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Mapping the impact
Exploring the payback of arthritis research

RAND EUROPE

ARC 0870 850 5000 www.arc.org.uk
Committed to curing arthritis
The research described in this report was prepared for and funded by the Arthritis Research Campaign (arc).

Cover Design ‘Making an Impact’:
(left) Dr George Peat, Senior Lecturer in Clinical Epidemiology at the Arthritis Research Campaign National Primary Care Centre at Keele University, who is leading a major study aimed at improving the care and treatment of osteoarthritis.
(centre) Andrew McCaskie, Professor of Orthopaedics at the University of Newcastle, prepares for surgery.
(right) Andrew Fulljames had both knees replaced in 2005 at the Nuffield Orthopaedic Hospital in Oxford. His surgery has been very successful and has enabled him to lead a normal life.
(background picture) Dr David Gould and arc Professor Yuti Chernajovsky working on gene therapy research at the University of London.

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Executive summary

To further its mission of curing arthritis, arc needs to develop a better understanding of its research portfolio and the impacts arising from its research. What types of research are being funded? What paybacks are being produced? And how will the advances made through research be followed up, in the short and long term? The charity also needs to be able to demonstrate the impacts and importance of the work it funds to justify its spending to donors and reform its end-of-grant reporting. Although previous end-of-grant reports have been detailed, it has been difficult to aggregate and analyse the information they collect across arc’s research portfolio.

Working with RAND Europe, arc set out to develop a new survey system that would provide an overview of the research arc funds through an information-gathering tool (survey instrument) that would be quick and easy for researchers to complete. This overview would inform arc’s future funding strategy and provide a foundation for more detailed evaluation work. The work built on earlier detailed case study research carried out for arc by RAND Europe, investigating how arc-funded research led to patient benefit. Figure S.1 details the key characteristics of an “ideal survey system” against which we could compare our designs and plans.

The survey instrument was intended to identify the diverse range of impacts arising from arc research. In addition to mapping the impacts of arc research, arc wanted a better overview of the types of research it was funding. While arc knows what types of research it funds in terms of disciplines, it has been harder to assess the stage of development of that research. The research pathway section of the instrument was developed to tackle this information gap. From an initially very rudimentary design, a complex and specific pathway emerged, through an iterative design process guided by consultation with researchers.

Over 40 arc researchers were consulted throughout the development of the system. They were involved at all stages, from initial conception of the system, through the design and testing of the final web-based questionnaire, and all appraisal areas.

The survey instrument

The new system is built around a web-based survey instrument (questionnaire) that asks about the sort of research that has been done, how it was developed and its impacts. Two major virtues of the instrument are that it is easy to use and that it

<table>
<thead>
<tr>
<th>Figure S.1</th>
<th>The characteristics of arc’s ideal evaluation system</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capturing the full range of benefits</strong></td>
<td>This should include benefits and impacts beyond publications and research qualifications.</td>
</tr>
<tr>
<td><strong>Aggregation</strong></td>
<td>The survey should allow impacts of many grants to be aggregated to provide an impression of the overall impact of a group or grants. At the same time, it had to allow for impacts of very different types to be kept apart – for example, the production of knowledge and influence on health policy. This would allow the different strengths if different types of research to be explored.</td>
</tr>
<tr>
<td><strong>Valuation</strong></td>
<td>The survey should provide a way of considering the differing value of different types of impacts, i.e. a method of reducing a range of impacts to a common currency.</td>
</tr>
<tr>
<td><strong>Low burden</strong></td>
<td>Any survey instrument always has a burden attached, whether this is the time it takes to complete a questionnaire or the administration costs involved. The burden will only be felt if it is disproportionate to the benefit of conducting or completing the survey. It is important to be disciplined about the information elicited – collect only what can be used and resist the temptation to gather extraneous information simply because you have the tools to do so.</td>
</tr>
<tr>
<td><strong>Wide applicability</strong></td>
<td>The instrument has to be widely applicable across all forms of research, while allowing room for some variation.</td>
</tr>
<tr>
<td><strong>Fairness</strong></td>
<td>The instrument should capture information fairly, allowing true comparisons of groups of research grants or types of research.</td>
</tr>
<tr>
<td><strong>Timeliness</strong></td>
<td>The speed with which the instrument can provide information will always be a tradeoff between the requirement for speed to support decision-making and allowing time for the outcomes of research to develop. Where possible, a monitoring system can provide early indicators of impact.</td>
</tr>
</tbody>
</table>
Mapping the impact tool covers a broad range of research impacts, including:

- research questions addressed and experimental systems used
- the position of the research on the research pathway
- whether the research has been or will be developed since the grant
- how the grant affected future research
- how results were disseminated
- impacts of the research on health policy, training and education
- whether the work led to medical intervention of public health advice.

Most questions can be answered with Yes/No tick-boxes. Figures S.4 and S.5 show sample questions from the Future Research and Interventions/Products sections of the questionnaire.

When arc adopted the survey to replace its end-of-grant reports it added two sections of qualitative questions encompassing a scientific summary and a lay summary. The structure of the survey instrument is discussed in more detail in Chapter 4.

![Figure S.2](image)

**Time to complete questionnaire (minutes)**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Time to complete questionnaire [minutes]</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Fewer than 30 minutes</td>
</tr>
<tr>
<td>50</td>
<td>30 to 60 minutes</td>
</tr>
<tr>
<td>40</td>
<td>1 to 2 hours</td>
</tr>
<tr>
<td>30</td>
<td></td>
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<tr>
<td>20</td>
<td></td>
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<td>10</td>
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<td>0</td>
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</tbody>
</table>

**Figure S.3**

The final research pathway

![Image of the final research pathway diagram]

**Figure S.4**

Example questions on research collaborations showing the Yes/No/Not Known tickbox structure

**4.2: Future Research - Further Research**

Have you had initial discussions about collaboration or informal knowledge exchange?

- Did these discussions lead to co-applications for funding?
- If so, were these successful?
- And/or, did these discussions lead to Material Transfer Agreements (MTAs)?
- And/or, did these discussions lead to sharing of reagents without MTA?

**4.3: Interactions with researchers in industry**

Have you had initial discussions about collaboration or informal knowledge exchange?

- If so, did these lead to consultancy?
- And/or, did these discussions lead to Material Transfer Agreements (MTAs)?
- And/or collaborations leading to co-publication?
- And/or an industry initiated research programme?
shared; there was strong academic dissemination of the research results; and around 10% of grants have contributed to new diagnostics, interventions or public health advice, or have had intellectual property arising from them protected.

The approach presented here depends on the researchers’ knowledge and honesty, and simplifies quantification of impacts and their attribution. It does this as a trade-off for the benefits of ease of use and analysis. Overall the indications are that the instrument is an effective and low burden way of collecting an overview of the impacts arising from a portfolio of research.

The organisation of this report

This report describes the development and final structure of the survey tool. Because many of the key issues discussed in this report are interwoven, some reiteration of information and data is unavoidable. However, we have done our best to keep this to a minimum. Chapter 1 provides some background to the Arthritis Research Campaign, its research focus and the findings from previous research reviews that led to their portfolio mapping initiative. Chapter 2 looks at general issues of research evaluation, the problems they can generate and the ways in which we dealt with them when developing the survey tools. Chapters 3 and 4 lay out in more detail the methods we selected and developed to produce the most effective questionnaire and explain how it was implemented. Chapter 5 shows results from our initial waves of surveying and discusses the potential for wider application of the survey and possible avenues for development. Appendix A is a sample of the online questionnaire completed by researchers.