

Powering the next decade of world-leading cancer research

Summary

The UK has a long history of cultivating scientists who make critical contributions to their fields and become world-experts, including cancer researchers. One of the key strengths of our nation's ability to punch above its weight in science is the diversity of our research base – the combination of public, private and charitable funding sources support innovation by pooling expertise and sharing riskⁱ. This creates a uniquely competitive and high-quality medical research environment which Cancer Research UK (CRUK) is an integral part of – we contribute to over half of all publicly funded UK cancer researchⁱⁱⁱ.

As the world's largest charitable funder of cancer research, CRUK responds directly, through donations, to the public's commitment to our ambition of improving cancer outcomes through research. More than 7 million people donated to medical research charities in 2018, demonstrating that charity-funded medical research is underpinned by a large public support base^{iv}. These donations contributed to the £1.9 billion of charity investment in UK Research and Development (R&D) in 2019 (£898m without the Wellcome Trust) which is more than the Medical Research Council or National Institute of Health Research^v. In 2018/19, CRUK alone committed £546 million to research into all types of cancer. Our long-term investment in state-of-the-art facilities has helped create a thriving network of research at 90 institutions in more than 40 UK towns and cities.

Charities make vital contributions to the UK's R&D base due to their focus on strong patient relationships and insight - this cannot be simply replaced by other funders. Not only do charities hold patient-centred data assets, they also invest in early-stage research to de-risk complex projects, and broker vital collaborations around patient priorities and areas of unmet need like rare diseases. They also make significant contributions to the UK's skills pipeline - in 2018, the Association of Medical Research Charities (AMRC) estimate their members funded the salaries of 17,000 researchers across universities, the NHS and other bodies in all part of the UK.

At this challenging time, it is vital that the talented minds of UK researchers are supported to transform their ideas into reality. Not only to improve patient outcomes, but also the economy - every pound invested in medical research delivers a return equivalent to around 25p every year, for ever^{vii}.

We're resolute in our ambition to see 3 in 4 people survive cancer by 2034. Unfortunately, people with cancer are doubly vulnerable to the impact of COVID-19 on their health, from COVID-19 itself and the knock-on impact it is having on access to cancer services in the NHS, which is why our research community has been supporting the national response to the pandemic. The sooner we can tackle COVID-19, the sooner we can minimise disruption to our life-saving cancer research. Like many medical research charities, our fundraising has been significantly hit by COVID-19. We expect at least a 25% loss of fundraising income this financial year and have postponed our Spring research funding round and already made £44m of cuts to our current research. The AMRC estimate there will be between a £252 - £368 million shortfall in medical research charity sector investment in UK R&D in FY20/21 alone – although this is a conservative estimate.

We want to work with Government to secure the future of our world-leading life sciences research base post—COVID-19, both to save lives through research and to kickstart the economy across all corners of the country.

Recommendations:

- **Government should work with us to develop a sustainable post-COVID recovery funding model for charity-funded medical research that includes significant financial support from Government.** This will protect the valuable contributions of charities to the research base and

shore up the UK's status as a world-leading life sciences destination. Options for this model could include:

- Government provision of 1:1 match funding to charitable contributions to medical research for a defined period (e.g. 3 years) and up to a capped limit.
- Establishment of a Government-Charity Partnership Fund which distributes Government funding to a defined proportion (less than 1:1 contributions) of charity-funded life sciences research projects over the next few years.
- **Government should consider additional research partnership opportunities with CRUK** - we are uniquely placed to support the Government to drive cancer research progress.
- **BEIS should provide direct funding to cover costed extensions for stipends of charity-funded PhD students**, or the cost of these extensions should be adequately costed into wider Government financial support for charity-funded medical research.
- **At part of the Research People Strategy, BEIS and UKRI should set out a how it will protect the cohorts of the research workforce who are most at risk to the impacts of COVID-19 on the research base, including early career researchers.**
- **DHSC and NIHR should provide clear guidance on how staff costs for those seconded to the NHS will be recouped by medical research charities from Trusts in a timely manner.**
- **BEIS and DHSC should commit to ensuring that the additional costs of restarting research are reflected into Government financial support for charity-funded medical research.** Research that relies on longitudinal data collection, tissue sampling, involving animals, as well as clinical trials, have already been considerably disrupted, which has cost implications.
- **UK and devolved governments should provide significant increases to university QR funding through Research England and devolved equivalents** to build the UK's research excellence and capacity.

Responding to COVID-19 now so we can tackle cancer tomorrow

CRUK and our research community have been proactively identifying how to support the national response to the COVID-19 pandemic as those at risk include cancer patients. This includes many of our clinical academics and research nurses returning to the frontline of the health service; scientists volunteering at COVID-19 testing hubs; others using their skills and expertise to develop new ways to directly combat COVID-19, or understand its effect on people with cancer; and operational staff being redeployed to support NHS domestic, portering or medical secretary work. Below are some examples of the support our research community is providing:

1. **Vital testing/equipment:** Boosting testing capacity is a key plank of The UK Government's response to the virus. Laboratories across our network have responded to calls for specific equipment to help test for the coronavirus. Equipment has been taken to the Milton Keynes Biocentre, where samples will be sent to test for key workers and will be returned after the epidemic. The Francis Crick Institute has been temporarily converted into a COVID-19 testing hub^{viii}, and our Manchester Institute is playing a key role in Alderley Park's national testing hub.
2. **Voluntary redeployment:** Many of our academic research staff are helping on the front-line including – for example, a quarter of the volunteers at the Queen Elizabeth University Hospital in Glasgow testing hub are staff from the CRUK Beatson Institute.
3. **Innovating to beat COVID-19:** Many of our researchers are facing long spells away from their main research focus. Many, however, are using this enforced pause to deploy their skills, technology and expertise against the virus. For example, Cardiff University researchers, led by Dr Alan Parker, have been repurposing their anti-cancer viruses to generate coronavirus vaccines

and staff at our Southampton Clinical Trials Unit are collaborating with others to develop ‘first-in-human’ trial platforms of experimental new anti-COVID-19 drugs^{ix}.

Enabling charity research to reach its full potential now and in the future

Charity-funded medical research is an integral part of the UK’s uniquely diverse life sciences research base, sitting alongside government and industry research funding. This diversity of funding sources allows the sharing of expertise and risk – creating the UK’s world-leading medical research environment^{x xi}.

The vital contributions of medical research charities to this environment centre around the ability of charities to set priorities based on insights from patient communities who they build strong relationships with, and to focus on areas of unmet need, including rare diseases. These contributions cannot simply be replaced by other funders that are not patient-facing and do not receive direct support from the public like charity funders do through donations.

Charity contributions to the life sciences sector include de-risking research and creating research collaborations that centre on patient need and facilitate industry research investment. For example, CRUK has been a major contributor to the wider life-science industry sector here in the UK. On average we form two spin out companies a year, and this year our portfolio of spin outs raised over £1bn in third party investment.

CRUK is the second biggest licensor in the world after MD Anderson in the US (*Nature, Biopharma deal makers; March 2018*), fuelling the pipelines of companies such as Astra Zeneca, Novartis, Roche and multiple mid-sized biotechs. Our work with industry has yielded 10 major alliances in therapeutic drug discovery, 8 marketed cancer drugs that have treated over 350,000 patients. And a recent partnership with SV Health Investors established a £250m life science investment fund.

Our Cancer Grand Challenge initiative^{xii} is the bigger cancer research grant in the world which drives collaborations between the UK science base and international partners. In addition, we fund significant UK research infrastructure as well as vital research in the NHS including supporting over 200 clinical trials. It is critical that the Government works closely with medical research charities like CRUK to build on the strength of our existing research foundations for maximum patient benefit, research progress, and to best support the economy.

The impact of COVID-19 on medical research charities

Like all medical research charities, Cancer Research UK has been impacted by COVID-19. We rely on fundraising income and we have had to close our retail outlets (around 600 CRUK shops) and cancel fundraising events. We expect at least a 25% loss of fundraising income (around £120m) this financial year. It is estimated that three-quarters of medical research charities anticipate a reduction of 25% or more in fundraising income, with a third expecting a reduction of 40% or more^{xiii}.

In order to mitigate our income shortfall as much as possible, we have made use of the Government’s Coronavirus Job Retention Scheme by placing 60% of our staff on furlough. The remaining staff have also moved to 80% pay and time arrangements. In addition, we are taking extensive measures to try to recover our fundraising activity in future years. This includes philanthropic giving and exploring new fundraising approaches, with a greater emphasis on digital events and digital advertising. Whilst innovative fundraising activity will go some way to alleviate the pressure on the UK cancer research community, these activities don’t come without setup costs, and will not be able to resolve CRUK’s research funding shortfall alone.

We have also had to take immediate steps as we feel the knock-on impact of the fall in our income. We have deferred our Spring research funding round whilst we assess what the full effect on our income will be^{xiv}. This means we will be unable to fund excellent science and scientists, and risks leaving a cohort of cancer researchers with a gap in funding which may result in some leaving science altogether. The cancer research environment may be more vulnerable than some other disease areas as the Government is funding a much lower proportion of resources and infrastructure for cancer research than other medical research. For example, CRUK covers around 50% of cancer research resources and infrastructure, and the Government around 50%.

CRUK has also made the difficult decision to make cuts to our research funding this year of £44m, and we have communicated this to our research community^{xv}. We decided not to make cuts to our clinical research infrastructure (Clinical Trial Units, Experimental Cancer Medicine Centres) at this time, as this could provide support for the national COVID-19 effort. This means that the cuts to our research funding fall largely on CRUK's discovery and translational infrastructure and research. The cuts we've had to make include^{xvi}:

- Our centres and wider infrastructure - funding cut by up to 20%. Our network of 14 translational research centres and related infrastructure (including Drug Discovery Units & CRUK Centres of excellence) drive local collaborations between universities, NHS hospitals and other research organisations
- Our institutes – funding cut by 5-10%. We have 4 core funded institutes which focus on discovery science. Alongside the CRUK Beatson Institute in Glasgow, the CRUK Cambridge Institute and the CRUK Manchester Institute, we're partners in the multidisciplinary Francis Crick Institute in London – Europe's largest single-location biomedical research institute
- Our general funding – funding cut by 5-10%. This includes, for the first time ever, making cuts to our live grants.

If the situation continues, we will have to make more cuts across all our research portfolio. Areas impacted by our cuts include: fellowship programmes for young clinical and non-clinical academics; ability to recruit new research teams to our institutes and centres; and research initiatives where we have worked closely with Government, such as joint efforts in brain tumour research. We stand to lose a great deal of translational capacity, and our ability to deliver drugs and therapies, spin-out companies and clinical trials will be hampered. For example, we anticipate our cancer drug pipeline would reduce by about one third.

The AMRC estimate that there will be at least a £252 - £368 million shortfall in medical research charity sector investment in UK R&D in FY20/21 – a conservative estimate. Unfortunately, the financial situation means most medical research charities will only be able to offer no-cost extensions to their research in most instances, rather than cost extensions^{xvii}.

We welcome the recognition from Government of the vital importance of research and innovation, including in supporting society and the economy to recover post-COVID^{xviii xix xx}. However, medical research charities are not currently able to access Government funding announced in the support packages for frontline charities, nor for business R&D^{xxi xxii}. Additional financial support from Government is required for the medical research charity sector to ensure the UK's biomedical research base can thrive and be truly world-leading. We appreciate that there are a lot of pressures on Government funding now. We are flexible about the nature of this financial support and are prepared to work closely with Government to develop a sustainable model of Government support for the medical research charity sector.

Recommendations:

- **Government should work with us to develop a sustainable post-COVID recovery funding model for charity-funded medical research that includes significant financial support from Government.** This will protect the valuable contributions of charities to the research base and shore up the UK's status as a world-leading life sciences destination. Options for this model could include:
 - Government provision of 1:1 match funding to charitable contributions to medical research for a defined period (e.g. 3 years) and up to a capped limit.
 - Establishment of a Government-Charity Partnership Fund which distributes Government funding to a defined proportion (less than a matched contribution) of charity-funded life sciences research projects over the next few years.
- **Government should consider additional research partnership opportunities with CRUK** - we are uniquely placed to support the Government to drive cancer research progress.

Securing the future of the UK's research talent

Medical research charities play a key role in supporting talented researchers to develop their careers in the UK and to turn their ideas into ground-breaking discoveries and interventions that can improve lives across the nation and globally. AMRC estimates that their charity members funded 17,000 researcher salaries, including 1,700 PhD students, in 2018. CRUK alone is currently funding around 160 fellows, 600 post-doctoral researchers, and over 500 PhD students.

Unfortunately, the COVID-19 situation is likely to have a detrimental impact on the long-term health of the UK's life sciences workforce. We are concerned the impact will be felt greatest on PhD students, early career researchers and those researchers with fixed-term contracts and contracts ending soon. They are likely to be disproportionately impacted by reductions in response-mode funding, are less likely to have a role lined up and there will be limited obligation from their employer for support. This risks the loss of the development of a vital cohort of appropriately trained cancer researchers in the UK – which could set back our progress in cancer research for many years if there is not substantial support. The Government made encouraging signals earlier in the year when it announced the development of a Research People Strategy^{xxiii}. It is vital the impact of COVID-19 is considered and integrated into these commitments to invest sustainably in the people who conduct research, including nurturing early career researchers^{xxiv}.

Whilst we are attempting to retain as much of our scientific workforce as possible, many charities are not in a financial position to provide researchers with cost extensions in most cases. Therefore, Government funding is required to sufficiently cover staff and student salaries and stipends and associated costs, to protect the future of the UK's cancer research workforce. It is positive that charity-funded researchers in universities can access the Coronavirus Job Retention Scheme (CJRS) - this will go some way to protecting this cohort of researchers at this challenging time^{xxv}. However, support via the CJRS will fall far short of what is needed to sufficiently cover salary costs of charity funded researchers since it covers only 80% of salaries, there has been a delay in clear Government guidance on the scheme's applicability to these researchers, and therefore a delay in universities using the scheme. Utilisation of the scheme is also at the discretion of the employer (i.e. university) and some may choose to not make use of the scheme as it only covers salary and not research costs, and since researchers on the scheme are unable to attend lab meetings or write research papers.

Unfortunately, PhD students are not eligible to receive support via the CJRS. The announcement from UKRI to provide costed extensions for final year UKRI-funded PhD students is a positive signal

to the research community^{xxvi}. However, many charity-funded PhD students are currently uncertain about how the disruption of lockdown on their research will impact on the outcome of their PhDs. There now needs to be further commitments from Government that ensure PhD students funded by medical research charities will not be disadvantaged. CRUK has estimated that a 6-month cost extension for our cohort of 81 final year non-clinical PhD students would be £962,797 (this covers stipends and some additional costs but not research costs). This would rise to £2.26m if our 109 3rd year non-clinical PhD students were also given a 6-month cost extension.

Many members of CRUK's research community, including our clinical PhD students, have returned to the NHS frontline where we are expecting their salaries to be covered by NHS Trusts. We are fully supportive of our researchers being redeployed into front-line NHS service, however it is also important to the financial health of the UK's cancer research ecosystem that charities can recoup these costs easily in future. We also anticipate that the PhD students will be relieved from the frontline before they are able to commence their research. This will mean that there would be an additional financial pressure on charities to provide costed extensions for clinical PhD students.

Recommendations:

- **BEIS should provide direct funding to cover costed extensions for stipends of charity-funded PhD students**, or the cost of these extensions should be adequately costed into wider Government financial support for charity-funded medical research
- **At part of the Research People Strategy, BEIS and UKRI should set out a how it will protect the cohorts of the research workforce who are most at risk to the impacts of COVID-19 on the research base, including early career researchers.**
- **DHSC/NIHR should provide clear guidance on how staff costs for those seconded to the NHS will be recouped by medical research charities from Trusts in a timely manner**

Accelerating progress by restarting research with minimum delay

Due to the impact of lockdown, months, and in some cases years, of scientific work have potentially been severely disrupted or damaged. For example, animal facilities have had to work on skeleton staff and some long-term experiments have been stopped and, in some instances, animals have had to be culled as a last resort^{xxvii}. Any clinically-facing or translation work such as sample and tissue collection will also have been affected. Ceasing long-term experiments and starting them back up again takes out significantly more time than the duration of any pause – when researchers move institutions it can take them 18-24 months to get fully up to speed again, but this will be across the entire science portfolio.

Cancer Research UK's clinical work is also impacted as many of our clinical trials have paused recruitment, delayed set up, or are having to find innovative ways to deliver care to patients. We do not yet know the longer-term impact on patients, but it is likely that they will be detrimentally affected by delays in both standard of care, and innovative treatments. Many patients enrol onto clinical trials – especially early phase trials – as it offers them another treatment option that they otherwise would not have. The results of these trials are also, of course, critical to drug development and the current pandemic will ultimately delay Cancer Research UK's ability to contribute in bringing novel medical products to cancer patients across the UK. To give a sense of scale, last year over 26,000 patients were recruited onto CRUK supported studies and 9,500 of these patients were on a trial with a treatment intervention. And at one point during lockdown, AMRC estimated that around 126,000 patients were unable to participate in paused and delayed charity-funded clinical studies^{xxviii}.

Recommendations:

- **BEIS and DHSC should commit to ensuring that the additional costs of restarting research are reflected into Government financial support for charity-funded medical research.** Research that relies on longitudinal data collection, tissue sampling, involving animals, as well as clinical trials, have already been considerably disrupted, which has cost implications.

Building the future of the wider UK research base

We are very supportive of the Government's commitment in the Spring Budget to oversee an increase in R&D spending to reach £22 billion per year – the highest investment in UK R&D for nearly 40 years. Investment in science, research and education will be critical to restart the economy after this crisis – every pound invested in every pound invested in medical research delivers a return equivalent to around 25p in perpetuity^{xxix}. Medical research charities are a vital contributor to university research and spend 87% of their grants in universities. Unfortunately, the higher education sector has been forecast a 90% reduction of economic output this quarter^{xxx xxi}. UUK estimate that the sector will lose approximately £790m from accommodation, catering, conference, income and new teaching costs in 2019-20, and the risks to international fee income could total £6.9 billion for the next academic year.

Bringing forward next year's income to universities, including £100m of Quality-related (QR) research funding, was a pragmatic initial step from Government to ease immediate cash flow issues faced by institutions^{xxxi}. However, this support will not address the full scale of financial challenge currently facing university research. Additional financial measures are needed from Government to support the wider research sector. A healthy university research sector is integral to building a future that places the UK at the global epicentre of life sciences.

Recommendations:

- **UK and devolved governments should provide significant increases to university QR funding through Research England and devolved equivalents** to build the UK's research excellence and capacity.

ⁱ Exploring the Interdependency between Public and charitable medical Research (2011)

<https://www.ohe.org/publications/exploring-interdependency-between-public-and-charitable-medical-research#>

ⁱⁱ Exploring the Interdependencies of Research Funders in the UK (2014)

<https://pdfs.semanticscholar.org/f30d/40e97adc1235f053814c0aa95f24f80fefde.pdf>

ⁱⁱⁱ Figures are for 2018-19 spend where CRUK funded £354m (50%) of the total £702m* of cancer research spend by charitable and public bodies in the UK. Whilst this was the total we spent on research that year, in 2018-19 we committed a total of £546m. *Source for £702m figure for cancer research spend from National Cancer Research Institute (NCRI):

<https://www.ncri.org.uk/ncri-blog/increase-in-cancer-research-funding/>

^{iv} More than 7 million: [CAF UK Giving report 2019](#) and mid-year 2017 UK population estimates for adults 20+ years from [ONS](#)

^v £1.9bn figure is updated data for 2019, available from AMRC

^{vi} Exploring our annual infographic: the stories behind the icons (2019) <https://www.amrc.org.uk/blog/exploring-our-annual-infographic-the-stories-behind-the-icons>

^{vii} Economic returns to medical research funding (2018), Grant. J; Maxton. M; <https://bmjopen.bmj.com/content/8/9/e022131>

^{viii} Testing for COVID-19 coronavirus at the Francis Crick Institute (2020)

<https://scienceblog.cancerresearchuk.org/2020/04/02/testing-for-covid-19-coronavirus-at-the-francis-crick-institute/>

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- ^{ix} Covid-19: Fighting viruses with viruses <https://scienceblog.cancerresearchuk.org/2020/04/29/fighting-viruses-with-viruses/>
- ^x Exploring the Interdependency between Public and charitable medical Research (2011) <https://www.ohe.org/publications/exploring-interdependency-between-public-and-charitable-medical-research#>
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- ^{xii} Cancer Grand Challenges website, CRUK <https://www.cancerresearchuk.org/funding-for-researchers/cancer-grand-challenges/about-grand-challenge>
- ^{xiii} The Impact of COVID-19 on charity-supported medical research; AMRC (2020) <https://www.amrc.org.uk/Handlers/Download.ashx?IDMF=821c6d30-09b5-4659-9577-a74d23f86bce>
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