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# Mapping the impact

Exploring the payback of arthritis research



EUROPE



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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Published 2009 by the RAND Corporation  
1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138  
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# Mapping the impact

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Exploring the payback of arthritis research

**Steven Wooding, RAND Europe**

Edward Nason, RAND Europe

Tony Starkey, RAND Europe

Stephen Hanney, Health Economics Research Group, Brunel University

Jonathan Grant, RAND Europe



## Executive summary

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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

**Figure S.1**  
The characteristics of **arc**'s ideal evaluation system

**Capturing the full range of benefits**

This should include benefits and impacts beyond publications and research qualifications.

**Aggregation**

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 of different types of research to be explored.

**Valuation**

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.

**Low burden**

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.

**Wide applicability**

The instrument has to be widely applicable across all forms of research, while allowing room for some variation.

**Fairness**

The instrument should capture information fairly, allowing true comparisons of groups of research grants or types of research.

**Timeliness**

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.

provides data that is easy to analyse. One indication of the ease of use is the speed with which researchers can complete the questionnaire: in most cases it takes less than an hour (see Figure S.2). In contrast, previous end-of-grant forms could take between half a day and a full day to complete.

There are two key sections in the questionnaire. The first asks researchers to place their work on a research pathway (see Figure S.3). This allows **arc** to collect and analyse information on the range of research it funds.

The second key section investigates the impacts of that research. Rather than just examining publication outputs or qualifications gained, the

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 or 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  
Time to complete questionnaire (minutes)

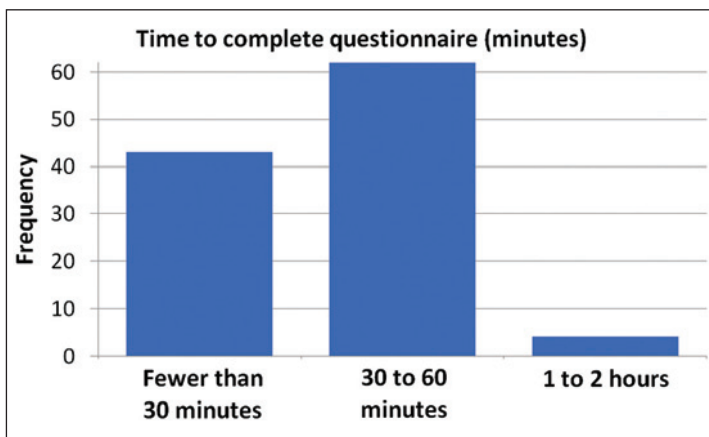


Figure S.3  
The final research pathway

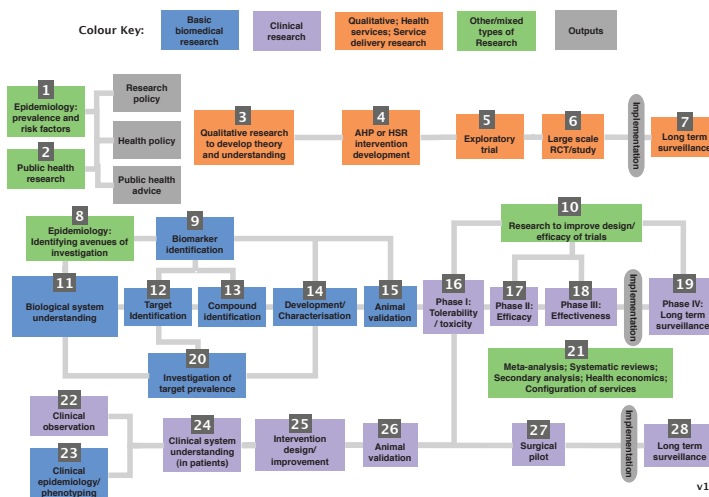


Figure S.4  
Example questions on research collaborations showing the Yes/No/Not Known tickbox structure

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### 4.2: Future Research - Further Research

Has your research on this grant led to discussions about possible collaborations, consultancy or similar? If so, which of the following have taken place? Note that we ask about Material Transfer Agreements (MTAs) in this section, as a marker of collaboration; patents and intellectual property impacts are dealt with later in the questionnaire.

55. Interactions with researchers in academia/non-profit organizations:

	Yes	No	Not Known
Have you had initial discussions about collaboration or informal knowledge exchange?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did these discussions lead to co-applications for funding?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If so, were these successful?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or, did these discussions lead to co-publications?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or, did these discussions lead to Material Transfer Agreements (MTAs)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or, did these discussions lead to sharing of reagents without MTAs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

56. Interactions with researchers in industry:

	Yes	No	Not Known
Have you had initial discussions about collaboration or informal knowledge exchange?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If so, did these lead to consultancy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or Material Transfer Agreements (MTAs)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or collaborations leading to co-publication?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
And/or an industry initiated research programme?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

57. Other interactions not captured above

**Figure S.5**  
**Example questions on Intervention/Products**  
**showing the Yes/No/Not Known tickbox structure**

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<b>8.1: Interventions/Products - IP</b>				
140. For the research cited by patents, or intellectual property protection, which stages were carried out during the grant, or have happened since?				
	Yes	No	Not Known	
Cited in a patent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patent applied for/ filed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patent granted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patent licensed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
		Page 42		
<b>8.3: Interventions/Products - Diagnostics</b>				
142. For the diagnostic test, which stages were carried out during the grant, or have happened since?				
	Yes	No	Not Known	
Test development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Proof of concept	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Proof of efficacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Regulatory approval	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
On the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Trialling a current diagnostic in a new environment or context	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
		Page 47		
<b>8.8: Interventions/Products - Health Advice</b>				
149. For the new, or revised, public health advice, at what level has this advice been disseminated?				
	Yes	No	Not Known	
By your research group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
By arc	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
By the Department of Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Internationally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

## Pilot results

A pilot survey was conducted in 2007 on 136 grants ending in 2002 and 2006, from which a response rate of 87% was achieved. The questionnaire enabled rapid data collection and the results mapped a wide and diverse range of research impacts. While it is too early to draw specific policy conclusions from this initial survey, we made a number of preliminary observations: there was a diverse range of paybacks, and most impacts were generated at least once; over 80% of grants generated new research tools, of which 50% were

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.