Cancer Research UK response to the Industrial Strategy Green Paper

April 2017

Cancer Research UK (CRUK) strongly welcomes the focus on science, research and innovation at the heart of the Industrial Strategy Green Paper. A strategy that strengthens the global standing of our research base will not only increase the UK's productivity and stimulate the economy, but have tangible benefits for patients. The priorities we have set out in our response are also highly relevant to the development of the Life Sciences Industrial Strategy: Cancer Research UK sits on Sir John Bell's Life Sciences Industrial Strategy Board.

Summary

Science and research play a crucial role in driving the UK's economy. Along with Government and industry, medical research charities play a vital role in stimulating and investing in innovation. Charities have invested nearly £10 billion in life science and medical research in the UK since the sector started collecting data in 2008[1]. In 2015/16 alone, CRUK spent £432 million on research in institutes, hospitals and universities across the UK. This demonstrates our strong commitment to improving patient lives through research and the important contribution of charities to UK life sciences and the economy.

Furthermore, medical research charities stimulate regional economies by funding research across the UK. Last year, CRUK spent over £23 million on research in the North West of England, over £41 million in East Anglia and over £33 million in Scotland.

In this submission, we have outlined four priority areas to address in the strategy:

- ***Optimising medical research charity investment***
- ***Enhancing the clinical research environment in the UK***
- ***Harnessing data to benefit patients***
- ***Ensuring we have a skilled science workforce***

Consultation Question responses

5. What should be the priority areas for science, research and innovation investment?

Our science base is a national asset. Government must ensure that its investment in science serves to attract further investment in UK R&D from industry and charities. To do so, we believe Government should set an ambitious target and roadmap for total public and private R&D spending in the UK to reach 3% of GDP.

This call was supported in the House of Commons Business, Energy and Industrial Strategy Committee's First Review of the Industrial Strategy[2]. The target would be in line with other comparable countries and would send a clear signal globally that the UK is open for business.

[1] Association of Medical Research Charities, *Medical Research Charities: investing in research*, 2015
[2] https://www.publications.parliament.uk/pa/cm201617/cmselect/cmbeis/616/616.pdf

Optimising medical research charity investment

Increasing the Charity Research Support Fund (CRSF)

Government must provide universities with long-term confidence in its support for charity investment by committing to increase the CRSF. This commitment needs to be maintained by the Higher Education Funding Council's successor organisation, Research England.

Universities rely heavily on funding from charities for exploratory and high-risk research. Promising results which arise from this research are taken forward by industry, having been "de-risked" by charity funders. To leverage further investment from industry and charities, it is crucial that a proportion of Government's new investment in R&D of up to £2bn/year supports research in UK universities through quality-related (QR) research funding, which underpins the excellence of our science base.

The CRSF is an important component of QR research funding. Universities receive the CRSF from Government to cover indirect costs of research, such as the costs of maintenance of laboratories, which charities cannot pay because their supporters expect donations to be spent directly on research activity. However, ongoing failure to increase investment in CRSF, so that it keeps pace with charity spending, is impacting on the attractiveness to universities of medical research charity funding, with negative consequences for research anticipated in a wide variety of disease areas.

Within QR funding, the level of the CRSF has remained at £198 million per year since 2010; a real-terms decrease of £38.7 million over 6 years, and it will stay at £198 million in 2017/18. This has put pressure on universities and has led to some coming to view charity funding as being less valuable than other sources[3]. An increase in the CRSF to £264 million by 20/21 would be in line with inflation since 2010 and in proportion to changes in charity investment since 2010.

Evidence suggests investment in charity research by Government will see long term returns: each pound invested in cancer related research by the taxpayer and charities returns around 40 pence to the UK year on year[4]. It is therefore vital that the Government incentivises and provides long-term confidence for universities seeking charity investment.

R&D tax credits for medical research charities

The strategy should maximise on the opportunity of Government's review of the research and development (R&D) tax environment by setting out a mechanism for medical research charities to benefit from R&D tax credits. This would enable charities to invest more in UK R&D.

The Industrial Strategy stated that Government 'can take action to invest and introduce tax incentives to encourage businesses to invest in R&D'[5]. We believe that charities and industry alike must be supported by the UK tax system to make R&D investments, often with levels of uncertainty and risk, to develop innovative technologies.

R&D tax credits enable companies that incur costs in developing new products, processes or services to receive a cash payment or tax deduction. Universities and large charities were originally able to

[3] AMRC 2015 Spending Review submission to HMT
http://www.amrc.org.uk/sites/default/files/doc_lib/AMRC%20SR15%20SUBMISSION%20FINAL_PDF.pdf
[4] https://www.cancerresearchuk.org/sites/default/files/policy_june2014_medical_research_whats_it_worth_briefing_document.pdf
[5] Industrial Strategy Green Paper, January 2017, p.25

claim relief through the Research and Development Expenditure Credit (RDEC), but in 2015, the legislation was changed to close this scheme to charities 'in line with the original intention of the policy'[6].

We disagree that medical research charity spend is at odds with the original policy intentions. On the contrary, in 2015, medical research charities spent over £1.4 billion on research in the UK; directly supporting the Government's primary aim to increase investment in R&D in the UK.

One option is for Government to open the RDEC scheme to independent charities not based at a Higher Education Institute. This would meet the scheme's original policy intention and, since any funds recuperated by medical research charities must be reinvested in research activity, enable Government to further stimulate R&D growth in the UK.

We therefore propose that Government establish an independent 'charities RDEC' rate. In the first year the percentage rate could be set at a conservative level to enable Government to accurately assess the size of the claim and mitigate against liability in the first year. In successive years Government would have the option to increase or decrease the percentage rate to optimise the size of the claim. We have seen this approach used in other policy areas, such as the gift aid small donation scheme, where the total claim was lower than anticipated. Using the mechanism used to calculate the existing RDEC, we calculate that the maximum claim by the sector would be £122m. However, this is likely to be an overestimate since eligibility is not anticipated to be 100%.

Amend VAT rules on shared facilities

Government should review current rules on VAT exemption on sharing of buildings, equipment and facilities for the purposes of R&D, to support industry, academia and charity collaborations and attract further inward investment.

The extent to which charities and universities can currently partner with industry is limited by VAT rules on sharing of facilities, equipment and buildings. Publicly-funded research institutes are restricted to 5% commercial activity if they opt not to pay VAT or face costly tax bills to co-locate their researchers with industry colleagues. The ability for industry and publicly funded researchers to collaborate is crucial to translation, and the inability to collocate and share resources is seen as a major barrier.

Although calls have been made for Government to address this issue, we understand that reform has not been possible because of EU membership. The UK's exit from the EU presents an opportunity to improve the tax system for collaborative research, development and innovation in the UK.

Enhancing the clinical research environment in the UK

Streamline clinical trials set up

Government should take steps to streamline the setup for clinical trials and increase industry investment, through investment in infrastructure and alignment with the EU Clinical Trials Regulation.

[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/81255/condoc_above_line_credit_rd.pdf

Government must recognise the importance of adequately resourcing the Health Research Authority (HRA) to implement long-awaited Integrated Research Application System (IRAS) functionality updates aimed at speeding up assessment of resource implications for clinical trial delivery.

Additionally, Government should prioritise alignment with the new EU Clinical Trials Regulation, due to come into force in 2018, which the UK has played a key role in shaping for the benefit of UK research. The ability for our researchers to collaborate with European counterparts is key to conducting research for paediatric patients and those with rare diseases.

Finally, the HRA must ensure interoperability between IRAS and the EU Clinical Trials Regulation infrastructure, including the portal and database.

Streamlined commissioning of Excess Treatment Costs (ETCs) for clinical research

Commissioners must meet ETCs for clinical trials as part of routine business, to avoid delays in setting up studies. This would ensure optimal development and delivery of high quality clinical trials.

The treatment costs that the NHS covers for non-commercial trials – ETCs - are a critical component of clinical research. As well as providing the foundations for a research active NHS, ETCs can also leverage significant amounts of inward investment when non-commercial funders collaborate with industry.

However, the current guidelines on the commissioning of ETCs leave decisions to the discretion of Clinical Commissioning Groups, which results in local level discussions with multiple providers and commissioners and consequent delays in setting up studies. Trial setup delays harm our international competitiveness, and make us less attractive to industry.

For certain therapies it is essential that we take a national approach to meeting the ETCs of studies, to fit with national priorities. In cancer this is particularly relevant in radiotherapy, where we have already seen the benefit of national funding for stereotactic ablative radiotherapy (SABR) studies. The national cancer strategy called for £4.3m per year to provide ETCs for upcoming trials up to 2020[7].

In 2013, the UK Government confirmed plans to build two state-of-the-art high-energy proton beam facilities in the UK by 2018 at a total cost of £250 million[8]. It is vital that more research is done to understand the benefits of proton beam therapy. Commissioning of ETCs must not prevent these new facilities, and the patients using them, from participating research.

Harnessing data to benefit patients

We support the current considerations for the Life Sciences Industrial Strategy to create health economies for data and believe that this ambition should be supported by the overarching Industrial Strategy.

[7] *Achieving world-class cancer outcomes: A strategy for England,* Report of the Independent Cancer Taskforce, July 2015. https://www.cancerresearchuk.org/sites/default/files/achieving_world-class_cancer_outcomes_-_a_strategy_for_england_2015-2020.pdf
[8] https://www.gov.uk/government/news/government-commits-250-million-for-innovative-cancer-treatment-to-save-lives-and-reduce-side-effects

Any data initiative must build on existing infrastructure, skills and relationships. Enforcing interoperability has been a weakness in past programmes and will be key in the implementation of this initiative.

Furthermore, it is crucial that strong safeguards are in place and that this is well-communicated to the public and patients to build trust. Patients are often supportive of their cancer data being used: 94% of people with cancer supported their cancer data being used for research and 89% supported their data being used for direct care. However, support does not override a desire to be informed: 83% believed it is important that people with cancer are informed about the cancer registry.[9]

To ensure that high support is maintained, communication must be carefully planned and information delivered effectively and accessibly to patients, health professionals and the public. The work of the National Data Guardian and of Understanding Patient Data[10] is central to this debate and must be progressed before any new initiative is launched and before charities could consider supporting it. We would also encourage the Office for Life Sciences to engage with Understanding Patient Data in the first instance.

Greater Manchester would be a good choice for a health economy, given the existing strong relationships formed during 'DevoManc'. The large amount of high-quality data available means that cancer could be an initial priority area; there is huge potential in linking genomic data to treatments and outcomes. The cancer vanguard in Manchester has a history of collaboration between organisations and a strong academic centre of excellence. However, it should be noted that a population of 5 million would not be large enough to capture enough data on rarer cancers.

Although these local health economies should be encouraged to trial new innovations, it is important that nationally-determined datasets and standards are adhered to. This allows for accurate regional comparisons and for robust evaluation of local initiatives that could be translated into a national programme.

Ensuring we have a skilled science workforce

The Industrial Strategy sets out the ambition for the UK 'to continue to be one of the best places in the world for science and innovation.'[11] To achieve this aim, Government must ensure that the UK is able to train, attract and retain the best and brightest scientific minds. The success of the Industrial Strategy will be dependent on the UK having a sufficiently skilled workforce.

The Industrial Strategy recognised the skills shortfalls that exist in some parts of the country, and especially within the Science, Technology, Engineering and Mathematics (STEM) sector. 75% of roles on the Home Office's Shortage Occupation List are in STEM[12].

Therefore, the following measures will be imperative to the full implementation of the Industrial Strategy:

- Developing an immigration system that enables us to attract, recruit and retain the best scientific talent from across the globe

[9] http://www.cancerresearchuk.org/sites/default/files/16-036870-01_perceptions_of_the_cancer_registry_survey_report_-_final_-_v2_public.pdf
[10] https://understandingpatientdata.org.uk/
[11] Building our Industrial Strategy, January 2017, p.27
[12] Shortage Occupation List 2015

- Review of apprenticeships to better support medical research charities

Developing an immigration system that enables us to attract and retain the best scientific talent from across the globe

A strong science base requires a skilled workforce. We believe that the mix of UK, European and international researchers within our research community is vital for the sharing of best practice, expertise and skills (see case study 1). Cancer Research UK recruits post-graduate students and researchers from an international pool to ensure that we are working with the very best minds to conduct the highest quality research.

Non-UK nationals are a significant and valuable part of our workforce dedicated to beating cancer sooner: 46% of our PhD students and half of our research fellows are from outside of the UK[13]. That is why the UK must develop an immigration system that enables us to attract, recruit and retain the best scientific talent from across the globe and recruit the staff needed for our NHS.

The UK plays a key role in training young researchers; many of whom go on to set up labs elsewhere, but maintain important collaborative relationships with research groups in the UK. The UK also benefits from recruiting talented researchers who have received specialist training from centres outside of the UK. Such recruitment is particularly important and sometimes necessary in areas of science where we have a national skills shortage such as researchers working in computational biology and big data[14][15].

We need to ensure that the UK remains open and welcoming to researchers, innovators and specialist technicians. In the short-term, we believe that all current EU-national researchers working in the UK, and UK-nationals working in the EU, should be given the opportunity to live and work in their present location following the UK's exit from the EU. The rights of their partners and dependents should also be protected.

We welcome the commitment in the 2017 Spring Budget of £100m to attract the brightest minds to the UK to help maintain our standing as a world-leader in science and research[16]. In addition to tangible policies that enable us to recruit talent, a positive and consistent message needs to be sent to researchers globally, including those already based in the UK, to reassure them that their contribution to UK science is valued and encouraged.

Case study: Dr John Diffley, Francis Crick Institute

John Diffley is one of the world's leading experts in studying how cells grow and make copies of themselves - a process that goes wrong in cancer. Dr Diffley's discoveries will form the foundations for new ways to diagnose and treat cancer in the future.

John's world leading research has benefitted hugely from the European Research Council (ERC) funding he was awarded in 2009. To date, this funding has supported 11 of his peer-reviewed

[13] The PhD student figure is based on data from Researchfish, a self-reporting tool for researchers, including those receiving CRUK funding
[14] 'Bio-informatician' and 'informatician' are included on the Shortage Occupation List, valid from 6th April 2015
[15] Medical Research Council and Biotechnology and Biological Sciences Research Council (2014) Vulnerable Skills Survey 2014
[16] https://www.gov.uk/government/publications/spring-budget-2017-documents/spring-budget-2017#executive-summary

research publications. Last year he was awarded another prestigious ERC Advanced Grant providing him with £1,455,294 for further research.

Around 50% of the scientists in John's lab are from non-UK EU countries. Two of the current 15 are funded through the Marie Skłodowska-Curie actions - Research Fellowship Programme. This fellowship, which is part of Horizon 2020, encourages researchers to move between EU countries to conduct their research, sharing their knowledge and skills as they go.

Over the years, John has established strong collaborations with labs across Europe. Some of these have been the direct result of EU funding. Dr Monica Segurado was able to come and work in John's lab thanks to an EU Network Grant, awarded in 2002. Since establishing her own lab in Spain, Monica and John have continued to collaborate and have jointly published research.

Review of apprenticeships to better support medical research charities

As one of the largest UK funders of medical research, Cancer Research UK is committed to skills development in science. We welcome the Government's recent commitment towards skills development through the apprenticeship levy. However, current apprenticeship standards do not enable the charity or medical research sector to develop skills relevant for these sectors to any significant extent.

In order to increase the number of high-quality apprenticeships within the charity or medical research sector, we would therefore welcome the possibility to transfer *more than* the required 10% of our levy funds to other organisations aligned to Cancer Research UK, whether these are universities, biomedical industry or other charities.

We are working with other medical research organisations, including funders and universities, to look at the possible mechanisms for creating a level 8, PhD-level apprenticeship standard for 'biomedical researchers' to continue to develop skills relevant to our sector.

7. What else can the UK do to create an environment that supports the commercialisation of ideas?

The Industrial Strategy Green Paper stated that Government is responding to the Accelerated Access Review (AAR). We welcome the vision and recommendations set out in the AAR and believe that there are several key points that Government should consider in its response.

We agree that there is a need to encourage flexibility and innovation in payment arrangements between NHS England and pharmaceutical companies for new medicines. One way of achieving this is the establishment of outcomes based payments and multiple indication pricing.

Additionally, the ARR proposes a new Strategic Unit (SCU) in NHS England to consider affordability and wider value of accelerated access, such as early approval from NICE. This would include the generation of real-world observational data on top of clinical trials data. We agree that there is a real opportunity to consider this approach beyond those drugs designated as "transformative".

As the cost of cancer drugs continues to increase, we believe the new SCU should consider a range of flexible pricing models as part of a commercial dialogue with innovators.

We agree with the AAR that transformative products, which show promise but where data remains immature, should be recommended by NICE for conditional recommendations leading to a period of managed access. This will increase innovation into the NHS and open up faster access for patients. However, we must not forget about all the other potential technologies that can make substantial improvements on patients' lives, and we support the need for clearer pathways of adoption for all types of technology.

Finally, CRUK does not support the new Budget Impact Test. We are concerned at the potential for NHS England to delay the introduction of new innovative cancer drugs into the NHS. If NICE has assessed a cancer treatment as clinically effective and represents value for money, then patients should receive it without delay. A system that could add up to a three year delay before patients can access treatments deemed clinically and cost effective is unacceptable. As we have already made clear, manufacturers should be encouraged to price drugs responsibly and there is absolutely a need to enable earlier and more flexible pricing negotiations, but we hope the Government will reconsider the introduction of this new test.

As the UK prepares to leave the EU and repositions itself on the global stage, Government must ensure that the UK remains attractive to industry investment and retains its status as an early launch market for new medicines. The AAR offers a pathway that will encourage the pull through of transformative medicines and innovation into the NHS, offering new possibilities to international pharmaceutical companies.

9. How can we best support research and innovation strengths in local areas?

Government can support research and innovation strengths in local areas through continued investment in initiatives such as the Experimental Cancer Medicine Centre (ECMC) Network. The ECMC Initiative was launched in 2007 as a partnership between Cancer Research UK and health departments from all four UK nations, and forms a network of 18 'virtual' centres across the UK designed to bring new treatments to cancer patients as quickly as possible.

1,500 new early phase trials over ten years in 35 cancer types were reported within the Network, providing access to innovative treatments to 18,000 patients. In addition, 70% of the studies supported in the network are either sponsored and/or funded by industry; ECMCs have been able to leverage over £155 million (£73.5m in 2014/15 alone[17]) from industry towards clinical trials and pre-clinical research in experimental medicine.

The network is a partnership between local NHS Trusts and universities, enabling world class health researchers and clinicians to work together to generate new approaches for beating cancer. Centres across the United Kingdom stimulate research and innovation in local areas: there are centres in Birmingham, Leicester, Leeds, Manchester, Liverpool, Newcastle, Sheffield, Edinburgh, Glasgow, Cardiff and Belfast as well as in London, Oxford, and Cambridge.

The Centres are funded by Cancer Research UK, the National Institute for Health Research (NIHR) through the Department of Health, and health departments from the devolved nations.

[17] https://www.ecmcnetwork.org.uk/news/announcement/ecmc-network-annual-report-201415

About Us

Cancer Research UK is the world's largest independent cancer charity dedicated to saving lives through research. It supports research into all aspects of cancer and this is achieved through the work of over 4,000 scientists, doctors and nurses. In 2015/16, we spent £432 million on research in institutes, hospitals and universities across the UK. We receive no funding from the Government for our research and are dependent on fundraising with the public. Cancer Research UK wants to accelerate progress so that three in four people survive their cancer for 10 years or more by 2034.

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