, but give the committee a sense—that the MHRA understands the importance to the UK of companies such as yours having a rapid and predictable regulatory approval process, reducing the cost of doing business in the UK?

Dr Phil L'Huillier: It would be very good for all of us if it did. My hands-on experience does not really back that up, unfortunately. We have been running clinical trials here in the UK, so the MHRA understands well what we are doing with our product. I go back to the comparison between the situation in the US—they saw our product for the first time just before the Christmas break and were able to turn around an approval for us in less than 30 days—and our experience here with the MHRA, where we are still in conversation on small items several months on. It has the body of evidence of our product through phase 1 and phase 2; it is very familiar with our product. So my experience does not support that, unfortunately.

The Chair: Lord Ranger, I think that Lord Drayson has asked your question.

Lord Ranger of Northwood: He has been through most of the questions.

Q135 **Lord Berkeley:** I ask this of both of you, but perhaps we could start with Dr Papadakis. Is there a problem with, or concern around, the workforce and training capacity in the NHS in terms of the ability to absorb innovation? If there is a concern, what can be done about it?

Dr Michalis Papadakis: A big part of the answer to this question relies on predicting how AI will transform the ability of the workforce, especially in the NHS, to absorb innovation. Beyond what we are doing with our AI technology—improving a specific indication in stroke and integrating within a workflow, which obviously requires, as I mentioned before, workforce capacity when we are integrating physicians to be trained—ultimately, the aim of all these solutions is to improve workflow and increase capacity, especially that of radiologists, for example. I would not say that we are lacking capacity or the ability of the current workforce to absorb such innovations, but the biggest unknown factor—I cannot say that I have an answer for it—is how AI more broadly, not just the healthcare part, will transform the workforce in the UK, especially in the NHS. That will directly impact the adoption of specific AI health tech innovations in the NHS.

Dr Phil L'Huillier: Our experience is that we get access to top talent in the academic setting, as well as top talent with experience of discovering and developing drugs in the regulatory and clinical trials. We have been lucky to access really strong talent.

Lord Berkeley: That is good news.

The Chair: Lord Winston, we have already touched on the MHRA.

Lord Winston: Yes, we have. Perhaps I could ask about something else.

The Chair: Please do.

Q136 **Lord Winston:** I wonder whether you could both be kind enough to answer this. In the public imagination, the word "vaccines" produces real issues; there is no doubt that we saw that during Covid and so on. It would be helpful if you could tell us what you feel the potential risks of vaccines used in this kind of way might be, as well as the side effects. That would be a really useful thing for us to put in our report for the Government.

Dr Phil L'Huillier: That is a good question. It is a hot potato across the globe these days, politically speaking, to talk about vaccines. I distinguish cancer vaccines from infectious disease vaccines for obvious reasons. There are some successful examples. Take the Gardasil product, which will eventually eliminate cervical cancer because we are vaccinating teenagers; that is becoming a very effective preventive cancer vaccine.

Ours is a therapeutic cancer vaccine. In our hands, with our product, we are seeing a very benign safety profile where our cancer vaccine is well tolerated. We see what we call low-grade adverse events; they are very transient, manageable and easily cleared up. I do not see, with our cancer vaccine product, having studied it in 130 patients, adverse events that are of concern to us.

Lord Winston: Dr Papadakis, would you like briefly to add anything?

Dr Michalis Papadakis: I am not able to provide any expert input on your question about the vaccine element but, more broadly—again, bringing it back to the core of the question about the adoption of innovation in the NHS, specifically for vaccines—we had a very sour experience during the pandemic of evidence not changing public opinion. Still, as scientists, academics, clinicians and UK innovators, we need to keep doing what the UK does best: generating evidence to support innovation and adoption.

Lord Winston: Dr L'Huillier, you mentioned the short-term issues, which are clearly not mild. Do you see any long-term risks in any of these ways of tampering with the immune system?

Dr Phil L'Huillier: That is a difficult question to answer in a general sense because each therapy and each cancer vaccine is very different. We do long-term follow-ups with our patients. We now have patients who have been out of therapy for two or three years, and we are not seeing the long-term or late development of adverse events that we did not see early on.

The adverse events that we see with our therapy are things such as bruising on the injection site. Sometimes, we see vitiligo, which is a whitening of the skin. Because we are treating melanoma patients, some patients see that as a badge of honour; it actually means that the therapy is working, but it is transient. Most of the adverse events that we see are simple fatigue, injection site bruising and transient, low-grade events. As we have studied patients for long-term follow-up, we have not seen any change in the adverse event profile.

Q137 **Lord Patel:** May I follow up on Lord Winston's good question? You call this a vaccine but it is a form of immunotherapy. How is it different from any other immunotherapy that is commonly used in cancer treatments? Why is it called a vaccine?

Dr Phil L'Huillier: I should say to the committee that I have called it different names. For the reason you just mentioned, at one point, I called it an in vivo antibody so as not to use the term "vaccine". It is a product that is injected into patients with a needle-free device to stimulate an immune response. In fact, it uses an antibody scaffold that is similar to how the immune system generates its own immune response to an infectious disease, say—so, yes, it is a vaccine response generating an immune response. I call it an active immunotherapy. It creates an immune response in the patient. Other immunotherapies are often antibodies that go in and block part of the immune system from suppressing the immune system to react against the cancer. We create T-cells to kill the tumour, so it is a form of vaccination.

Lord Patel: If I may prolong this discussion, that is similar to CAR T-cells.

Dr Phil L'Huillier: It is similar to CAR T-cells, but we use the body to create the T-cells.

Lord Patel: Not the lab?

Dr Phil L'Huillier: We do not use the lab to create the T-cells.

Lord Patel: We do not call CAR T-cells "vaccines".

Dr Phil L'Huillier: They generate an immune response in the same way in which, as I described, our vaccine generates an immune response.

The Chair: Thank you for clarifying that. We come to the last question, which will be asked by Lord Willis, who is coming in online.

Q138 **Lord Willis of Knaresborough:** First, I thank you both for your excellent responses to our questions—particularly those that challenged the very things you are saying. Our inquiry will ultimately make recommendations to the Government and to the NHS; these are intended to improve the NHS's adoption of innovative technologies. You have made a lot of recommendations today, but what would be the top three recommendations that you would ask us to make in our report?

Dr Michalis Papadakis: I will summarise my recommendation in three key points. First, reflecting on what I mentioned before, we need a clear national adoption pathway from clinical need to validation, procurement and scale-up. Again, I highlight the importance of connecting the dots and having an end-to-end process that leads to procurement; that currently does not exist. I also highlight again what we have done with our solution in stroke, where we have demonstrated at the health economic level that we can save the NHS £40 million annually and add 1,000 quality-adjusted life years but we still we need to go from trust to trust to be able to provide a licence commercially.

The second recommendation, which is linked to what I just said, concerns funding implementation and scaling—not just pilots. It is important to have not just the process but the right reimbursement, funding and procurement procedures so that innovators and companies have clarity on how, when they invest in the NHS, they will go from the beginning to the scale-up stage.

Thirdly—this is a very important point in terms of what we are experiencing now—we must make sure that whatever system we are producing can be leveraged when a company is looking to grow globally. We are focusing our lung solution, which I mentioned before, on the US despite the success that we have had in stroke. We have not yet started deploying it in the NHS because, despite our success in stroke, the barriers we have discussed today are too high for us to overcome in order to justify the investment that we would need to make. Ensuring that the NHS and the UK become a

powerhouse of innovation that can be translated globally would be my third recommendation.

Dr Phil L'Huillier: I would like to make two recommendations related to funding and financing companies at scale—that is, on the scale of clinical development that we wish to take on. The first is that, as an AIM-listed public company here in the UK, we are not able to access funding support alongside our investors from the British Business Bank. My first recommendation is that you unlock access to public companies such as ours so that we can get co-investment alongside our investors from the British Business Bank. It is inequitable.

The British Business Bank funds large institutions, venture capital companies and private companies, but a company such as Scancell has principally been funded for a decade or so by retail investors. These retail investors are also voters, but they have supporters over a long period. Because we are a public company on AIM, we are not able to access this capital. It is co-investment; I do not want it as just a handout. I want co-investment from the British Business Bank to invest alongside our investors and to support those retail investors that have, over a decade or more, funded this company in moving forward.

Secondly, as you heard in the previous session, unlocking the pension funds is critical for a growth-stage company. The biggest challenges I face are: where do I access the capital? Where do I place the company globally to run the phase 3 study? You heard about this in the previous session but I, like many other CEOs of biotech companies, also have to look to NASDAQ as the next path forward at this stage because I cannot even get access to the flows of capital that should be available to us here. Those would be my two recommendations.

Then, we have to look at alignment of the regulatory environment; AIM, alongside NASDAQ, is perhaps one market to look at. I get a lot of feedback from US investors saying, "Phil, we like what you're doing and believe in that approach, but the AIM market just isn't something we can participate in". There are two things here: alignment of regulation; and a lack of understanding. It is almost about educational marketing for the UK market, but that alignment and that regulation limit us in accessing US capital—or capital from elsewhere—remaining an AIM-listed company and staying in the UK.

The Chair: Those summary recommendations from both of you are very useful and important to us. We very much appreciate your

evidence. Thank you for coming. This is the end of the session.