

September 2017

Arthritis Research UK response to the House of Lords Science and Technology Committee inquiry: Life Sciences and the Industrial Strategy

1. Arthritis Research UK is the fourth largest medical research charity in the UK and welcomes the opportunity to respond to the House of Lords Science and Technology Committee inquiry into the Life Sciences and the Industrial Strategy.¹ Through the examples in this submission we provide a brief overview of our charity's involvement in this area and our response to the recently published Life Sciences Industrial Strategy.² We would be pleased to expand on the points below, and to provide further information to the Committee as oral evidence.
2. Arthritis Research UK invests in breakthrough treatments, the best information and vital support for everyone affected by arthritis. We combine cutting edge research and the expertise of people with arthritis to make everyday life better for all 10 million people with these conditions in the UK.³
3. This response addresses a number of the inquiry questions of most relevance to our work to prevent, cure and transform the lives of people with arthritis. In summary:
 - **Arthritis and other musculoskeletal are mainly long-term painful conditions with symptoms that fluctuate over time that can significantly impact people's quality of life, limiting independence and the ability to participate in family, social and working life.**
 - **Over the past decade, Arthritis Research UK has invested more than £200 million into UK research and current funds more than 300 research awards, worth in excess of £120 million across more than 70 institutions in the UK.**
 - **We welcome the recognition of medical research charities in the Life Sciences Industrial Strategy and strongly advocate that the Government's forthcoming Life Sciences 'Sector Deal' must support continued charitable investment through implementing the Life Sciences Industrial Strategy recommendation to enhance the Charity Research Support Fund (CRSF).**
 - **It is essential that the HARP Opportunities, or other 'moonshot' and research programmes resulting from the Life Sciences 'Sector Deal' are suitably geared to support musculoskeletal research, reflecting the current and future prevalence of musculoskeletal conditions, and the strong links between these and other long-term conditions.**
 - **Greater emphasis should also be placed on non-drug interventions in all current and future national strategies to accelerate access to novel and innovative treatments. In addition, there should be a greater focus on the evaluation of physical aids which support or enable independent living and improve quality of life.**
 - **The Government should support the Life Sciences Industrial Strategy recommendation that national registries in therapy-area-specific data across the whole of the NHS in England should be created and aligned with the relevant charity.**
 - **Leaving the EU provides an opportunity to develop a simple immigration framework for skilled scientists and health professionals to unlock the full potential of the UK life sciences sector, and the contribution of medical research charities to the training and**

development of the UK research workforce must be acknowledged and represented in the Government's forthcoming Life Sciences 'Sector Deal' to address skills shortages.

- **Geographical clusters of Life Sciences industry must be accessible to, and supportive of, medical research charity funders.**
 - **The forthcoming Life Science 'Sector Deal' should recognise the essential contribution of the NHS in supporting the life sciences sector and ensure it is adequately resourced and empowered to fulfil this role.**
4. Arthritis Research UK is a member of the Association of Medical Research Charities (AMRC). We work collaboratively with the AMRC on policy issues relevant to science and medical research, and support their response to the current inquiry.⁴

Inquiry questions:

- 3. What can be done to ensure the UK has the necessary skills and manpower to build a world class life sciences sector, both within the research base and the NHS?***
- 16. What impact will Brexit have on the Life Sciences sector? Will the strategy help the sector to mitigate the risks and take advantage of the opportunities of Brexit? What else can the UK do to create an environment that supports the commercialisation of ideas?***

5. Growing and supporting new skills, multidisciplinary teams and leaders will be crucial to the UK's success in the Life Sciences sector. The Life Sciences Industrial Strategy has rightly acknowledged the achievements of the UK's higher education system, and the sustainability of the life sciences sector depends on the availability of a workforce with a range of skills. Medical research charities are substantial investors in career development, with AMRC members funding the salaries of over 15,000 researchers in the UK in 2015.⁵ Arthritis Research UK currently funds £23 million in a range of schemes to support training in research, clinical and allied health professional careers, across 24 different research locations in the UK. Over the past decade the charity has supported over 400 fellows, postdoctoral trainees and students through our centres of excellence fellowships and research grants. Our schemes promote the development of innovative interdisciplinary research careers, for example our co-funded Fellowships in arthritis and mental health with the charity MQ: Transforming mental health.⁶ **The contribution of medical research charities to the training and development of the UK research workforce must be acknowledged and represented in the Government's forthcoming Life Sciences Sector Deal to address skills shortages.**
6. While addressing the domestic shortage in science, technology, engineering and maths (STEM) skills is a laudable goal, the Life Sciences Industrial Strategy correctly acknowledges that much of the UK life sciences sector's current talent base draws on expertise and skills from overseas, mostly from the European Union.⁷ Therefore, the continued migration and mobility of EU researchers is of utmost importance to ensure both the short- and long-term sustainability of the life sciences research sector.⁸ However, the current immigration system available for UK research institutions to recruit non-EU students, researchers and technicians can lead to increased financial and administrative burdens for host institutions. This is in part due to the additional legal and administrative monitoring responsibilities associated with specific work visas.⁹ **The UK's decision to leave the EU provides an opportunity to develop a simple immigration framework for skilled scientists and health professionals that recognises the**



collaborative nature of research and unlocks the full potential of the UK life sciences sector.

Inquiry questions:

6. Does the strategy contain the right recommendations? What should it contain/what is missing?

7. Arthritis Research UK is broadly supportive of the recommendations of the Life Sciences Industrial Strategy. Below we have highlighted a number of specific areas of interest:

Government support for medical research charity funding

8. The Life Sciences Industrial Strategy highlighted the important role medical research charities, like Arthritis Research UK, play in the UK Life Sciences Sector. Over 40% of publicly funded medical research in the UK is supported by medical research charities.¹⁰ In 2015, this investment amounted to over £1.4 billion, with AMRC member charities investing more than £1 billion in research in each of the past eight years.¹¹ Public and charity investment in science and research drives economic productivity; every £1 of investment in medical research generates annual monetised health benefits of 10p in perpetuity and additional spill over benefits.¹² Since 2013, each year Arthritis Research UK has invested around £20 million in high-quality cutting-edge research, careers and infrastructure. The latest figures for 2015/16 shows that for each £1 of funding received from Arthritis Research UK, an additional 72 pence has been secured from other funding organisations by those researchers: this approximates to £85 million of follow-on funding leveraged from these grant holders.¹³
9. Medical research charities support a broad-base of investigation which often leads to first-in-class patient therapies and downstream, sustainable economic benefits. For example, the Arthritis Research UK-supported discovery of the first biological therapies for rheumatoid arthritis, resulted in profound impacts on the health and lives of people with this conditions, as well as significant UK and global economic impacts, with three of the five top-selling drugs globally emerging from this discovery.¹⁴
10. Therefore, in recognition of the need to enhance the underpinning strengths in the UK economy, and to ensure continued development of innovative treatments and their knock-on economic benefits, **government incentives that facilitate charity research should continue to be prioritised and appropriately resourced.** The Charity Research Support Fund (CRSF) element of quality-related funding supports universities by covering the indirect costs of charity funded research (overheads) which are outside charitable funding remits and so should not be met by charity grants. In 2014, the £198 million invested through CRSF leveraged £805 million of research by charities in English universities.¹⁵ However since 2010 the CRSF has been fixed at this level representing a real-terms decrease of £38.7 million over 6 years, whilst charity funding of research has increased from £1.14 billion to £1.44 billion. **The Government should ensure the environment remains supportive of charitable contributions and implement the Life Sciences Industrial Strategy recommendation to enhance the CRSF.**

The Health Advanced Research Programme

11. The Life Sciences Industrial Strategy describes the need for the Health Advanced Research Programme (HARP), stating: '*it will be necessary for funders to find mechanisms to support a greater number of higher risk/higher reward projects and...larger scale science programmes*'. We fully support this position, including the recommended central role of charities, with much



of our work increasingly carried out in partnership and across disciplines and disease areas. For example, the Arthritis Research UK and Cancer Research UK co-funded Immune Homeostasis Joint Sandpit Workshop brought together leading researchers and clinical academics in inflammatory disease, rheumatology, cancer and physical sciences to explore novel and innovative ideas that will lead to new treatment for cancer and arthritis, with the most exciting projects selected for immediate seed funding by the two charities.¹⁶

12. Arthritis Research UK funds activity across all of the proposed 'HARP Opportunities' which require NHS involvement and collaboration for success. Musculoskeletal conditions account for the 3rd largest area of NHS programme spending at £4.7 billion in 2013/14,¹⁷ with the total annual cost to the UK economy of rheumatoid arthritis and osteoarthritis, including direct health costs and indirect (lost productivity, sickness absence, informal care) costs estimated to be £21.6 billion.¹⁸
13. Illustrating the progress that should continue to be supported in musculoskeletal research across the proposed HARP Opportunities, Arthritis Research UK's Centre for Genetics and Genomics represents a £2.5 million investment to support understanding of the underpinnings of musculoskeletal disorders and in helping to elucidate disease mechanisms.¹⁹ The Arthritis Research UK and Medical Research Council (MRC) funded MATURA consortium is working at the cutting-edge of stratified medicine, led by universities in Manchester and London and linking 11 academic groups and nine industrial partners.²⁰ The aim of this research and associated clinical trials is to use blood and synovial fluid tests to deliver stratified treatment for rheumatoid arthritis that could result in less drug wastage, reduction in drug prices and wider access for more people, estimated to have the potential to save the NHS £13–18 million per year.
14. The prevalence of arthritis is forecast to increase due to the ageing population of the UK, and growing levels of obesity and physical inactivity which are all major risk factors in the development of musculoskeletal conditions.²¹ Arthritis Research UK therefore welcomes the 'Healthy Ageing' HARP Opportunity, and the **specific recognition of the need to develop commercial products to improve outcomes for people with musculoskeletal disorders**. The Arthritis Research UK and MRC Centre for Musculoskeletal Ageing Research²² and Centre for Integrated Research into Musculoskeletal Ageing,²³ are among the UK's leading research hubs for ageing research. These centres work across six of the UK's top research performing institutions, examining all aspects of treatment for ageing from molecular research, drug discovery, improved clinical practice including preventative interventions for conditions associated with ageing like arthritis. These examples illustrate that **it is essential that the HARP Opportunities, or other 'moonshot' and research programmes resulting from the Life Sciences Sector Deal, are suitably geared to support musculoskeletal research** and other long term conditions in addition to those recommended in the Life Sciences Industrial Strategy.

Inquiry questions:

9. How do the devolved administrations and city regions fit into the strategy?

15. Arthritis Research UK welcomes the identification of 'clusters' of excellence in the Life Sciences Industrial Strategy in terms of a regional approach to investment. This structure is reflected in the charity's research portfolio and existing groups of Centres of Excellence representing an investment of over £40 million to provide a long-term research platform that attracts businesses from the life sciences sector. The charity has also been a partner in



government-led initiatives to invest in research infrastructure, including the UK Clinical Capital Initiative and the Clinical Capital Biobanking Initiative led by the MRC.^{24,25}

16. Specifically, Arthritis Research UK welcomes the identification of Leeds as a centre for orthopaedic medtech in the Life Sciences Industrial Strategy. The charity collaborates with the Leeds-based Medical Technologies Innovation and Knowledge Centre (IKC) to support and invest in proof of concept projects, advancing technologies through technology readiness levels 3 and 4, thereby reducing the risk for future investment and enabling product development by industry.²⁶ The IKC provides direct links to industry partners for these projects. One of the first-round awards for development of an osteochondral scaffold has leveraged significant development funding from Innovate UK with investment from China-based collaborator MOST to undertake GMP manufacturing. This collaboration illustrates the importance of **ensuring geographical clusters of Life Sciences industry and research are accessible to, and supportive of, medical research charity funders.**

Inquiry questions:

11. How can the recommendations of the Accelerated Access Review be taken forward alongside the strategy? Will the recent changes to the NHS England approval process for drugs have a positive or negative effect on the availability of new and innovative treatments in the NHS? How can quick access to new treatments and the need to provide value for money be reconciled?

17. The UK's ageing population, and increasing rates of obesity and physical inactivity are all factors associated with an increased risk of developing some forms of arthritis. Beyond this, musculoskeletal conditions can significantly impact workforce productivity, with over 30 million working days lost due to musculoskeletal conditions in the UK each year, which will act as a barrier to the ambitions of the Life Science Industrial Strategy if unaddressed.²⁷ Furthermore, the employment rate among people with arthritis is already 20% lower than among those with no condition or disability.²⁸
18. However research has demonstrated that targeted, early intervention can help to treat and prevent musculoskeletal conditions, increasing the rate at which people can return to work. Arthritis Research UK supported research focuses on improving health and producing wider societal savings. For musculoskeletal conditions, this often includes non-drug interventions. For example, the STarT Back Tool, developed by Arthritis Research UK-funded research in primary care, delivers better health outcomes for people with back pain at lower costs with an average saving to the NHS of £34.39 per patient and societal savings of £657 per person.²⁹
19. Therefore, Arthritis Research UK supports the Life Sciences Industrial Strategy recommendation that the Accelerated Access Review should be expanded, with a view to this including non-drug interventions. For musculoskeletal conditions, these include manual therapies (particularly physiotherapy) and orthotics which can improve quality of life and support the ability to live independently. However these interventions have historically been grouped within NHS services, alongside physical activity and weight management services which fall within the wider remit of public health and which local authorities are mainly responsible for providing. Availability of these forms of intervention are not subject to the same requirements as drug interventions. For example, when the National Institute for Health and Care Excellence (NICE) approves a drug treatment, it must be provided by the NHS within three months. However, there is no equivalent process to ensure the timely or equitable provision of non-drug interventions. Therefore, **greater emphasis should also be placed on non-drug interventions in all current and future national strategies to**



accelerate access to novel and innovative treatments. In addition, there should be a greater focus on the evaluation of physical aids which support or enable independent living and improve quality of life.

Inquiry questions:

12. How can collaboration between researchers and the NHS be improved, particularly in light of increased fiscal pressures in the NHS? Will the NHS England research plan help in this regard? How can the ability of the NHS to contribute to the development of and adopting new technology be improved?

20. As noted by the Life Sciences Industrial Strategy, the NHS is a key asset to the UK life sciences sector, providing a ‘real-world’ environment in which to carry out clinical trials, cohort studies and amass crucial longitudinal data. This is reflected in the recent publication of the NHS England Research Plan, which sets out its ambitions to build on its current research involvement and assets.³⁰ There are strong interdependencies across the UK life sciences sector, and the Department of Health research spend administered through the National Institute for Health Research (NIHR) is vital to a thriving clinical research community. NIHR support is particularly important to enable charities to fund clinical trials in NHS settings, for example Arthritis Research UK’s work to develop first-in-disease clinical trials of drugs for arthritis.³¹ **The forthcoming Life Science Sector Deal should recognise the essential contribution of the NHS in supporting the life sciences sector and ensure it is adequately resourced and empowered to fulfil this role.**

Charity involvement in data

21. The collection and availability of long-term patient data through the activities of the NHS is a strategic advantage that should be leveraged to improve health, care and services, and to support delivery of the digital health agenda and to facilitate research studies. Arthritis Research UK has already pioneered the development of tools to increase the quality and availability of data on musculoskeletal conditions, with the Musculoskeletal Calculator providing, for the first time, accurate estimates of the prevalence of a number of musculoskeletal conditions,³² and our previous £1 million investment in the Farr Institute as a national initiative in informatics and data led by Government and other funding partners. Therefore Arthritis Research UK **welcomes recognition of the importance of healthcare data in the Life Sciences Industrial Strategy.** However, collection and availability of musculoskeletal data is sparse, and the need for increased collection of musculoskeletal patient data has been acknowledged through both the Department for Work and Pensions’ recent Green Paper and the NHS England mandate to the NHS 2017/18.^{33,34}
22. In response, Arthritis Research UK has formed, and provides financial support for, the Musculoskeletal Data Advisory Group which brings together key stakeholders including Government and arms-length bodies, healthcare professionals, membership associations, researchers, umbrella bodies and people with arthritis to build a consensus view of the opportunities and feasibility of data collection on musculoskeletal conditions. This illustrates the important role charities can play in this area, and **the Government should support the Life Sciences Industrial Strategy recommendation that national registries in therapy-area-specific data across the whole of the NHS in England should be created and aligned with the relevant charity.**

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