

Bulletin

From Bench to Bedside...

The discovery of innovative medicines and vaccines

James Lind – British Naval surgeon, HMS Salisbury, 1747



The Cardiff University Science in Health Public Lecture Series attracts a diverse audience including secondary school pupils, students, healthcare professionals, and the public. The series aims to open areas of concern in healthcare and present new research on health issues in an inclusive and understandable way. The lectures run from October to April and are free to attend; everyone is welcome.

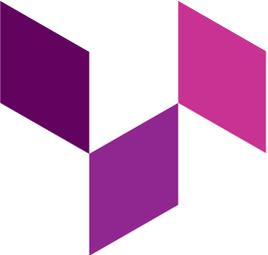
In March 2023, ABPI's Medical Director, Dr Amit Aggarwal, was honoured to close the current series, with a lecture on Drug Discovery – From Bench to Bedside. With a background working both in the NHS and the pharmaceutical industry, Amit took the audience members on a whistle-stop tour which explained how today's innovative medicines are research and developed, and how they are made available to patients.

The development of a single medicine usually takes over ten-years and costs more than £1bn, starting with 10,000 potential chemical candidates, before years of testing and trials reduces them down to arrive at the one effective medicine, which is safe and suitable for human consumption. He explained this as a journey from the computer screen and laboratory, through three-stages of clinical trials, via licensing and reimbursement bodies, to deliver novel treatments and ground-breaking advancements in patient care that change lives across Wales.



Dr Amit Aggarwal delivering his lecture to a packed room

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Chris Martin (Chair, Welsh Life Sciences Hub) questioning Amit following his lecture

Looking forward, Amit discussed the start of the genomic revolution. This is starting to bear fruit in providing personalised medicines and the potential for 'one shot cures' for some diseases that are currently life limiting. However, drug development is an increasingly expensive proposition and only the very best countries in the world will win the race to conduct this research.

Unfortunately, the UK is currently struggling with translational research (the research that seeks to produce more meaningful, applicable results that directly benefit human health), but this can still change. ABPI is working hard to ensure the UK remains one of the best places in the world to research and develop new medicines, making them available to patients at the earliest opportunity.

Amit left those attending with a strong message, translational research matters. This research has had an unfathomable impact on health, from an individual, as well as public health and societal perspective. However, it cannot be done without multi-stakeholder resources that can be used for basic science and commercial studies. The UK is typically great at translational research – and for those in the audience with an interest in science, he assured them 'you can be too'.

If you are interested in learning more, the lecture is now available to view on [YouTube](#).



Dr James Matthews (Cardiff University) questioning Dr Amit Aggarwal on clinical research

ABPI sets out new proposals to support the NHS and economic growth

The Association of the British Pharmaceutical Industry (ABPI) has published the pharmaceutical industry's vision for a new agreement with the UK Government which will deliver for patients, the NHS and the economy.

The industry's proposals for a new Voluntary Scheme for Pricing, Access and Growth (VPAG) would deliver a sustainable approach to medicines provision, while also maximising the potential of the UK life sciences industry as an engine for growth. They include measures to ensure rapid patient access and adoption of new medicines, as well as opportunities to improve health outcomes and productivity for the whole country.

The industry's proposals fall into four key areas: restoring an internationally competitive commercial environment for life sciences; supporting UK clinical

research and R&D; ensuring rapid patient access and uptake of new medicines; and improving population health and productivity through health innovation. Progress in all these areas is essential if we are to meet the needs of patients and the NHS, and industry.

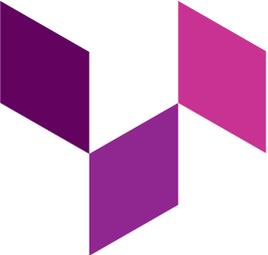
Among the proposals is a fixed rebate rate of 6.88% levied across all eligible NHS medicine sales, to be paid by the industry. This would deliver over £1bn a year to the NHS – around £300m more than the average delivered under the old scheme before 2023, and comfortably more than the highest contributions ever made before the pandemic. Under these terms, the UK would return to a more internationally competitive position for attracting inward investment, yet the UK would continue to spend less on branded medicines

than any comparable country, both in terms of per capita spend and as a proportion of total health spending.

In a world first, as long as we can agree an internationally competitive rate with the government, the industry also proposes that as part of such a package, they could agree to an industry-funded 'Investment Facility' worth more than £1 billion over five years, to maximise the potential of the UK health and life sciences ecosystem as an engine for innovation-led economic growth.

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The Investment Facility would be provided by a 1.5% premium on NHS sales, paid by scheme members in addition to the scheme payment rate. The fund could be used to support key shared priorities like boosting NHS clinical trial capacity and delivery, expanding UK Genomics capacity, and building the UK capability to use real-world data to improve the speed, diversity, and efficiency of recruitment into clinical trials. Such enhancements would strengthen the UK's ability to attract the next wave of inward investment in life sciences.

The Investment Facility would also fund a Medicines Equity Partnership operating across the four nations of the UK. That partnership would improve health outcomes and productivity for the whole country, by addressing barriers that prevent the timely uptake of new medicines that have been approved by AWMMSG, NICE and the SMC. Another key proposal is for companies to commit to prioritising the UK as an early launch market, seeking a GB licence on new medicines in their first wave of regulatory filings. This would rely on a number of improvements to the UK's regulatory approach to support rapid access to, and adoption of, new medicines and would enable the UK to regain and sustain its position as a 'first wave' country for new medicine launches.

Discussing the proposal, Richard Torbett, Chief Executive at the ABPI said:

"The life sciences industry in the UK stands at a crossroads. The current direction of travel is leading away from success, and we must act urgently to turn this around. A new Voluntary Scheme for Pricing, Access and Growth provides the opportunity for a new settlement, placing the UK's life sciences sector back on the path for future growth.

"Securing this vision will require a new mindset and approach from government, system partners and industry. It will require building on the partnership and trust forged during the pandemic.



Richard Torbett,
Chief Executive, ABPI

It will require learning from successes such as the Vaccine Taskforce, recognising that real progress comes from drawing on the strengths and experience of both the public and the private sectors. Working together, we can create the conditions for innovative medicines to deliver their true value as an investment in the nation's future health, wealth, and productivity."

You can find out more about the ABPI's proposal – and the evidence supporting it – [here](#).

Transforming lives, improving health outcomes: tackling the true cost of variation in uptake of innovative medicines – ABPI Cymru Wales at the Senedd

On 15th February 2023, ABPI joined with the Welsh NHS Confederation to host a drop-in session at the Welsh Parliament / Senedd Cymru to discuss a new report highlighting the cost of variation in uptake of innovative medicines¹.



Eluned Morgan, MS – Minister for Health and Social Services – meeting with the teams from the Welsh NHS Confederation and ABPI to discuss the Transforming lives report

The report is based on a roundtable discussion held in September 2022, bringing together experts from the healthcare policy landscape. Through a structured discussion, the participants identified barriers to system-wide uptake of innovative medicines, drivers of unwarranted variation, shared successes in tackling these challenges, and discussed how good practice could be adopted system-wide and what change would be required to enable this. This roundtable informed the recommendations of the subsequent report looking at better health system partnerships².

Continued on next page

¹ <https://www.nhsconfed.org/publications/transforming-lives-improving-outcomes>

² <https://www.abpi.org.uk/media/news/2023/january/better-health-system-partnerships-can-improve-equality-of-access-to-innovative-medicines/>



Sarah Murphy MS, who sponsored the event, with the teams from the Welsh NHS Confederation and ABPI

We were delighted to be able to talk to so many Senedd Members and teams about the report, the key recommendations of which are:

- ◆ Innovative medicines transform individual patient lives as well as bringing significant benefits to the economy and society, through greater patient and carer productivity, NHS productivity, and more. It is estimated that the UK economy would achieve £17.9bn additional productivity gains through the increased uptake of innovative medicines.³ For the NHS, and wider health and care system to survive and thrive for the benefit of its users, innovation at every stage and in every aspect is not only desirable but necessary.
- ◆ Adoption of innovation is challenged by the fact that NHS leaders face ongoing operational pressures every day, asked to meet increasing demand, reduce health inequalities, and improve outcomes within constrained resources, while also trying to re-imagine services transformed by a new focus on population health, enabled by partnership working and biomedical innovation.
- ◆ Rapid and consistent adoption of evidence-based, innovative medicines is a strategic opportunity for health systems. While medicines themselves have vital clinical benefits in individual treatment, they also have an important broader impact on patients, the NHS, society, and the economy.
- ◆ However, despite NICE and the AWMSG approving new medicines for use by patients, there is significant geographical and sub-population variation in their usage, leading to millions of patients missing out on proven treatments that would make a huge difference to health outcomes, as well as a failure to realise economic benefits for the NHS and society.
- ◆ Understanding the barriers to uptake of innovative medicines, and identifying and sharing practical solutions system-wide, are vital to making progress both operationally and strategically. The overarching challenge is to ensure that all health and care system leaders position medicines as a strategic enabler of improved patient outcomes, NHS productivity and efficiencies across the system, as well as a clinical intervention for individuals.
- ◆ Strategic partnerships across the system are also essential in creating a thriving health and life sciences ecosystem that works for patients, society, and the economy. Indeed, such partnerships play an important role in enabling the NHS to mature as an innovation partner across value chains and create the conditions required to ultimately tackle unwarranted variation in the uptake of innovative medicines. Continuing to support the equitable adoption of innovative treatments through the New Treatment Fund is vital in efforts to reduce health inequalities and promote equity across Wales.



Heledd Fychan, MS discussing the Transforming lives report with Dr Rick Greville, Director of ABPI Cymru Wales

We will continue to work with Senedd Members and their teams to share evidence as our work with the NHS right across the UK develops. Further details are available on our website - <https://www.abpi.org.uk/partnerships/working-with-the-nhs/>

³ <https://www.abpi.org.uk/publications/pwc-transforming-lives-raising-productivity/>

AstraZeneca committed to working with healthcare partners to drive sustainability

By Jonathan Morgan, Regional Healthcare Manager, AstraZeneca UK

GB-43478

Sustainability is fundamental, not only to the health of the planet, but to the health of our society and people. We know it's not only global temperatures and sea levels that are rising, but rates of chronic disease and levels of health inequality too.

By embedding sustainability in everything we do – from the lab to the patient – we are transforming the future of healthcare. Collectively, we are committed to driving meaningful change, championing innovation, supporting more resilient healthcare systems, and ensuring equitable access to care for patients. All in a way that is respectful to our planet.

As part of our commitment to environmental protection, we are on track to reduce gas emissions from our global operations and fleet (Scope 1 and 2) by 98% by 2026 (from a 2015 baseline), and halve our entire value chain footprint by 2030 on the way to a 90% reduction by 2045 (from a 2019 baseline). We are one of the first seven companies worldwide to have our net zero scope 1-3 science-based targets verified under the Science Based Targets initiative [Net-Zero Corporate Standard](#).⁴

The NHS – responsible for 4–5% of England's total carbon emissions⁵ – is aiming to become the world's first net carbon zero health service. The Greener NHS report: Delivering a 'Net Zero' Health Service⁶ looks at how they can decarbonise across the healthcare system, from care

to hospitals, medicines, and supply chain. They have stated a number of examples of how this can be done including: delivering care closer to home avoiding the carbon cost of travelling, minimising less appropriate procedures and linked carbon emissions, switching away from disposable equipment and towards reusable equipment, avoiding plastics in medicine supply, and working with pharmaceutical companies to reduce emissions from high-carbon medicines such as inhalers and anaesthetic gases.

Our partnership with the NHS to reduce use of 'rescue' asthma inhalers

We are already working in partnership with the NHS to help reduce the carbon footprint of healthcare delivery and to help them achieve their target of Net Zero by 2040. One of the main areas we are focused on is working to decarbonise inhaled respiratory medicines and transition to the next generation of pressurised metered dose inhalers (pMDI).

The propellants in older metered-dose inhalers are powerful greenhouse gases, which although not harmful to patients, account for approximately 13% of the NHS's carbon footprint related to the delivery of care.⁷ The majority of people are given two types of inhalers to treat asthma.⁸ Blue, short-acting beta-agonist (SABA) inhalers help to provide fast relief for symptoms as they arise, whereas brown, inhaled

cortico steroid (ICS) inhalers are used for daily maintenance and to address the underlying inflammation of the airways.^{9,10} Seventy per cent of the total carbon footprint of inhaler devices in the UK is represented by SABAs, often known as 'blue' or 'rescue' inhalers. In asthma, 83% of SABAs are prescribed to patients already using three or more inhalers a year. This equates to around 250,000 tonnes of eCO₂ annually within the UK.¹¹

Wales have set a target to reduce the carbon footprint of inhalers from 65 Million Kg eCO₂ to 20 Million Kg eCO₂ by 2025.¹²

Alongside this environmental agenda, the All-Wales asthma guidelines suggest that the practice of using short acting bronchodilator (SABA) monotherapy is now outdated and no longer acceptable; and recommend that prescribing more than six SABA prescriptions per year should prompt urgent review.¹³

We are working on a series of initiatives in Aneurin Bevan, Cardiff & Vale and Hywel Dda to identify and review high SABA use, with the objective of improving asthma outcomes, as well as reducing the environmental impact of treatment.

In doing so, we are applying learnings from the SENTINEL* project, conducted in collaboration with the NHS in Hull and now rolled out to over 230 Primary Care Networks, health boards and federations across the UK.

SENTINEL reviewed SABA reduction through implementing Hull SABA-free guidelines. In one Primary Care Network, between Dec '20 and Jan '21, 761 asthma patients were reviewed of which 375 had their SABAs discontinued with a total reduction of 1047 SABAs prescribed, compared to the previous 12 months. This led to a 29-tonne reduction in eCO₂, compared to the previous 12 months.^{14,15,16}

Following this model, one large practice in Aneurin Bevan has seen the patients who are prescribed to more than three SABA reduced from 43% to 30% from April to October 2022, with 621 fewer SABAs prescribed, compared to the previous 12 months. This has resulted in a reduction of 29.2Kg eCO₂.¹⁷ This is from just one practice, so it is easy to see how reductions in eCO₂ could be magnified if other practices across Wales applied the same model.

We are committed to working with practices across Wales and the UK to support them in reducing their SABA prescribing. With our commitment to driving meaningful change in healthcare, we are excited at how we collaborate to support the NHS reduce carbon emissions more broadly than just in asthma.

* The SENTINEL project was a quality improvement initiative undertaken in Hull and East Yorkshire, supported through a joint working agreement between Hull University Teaching Hospitals NHS Trust and AstraZeneca UK. The SENTINEL intervention was designed in collaboration with asthma clinicians and patients using experience based co-design methodology.

⁴ AstraZeneca.com. Ambition Zero Carbon. Available at: <https://www.astrazeneca.com/Sustainability/environmental-sustainability/ambition-zero-carbon.html>. Accessed February 2023

⁵ Greener NHS campaign to tackle climate 'health emergency'. Available at: <https://www.england.nhs.uk/2020/01/greener-nhs-campaign-to-tackle-climate-health-emergency/>. Accessed February 2023

⁶ Delivering a 'Net Zero' National Health Service. Available at <https://www.england.nhs.uk/greenernhs/publication/delivering-a-net-zero-national-health-service/>. Accessed February 2023

⁷ Wilkinson A, Woodcock A. The environmental impact of inhalers for asthma: A green challenge and a golden opportunity. *Br J Clin Pharmacol*. 2022 Jul;88(7):3016–3022

⁸ NHS. Asthma overview. Available at: <https://www.nhs.uk/conditions/asthma/>. Accessed: February 2023.

⁹ O'Byrne P, et al. The paradoxes of asthma management: time for a new approach? *European Respiratory Journal*. 2017;50:1701103

¹⁰ AstraZeneca UK. Preventer inhalers. Available at: <https://www.asthma.org.uk/advice/inhalers-medicines-treatments/inhalers-and-spacers/preventer/>. Last accessed: February 2023

¹¹ Wilkinson, AJK et al. BTS Oral Abstract No. S26. Available from <http://dx.doi.org/10.1136/thorax-2020-BTSAbstracts.32>. Accessed February 2023

¹² All Wales Prescribing Advisory Group. Inhaler decarbonisation scenarios. Enclosure No. 5/AWMSG/1222

¹³ All Wales asthma guidelines. Available at: <https://awttc.nhs.wales/files/guidelines-and-pls/all-wales-adult-asthma-management-and-prescribing-guideline-pdf/>. Accessed: February 2023

¹⁴ Crowther, L et al. Poster presentation. 10th IPCRG World Conference, Dublin, 2021, 6–8th May

¹⁵ Open Prescribing. Available from <https://openprescribing.net/pcn/U64827/measures/?tags=respiratory>. Accessed February 2023

¹⁶ Janson, C et al. *Thorax* 2020; 75: 82–84

¹⁷ Reynolds J. Turning blue inhalers green. Sferic Susqj Project, October 2022

Science in Health LIVE Back with a Bang



Almost 500 Year 12 and 13 students from right across Wales were treated to a day of tours, talks and interactive exhibitions as Science in Health LIVE celebrated its return, in real life, for the first time since 2019.

Since 1995, Cardiff University's School of Medicine has welcomed sixth-form students from across Wales with the aim of engaging and inspiring them with the exciting science underpinning clinical management of disease and medical research. ABPI Cymru Wales has been working with them from its establishment in 2003.

This year, students were once again treated to laboratory tours, which allowed them to gain a feel for the excitement and challenges of biomedical research; they visited a wide range of interactive exhibitions, listened to a series of talks on various hot topics in biomedical science, and were able to meet and question scientists and clinicians from across the whole spectrum of scientific and healthcare careers. Colleagues from the ABPI were able to share details of both the [ABPI Schools](#) website and [Careers](#) website – to help students with their current workload and to think about the future.

The event, and ABPI's long-standing sponsorship, is always extremely well received by both students and teachers alike, and over the years it has become clear that Science in Health LIVE, alongside other Science in Health initiatives, is having a positive

impact on influencing career choices and supporting students to realise those choices in terms of gaining university entrance.

Andrew Croydon, ABPI Director of Skills & Education Policy and Examinations explains why inspiring children in STEM, and supporting informed careers decisions, is vital for supporting more young people into science based jobs like those in the pharmaceutical industry.

The term STEM stands for Science, Technology, Engineering and Mathematics and can be used to describe a whole wealth of jobs and industries that are seen to be of significant importance to the UK economy. Typically, STEM industries face some difficulties in recruiting people with STEM skills – which can in part be attributed to a lack of quality career guidance.

How do we inspire the next generation in STEM?

For some, making decisions on which education route to take can start as early as primary school. This is why it is so important to support teachers of all age groups with high-quality classroom resources, alongside content that can help them give students informed career advice at each stage of their education.

Contrary to popular belief, the skills required in the pharmaceutical industry are not limited to the classic science subjects such as biology and chemistry, or even maths and engineering. In fact, the industry needs people with both STEM and non-STEM skills. For this reason, it is important people don't feel limited in their career choices based on the subjects they choose to study in their earlier years.

How does the ABPI contribute to the UK skills environment?

Working with our members, we regularly conduct analyses on where the skills gap lies within the industry, and how the ABPI is supporting student learning to address them.

More and more pharmaceutical companies are looking for people with a wide range of skills, from leadership to engineering – communications to project management, something we recently spoke about at the [House of Lords](#) inquiry into people and skills in STEM in the UK.

By working with Government, we help develop policy solutions that support skills needs and create a sufficiently skilled workforce, which ultimately aids the Government's mission to become a science and technology superpower.