

Starter Grants for Clinical Lecturers: Research Outputs and Impact 2017

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Starter Grants for Clinical Lecturers: Research Outputs and Impact 2017

Researchfish report, December 2017

Contents

Foreword	4
Aims of the report.....	5
The story so far.....	6
How the data is captured	9
Research Outputs and Impact.....	10
Publications.....	11
Further Funding	13
Career Progression	15
Other Outputs.....	16
Case Studies	18
Closing Remarks	24
Annex 1.....	25

Foreword

In 2008, the Wellcome Trust and the Academy of Medical Sciences launched the Starter Grants for Clinical Lecturers funding scheme with the first awards being made in 2009. These awards – which are of up to £30,000 over two years – address a key gap in biomedical funding in the UK, allowing doctors in training to maintain their research momentum following their PhD. The Starter Grants scheme, since its conception, has continued to provide much-needed financial support to enable clinical academic trainees to secure preliminary data to develop further applications for substantive research funding awards.

Since the launch of the Starter Grants, a funding consortium has been formed to support the scheme; currently, comprising the Wellcome Trust, Medical Research Council, British Heart Foundation, Arthritis Research UK and Diabetes UK, to whom we are grateful for their continued support. Since 2009, 387 Clinical Lecturers have now been supported through the scheme.

It is important for the Academy and its partner funding organisations to capture the outcomes of the research we fund. Previous scheme evaluations and feedback from stakeholders has continued to ensure that our schemes are fit for purpose and they continue to address key biomedical funding gaps. This report demonstrates the outputs and impact of the Starter Grants for Clinical Lecturers scheme through quantitative analyses of data captured via Researchfish as of March 2017, and narrative case studies drawn from five awards.

In 2013, the Academy adopted the Researchfish platform to gather output and impact data from the grants it awards; we require award holders to submit information annually through the portal throughout the lifetime of their award and for at least three years afterwards. Starter Grants award holders first reported via the system in 2014 and, to date, 270 of the 387 Starter Grant awards have been captured in one or more of the reporting windows; those that have not either pre-date the adoption of the system or were awarded in 2017 itself. We have previously produced reports using Researchfish data captured in past submission windows. The quantitative analyses presented in this report primarily focus on the newest outputs from 226 awards captured in the most recent submission window, but will also make reference to the cumulative outputs data gathered to date.

New outputs: April 2016-March 2017

This submission window we received reports from 226 of the Starter Grant award holders - 139 of whom were live award holders, some having only recently started their grant, and 87 of which held completed awards.

- £24.9m in follow on funding
- 363 publications
- 12 Clinical Scientist Fellowships
- 112 awards, prizes and other markers of esteem
- 126 new collaborations
- 23 instances of influencing policy

Aims of the report

The intentions of this report are to summarise the outputs and impact of our Starter Grants for Clinical Lecturers scheme in terms of research and career progression. The report brings together quantitative analyses of data reported to us via Researchfish and narrative case studies drawn from awards that are either ongoing or recently completed.

By discussing the specific outputs that are reported we hope to demonstrate the impact of the scheme in generating new knowledge and helping retain clinical researchers within academia by supporting their development to more senior research-active and independent positions. Case studies complement the analysis by exploring single awards in greater detail, and beyond the most recent submission window. Each case study presents the research supported through the Starter Grant and the impact of the award on the award holder's career.

In 2017 the Academy launched a new [strategic plan](#) outlining the key challenges and objectives that the Academy will aim to address over the next 5 years, with the central mission of advancing biomedical and health research and its translation into benefits for society. One fundamental part of this is to lead innovation in the development of research talent through funding and careers support. This will be done by maintaining a focus on career transition points, providing early career researchers with the resources to develop as independent researchers, as well as identifying and addressing any issues surrounding changes in the funding landscape and clinical training pathway.

Targeted grant schemes such as the Starter Grants for Clinical Lecturers scheme are paramount to addressing this strategic challenge. By providing an overview of the research outputs of these awardees, and any impacts resulting from their work, we hope this report will create a sense of the value of this scheme in supporting clinical academics during the early stages of their academic careers.

The story so far

Starter Grants for Clinical Lecturers

Clinical Lecturer posts provide a salary but often do not come with funding to support research costs; the Starter Grants scheme was designed to help bridge this gap and facilitate research activity during the period of the post. Each Starter Grant provides up to £30,000 towards research costs for up to two years. A recent [independent evaluation](#) (2016) has demonstrated that the value of the award is still the appropriate level for this type of award. Award holders are actively encouraged to take advantage of the Academy's [mentoring scheme](#) and other [career development](#) activities.

The scheme was launched in October 2008 as a partnership between the Academy and the Wellcome Trust. Since then, further funders have added their support to the scheme, creating a funding consortium that has consisted of: the Wellcome Trust, the Medical Research Council, British Heart Foundation, Arthritis Research UK, Diabetes UK, the Royal College of Physicians (2014-2017) and Prostate Cancer UK (2013-2015).

Starter Grants at a glance



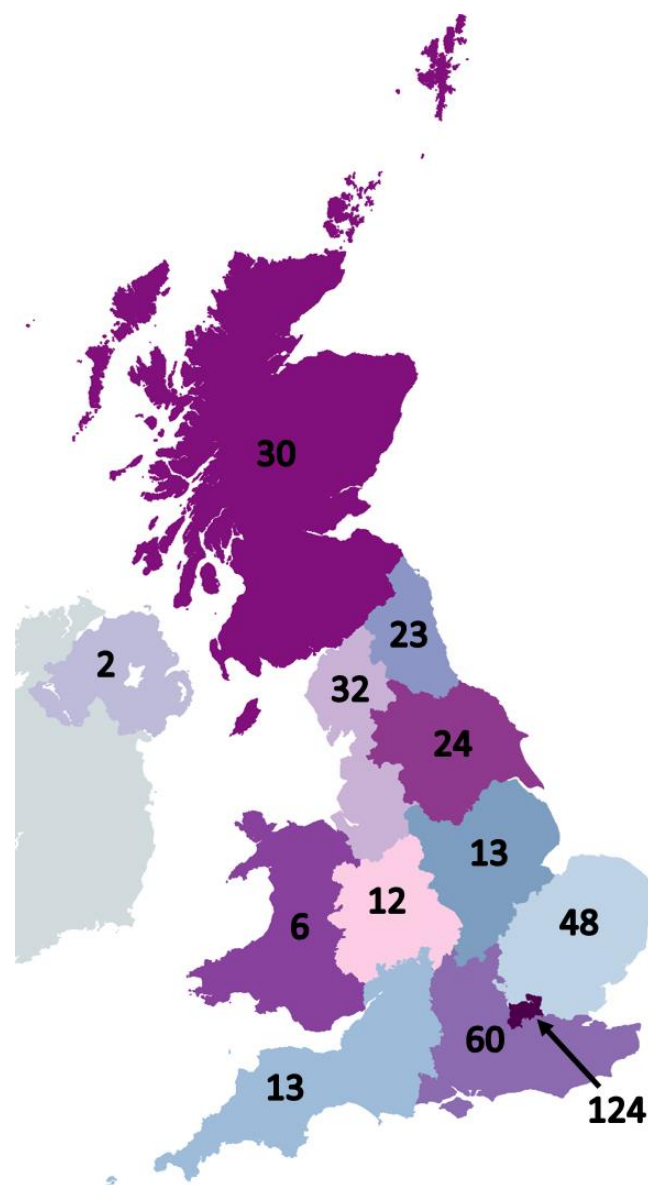
The Starter Grants [Selection Panel](#) meets twice yearly and supports on average 45 new Clinical Lecturers each year, awarding over £1.3 million annually. To date, 387 Clinical Lecturers have been awarded over £11m through 17 grant rounds. The scheme funds a wide variety of research relevant to human health and supports Clinical Lecturers from a wide range of clinical specialties, which are summarised in Table 1. The geographic distribution of these awards for rounds 1 to 17 are presented in Figure 1; and the number of awards and gender statistics are presented in Figure 2.

A [2017 survey led by the MRC](#), following clinical and health research fellowships, has shown that there is a significant drop-out of female clinical academics past the post-doctoral stage for reasons that remain to be addressed. For the first time since the Starter Grants scheme began, we saw in Round 17 over 50% of the awards being made to female Clinical Lecturers. This is an encouraging step in the right direction and is a trend we hope to see emerging in subsequent rounds as we aim to aid the retention of female clinical academics in more senior academic roles.

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Awardee Clinical Specialty	Reporting in 2016/2017	Total awardees
Surgery	28	56
Neurology	19	37
Cardiology	17	32
Respiratory Medicine	15	18
Oncology	12	27
Psychiatry	11	20
Paediatrics	11	14
Infectious diseases	10	16
Obstetrics and Gynaecology	10	18
Nephrology	9	21
Ophthalmology	8	14
Anaesthetics and intensive care	6	8
Clinical Genetics	6	7
Dentistry	6	10
Pathology	6	7
Public Health	6	7
Endocrinology	5	12
Gastroenterology	5	10
Rheumatology	5	7
Haematology	4	5
Trauma & Orthopaedics	4	5
Urology	4	8
Clinical Pharmacology	3	3
Palliative Medicine	3	3
Radiology	3	4
Geriatric Medicine	2	4
Hepatology	2	2
Immunology	2	2
Dermatology	1	4
General Practice	1	2
Otolaryngology	1	1
Tropical Medicine	1	1
Veterinary Medicine	0	1
Veterinary Pathology	0	1
Grand Total	226	387

Table 1 – Clinical specialty of Starter Grant holders reporting in the 2016/17 submission window and in total since Round 1 in 2009.



Region	Count of Region
London	124
South East	60
East Anglia	48
North West	32
Scotland	30
Yorkshire & Humberside	24
North East	23
East Midlands	13
South West	13
West Midlands	12
Wales	6
Northern Ireland	2

Figure 1 – Geographical distribution of award holder (created with mapchart.net)

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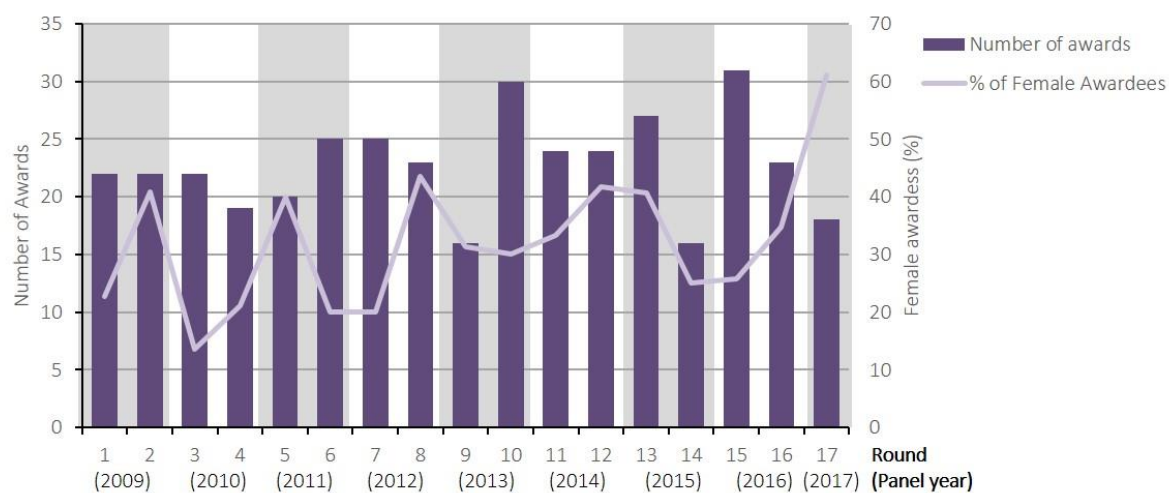


Figure 2 – Number of awards per round (left axis) and gender breakdown per round (right axis).

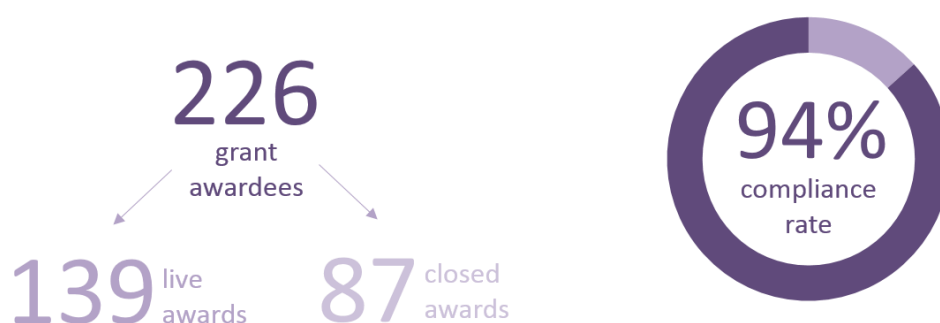
“This award has had a huge impact on my career and career development. It has provided me with the opportunity for increased research time, the opportunity to develop new project ideas and collaborations.”

Kathryn Peall, Round 11

How the data is captured

The Academy adopted Researchfish in 2013 as the sole reporting system for its grant schemes, replacing end of grant reports. Award holders are **required** to submit data to Researchfish annually throughout the lifetime of their grant, and the year immediately following the close of their award; they are also **requested** to continue doing so for three years after their award finishes. Researchfish submissions are completed between January and March of each year.

2016/17 Reporting Statistics



In total 226 grant awardees reported to us this submission window representative of 139 live awards and 87 closed awards. Of all the awards still open, 94% complied and submitted a report. As we adopted Researchfish in 2013 not all awards have been captured on the system. However, the majority of starters grants awarded from Round 5 onwards have been captured and there has been a steady increase in proportion of awardees reporting per round since the adoption of the platform (Figure 3). As Rounds 16 and 17 were awarded after the 2016/17 submission window, the first reports from these awardees will be made to us in the 2018 submission window.

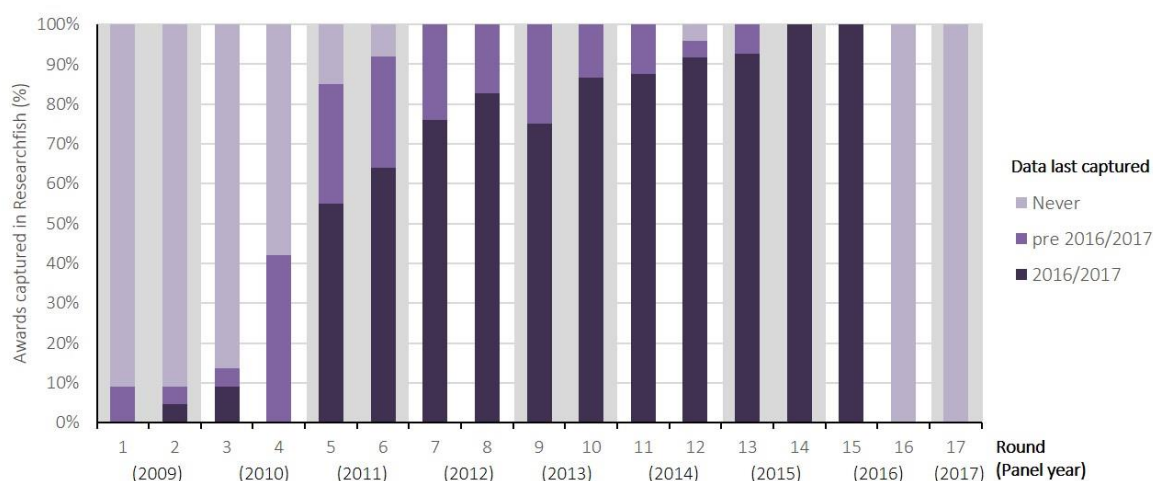


Figure 3 – Coverage of Researchfish data captured as of 2016/17.

Research Outputs and Impact

The Academy is an authoritative voice on the development of training and career pathways, and a source of personal support for early-career biomedical researchers. Our Starter Grants for Clinical Lecturers scheme aims to support early-career clinical researchers and thus develop the next generation of leading medical researchers. Through our policy activities, we also seek to positively influence the research culture, such as through our policy reports on [Team Science](#) and [Research Reproducibility](#).

In this section, we discuss outputs that were reported through Researchfish, which demonstrate the impact of the scheme in generating new knowledge and enabling the development of our Starter Grant holders. For this, we focus primarily on the publications produced, the further funding leveraged as a result of this scheme, and career progression. We also look to the collaborations, markers of esteem, and influences on policy and practice reported to us for further indicators of research quality and esteem.

Awardees were asked to report outputs that arose as a result of their Starter Grant award. We rely on award holders to make accurate reports; data were cleaned prior to analyses to remove records that could not have occurred as a result of the grant (e.g. publications arising before the award start date) but there could remain some inaccuracies and omissions. Because research is a collaborative endeavour, some of the outputs presented here may also have been supported by additional awards.

Notes on the analysis

Two time periods have been used for analysis of the Starter Grants Researchfish data, which span rounds 1 to 15 of the scheme:

2016/17 – new outputs first submitted in the 2017 submission window (i.e. between April 2016 and March 2017).

To date – all data submitted to us via Researchfish since its adoption by the Academy in 2013.

In addition to the above, longitudinal analyses will draw upon the data reported 'to date' by award holders from round 5 (June 2011 Panel) to round 15 (June 2016 Panel), where the majority of awards have been captured via Researchfish (Figure 3).

Awardees report to us both during their award and after it has completed. References are made to live and closed awards in this report, which are defined as follows:

Live – award with an end date occurring after 31 March 2016 (i.e. the end of the previous submission window).

Closed – award with an end date occurring on or before 31 March 2016.

Publications

New outputs captured from the 2016/17 submission window:

Awardees reported 363 new publications stemming from their Starter Grant award:

- 334 peer reviewed journal articles;
- 22 conference proceedings and abstracts;
- 7 book or book chapters.
- A further 17 publications are in press as of 31 March 2017 – these are not included in the current analysis but will be featured in next years report.
- The most popular journal in which our awardees published in this years submission period was European Urology (Table 2).

In 2016/17, publications were reported by award holders belonging to 28 of the 32 medical specialties represented in the Researchfish data that year. Many of the journals in which the award holders published highly are dedicated to work of a clinical nature showing the translational benefit these funds provide. Award holders specialising in surgery, psychiatry and cardiology were together responsible for a third of the publications reported in 2016/17, this reflects the high number of award holders working in those disciplines as detailed in Table 1. The ten specialties with the highest number of awardees reporting all featured amongst the specialties with the most publications (Table 3). The elevated number of publications in the two medical specialties that feature in this ranking, despite having relatively fewer award holders – pathology and urology – is due to a number of highly productive individuals, with two award holders across these two specialties each reporting ten or more publications in 2016/17 alone. Indeed, the individual specialising in urology is responsible for 6 of the publications in European Urology, aiding this in becoming the most popular journal this period.

Table 2 – Journals in which awards holders published in 2016/17.

Journal	Number of Publications
European Urology	8
Lancet	7
BMJ Open	6
Transplantation	6
Oncotarget	5
Scientific Reports	5
The Lancet Infectious Diseases	5
Circulation: Cardiovascular Imaging	4
Clinical Infectious Diseases: IDSA	4
PloS ONE	4
American Journal of Respiratory and Critical Care Medicine	3
Brain: A Journal of Neurology	3
Circulation Research	3
Clinical Cancer Research: AACR	3
Colorectal Disease	3
JACC: Cardiovascular Imaging	3
Journal of Clinical Immunology	3
Alimentary Pharmacology & Therapeutics	2
Annals of Biomedical Engineering	2
<i>Remaining 224 journals</i>	<i>255</i>
Total	334

Table 3 – Clinical specialties of the award holders that reported publications in 2016/17.

Clinical Specialty	Number of Publications	Award Holders Reporting
Surgery	58	17
Cardiology	39	11
Psychiatry	30	6
Pathology	23	4
Nephrology	20	6
Oncology	19	6
Neurology	19	9
Paediatrics	16	4
Obstetrics and Gynaecology	15	8
Respiratory Medicine	15	5
Urology	13	3
Infectious Diseases	11	6
Ophthalmology	9	5
<i>Remaining 15 specialties</i>	<i>54</i>	<i>26</i>
Total	363	116

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To date, there are 195 Starter Grants award holders that have reported a combined total of 1401 publications. Figure 4 shows the number of publications reported to us to date, according to the year of publication. The number of new publications has continued to increase year-on-year but the rate of increase has begun to slow. This is in line with expectations as Starter Grants fund projects for up to two years and the awards on Researchfish have now matured since its adoption four years ago.

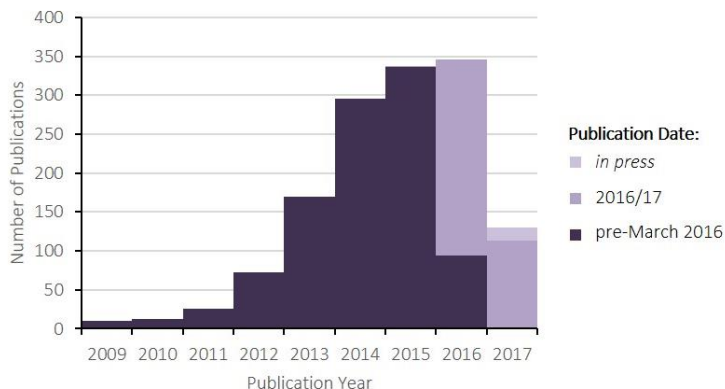


Figure 4 – Publications reported by Starter Grants award holders to date.

Focusing on the publications to date from awards in rounds 5 to 15 – where the majority of awards have now been captured in Researchfish – reveals longitudinal trends. There are two Selection Panels each year with meetings held every six months; grouping Starter Grants awards by round therefore clusters these within half yearly intervals since the start of award. Going from the most recent to the oldest awards (i.e. round 15 to round 5) reveals a general increase in the number of publications reported to date (Figure 5, left axis). As the number of awards made in each round varies (see Figure 1), we have plotted the average number of publications per award holder on the right axis to highlight the average output each award holder makes. Through this we see that the average number of publications per award holder increases as their award matures as might be expected given that there is a time lag to publishing findings. Focusing on the data from rounds 5 to 10 highlights that overall an average of 7 publications per award holder are linked to their Starter Grant.

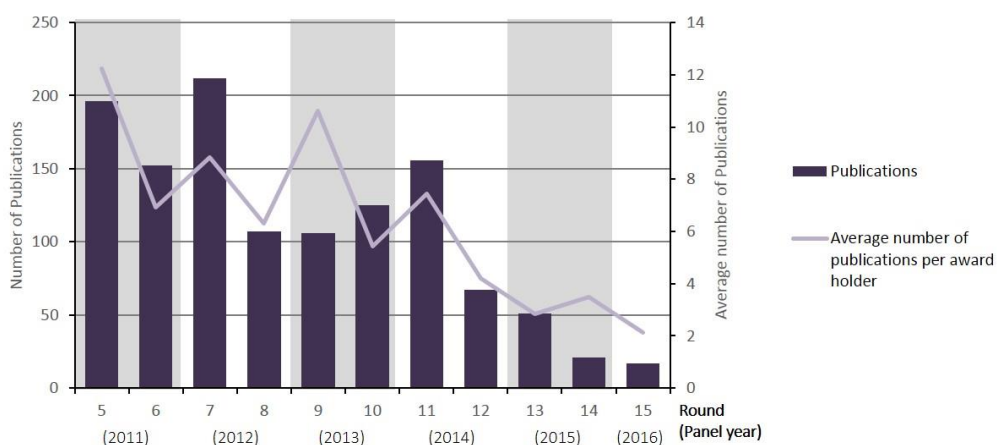


Figure 5 – Number of publications reported by round (left axis) to date and average number of publications per award holder (right axis).

Further Funding

New outputs captured in the 2016/17 submission window:

- **£24.9m** of further funding was leveraged by 61 awardees.
- **88%** of further funding awards came from UK-based organisation.
- The majority of funding awards came from the **charity/non-profit** and **public sectors** (42 and 25%, respectively).
- **£612k** of further funding was secured from private/industry sources.
- Starter Grants funders contributed **£15.2m** (61%) of the further funding secured by award holders (Figure 6; Table 4).

Most of the further amount funding secured in 2016/17 comes from research grants and fellowships – together these award categories account for 83% of the further funding reported (Figure 7) and 98% of the further funding amount. The majority of the further funding awards were small grants but Starter Grants holders also succeed in securing large research grants and fellowships – 18% of the awards had a value exceeding £500k (Figure 8). It should be noted that further funding as currently reported via Researchfish does not include a record of the share of award where there are co-Investigators. In particular, sums relating to project and programme grants – both of which fall under the ‘Research grant’ header in the figures below – may be shared across the Starter Grant holder and other investigators.

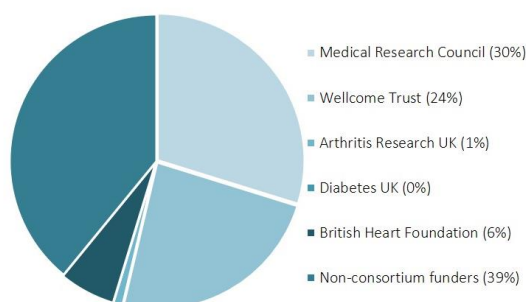


Figure 6 – Starter grants consortium funder contributions to further funding reported in 2016/17

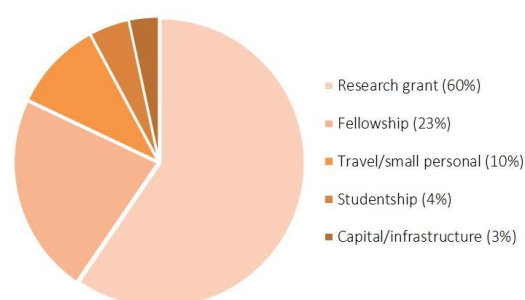


Figure 7 – Nature of the type funding received as reported in 2016/17.

Table 4 – Top ten organisations providing further funding to Starter Grants holder in 2016/17.

Organisation	Sum of award(s)
Medical Research Council	£7,421k
Wellcome Trust	£5,949k
National Institute for Health Research	£4,956k
British Heart Foundation	£1,543k
Cancer Research UK	£1,480k
Rosetrees Trust	£501k
Newton Fund	£402k
Arthritis Research UK	£256k
British Lung Foundation	£250k
The Evelyn Trust	£197k
Remaining 40 funders	£1,951k
Total	£24,909k

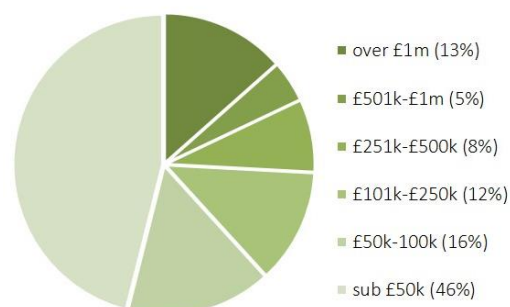


Figure 8 – Value of individual awards received as reported in 2016/17.

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To date, 51% of the 270 Starter Grants holders that have ever reported via Researchfish to us, have attributed receiving further funding as a result of their award. This total funding amount received has now totalled up to £81m (Figure 9).

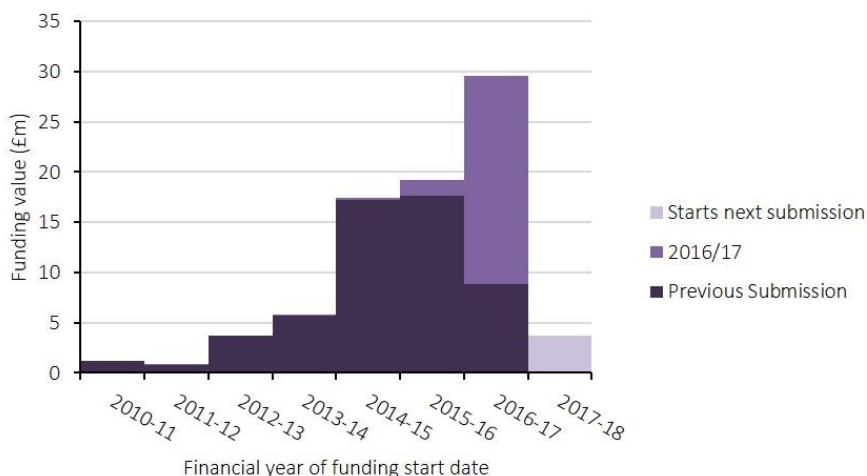


Figure 9 – Total amount of secured further funding reported to date.

As per the previous section analysing publications, focusing on rounds 5 to 15 and the data reported to date reveals the occurrence of long-term trends. The proportion of Starter Grants award holders reporting further funding as a result of their award increases with the time since the start of award, with approximately half of the award holders from rounds 13 and earlier having reported receiving further funding (Figure 10, right axis). This suggests that roughly half of Starter Grants award holders go on to secure further funding as a result of their award, with the first instance of further funding usually being secured within two years of the start of their award. This is reflected in the total amount of further funding per round which continues to increase as the award ages (Figure 10, left axis). This suggests that award holders are initially obtaining other small grants to support their research soon after securing their Starter Grant; whereas they then go on to secure larger and longer term funding (e.g. Clinician Scientist Fellowships) a few years later. This is consistent with the Starter Grants scheme’s aim to enable Clinical Lecturers to produce preliminary data to support applications for large competitive grants. The reduced amount of further funding reported in Round 9 is most likely due to the fact that only 16 Starter grants were awarded, which is significantly below the average number of awards usually made per round (see Figure 2). However, these awardees are just as successful as other rounds at obtaining further funding, with 50% of awardees reporting receiving further funding.

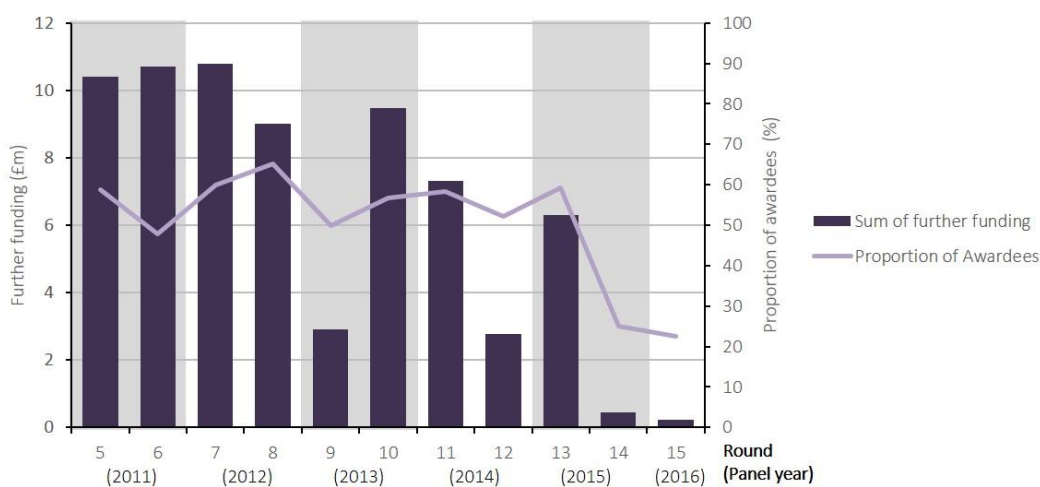


Figure 10 – Total value of further funding reported by round (left axis) to date and proportion of awardees reporting funding per round (right axis).

Career Progression

Currently, career progression data is not systematically captured via Researchfish; a career tracker is in development for the system, and is likely to come online in 2018. Some career progression data is, however, collected indirectly when Starter Grant holders report securing large personal fellowships to us as part of their further funding. Pending the development of a career tracker function in Researchfish, we also introduced a funder-specific question regarding promotions and whether these are research-active positions, and have now captured data through two submission windows.

New outputs captured in the 2016/17 submission window:

- Awardees reported securing **16** large personal fellowships (Annex 1), of which there were:
 - **12** Clinician Scientist Fellowships, and
 - **4** post-doctoral clinical fellowships.
- Awardees secured **4** studentships for junior researchers working with them.

The above awards take the total number of senior fellowships reported to us via Researchfish to date to 33 Clinician Scientist Fellowships (or equivalent) and 21 senior clinical postdoctoral fellowships. Compared to previous years reports, this year has seen a doubling of the Clinician Scientist Fellowships awarded (Annex 1), with 58% of these awarded to females, an encouraging trend but also reflective of the increased number of awardees now reporting to us. The number of such fellowships secured by all the Starter Grants awardees is, however, likely to be much higher. This is because the majority of the awardees from rounds 1-4 of the scheme – whose awards closed prior to our adoption of Researchfish – have never reported via the system, meaning data collection 3 years post-award has never been made. Fellowships awards are often secured following the completion of a Starter Grant meaning data from early rounds will be incomplete.

During the 2016/17 submission period 124 awardees, representing 86 closed and 38 live awards, answered our funder specific question bringing the total number of awardees reporting through this feature to date to 259. Of the closed awards which have so far reported to us, 77% have secured promotions, with 93% of these being to research-active roles (Figure 11), such as senior lectureships. Of the live awards, 26% have secured promotions and of these 86% are research-active promotions. This is especially encouraging to see the majority of awardees retained within research-active positions after the completion of their awards and clinical lectureships.

Overall, looking longitudinally by round, we see an increase in the number of promotions reported as the award ages (Figure 12). Focussing on Round 10 where at the time of submission most of the awards will have recently closed, shows that 60% of award holders have received a promotion.

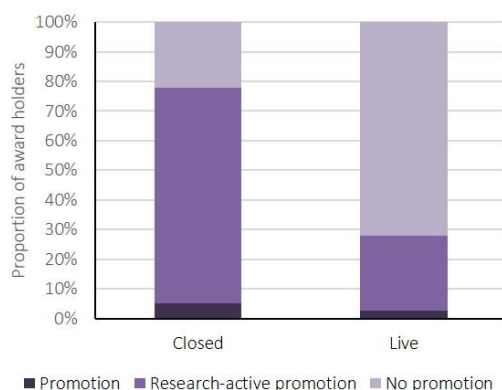


Figure 11 – Proportion of award holders as of 2016/17 who have reported securing a promotion based on award status.

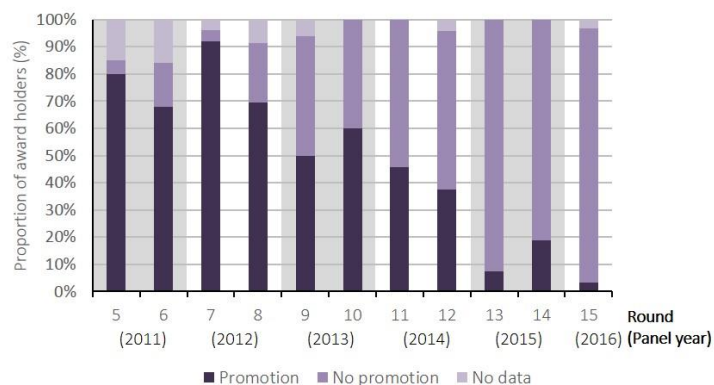


Figure 12 – Proportion of award holders each round reporting whether they have received a promotion.

“This award was invaluable in helping me financially and allowing me the time and space to develop my current research interests, ultimately leading to my successful appointment as a Senior Lecturer and Honorary Consultant.”

Stuart McCracken, Round 4

Other Outputs

In addition to publications, further funding and promotions, we also collect information on any collaborations forged by our Starter Grants holders, awards and prizes they have received, and any influences they have had on policy and practice. These outputs can serve as indicators of research quality and esteem and are also of keen interest to us as they align with the Academy’s careers policy activities and strategic priority of developing talented researchers.

Collaborations

New outputs captured in the 2016/17 submission window:

- Award holders reported **126** new collaborations linked to their Starter Grant;
 - **18** of these collaborations were for projects with multiple named collaborators, bringing the total number to **202** new partners.
- Collaborators were primarily UK-based and with partners in the Academic sector (Figures 13 and 14).
- 41% of awardees reported collaborations with international partners.

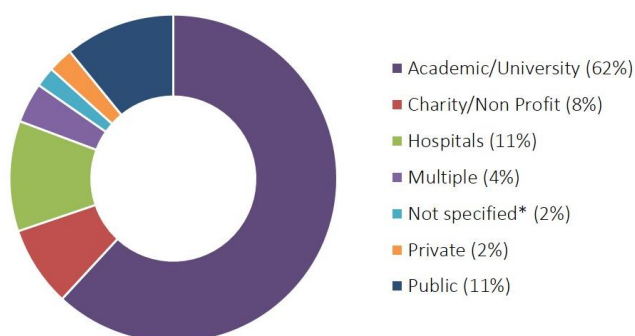


Figure 13 – Sector of newly reported collaborating partners in 2016/17.
*Collaboration partner sector was not reported in all cases.

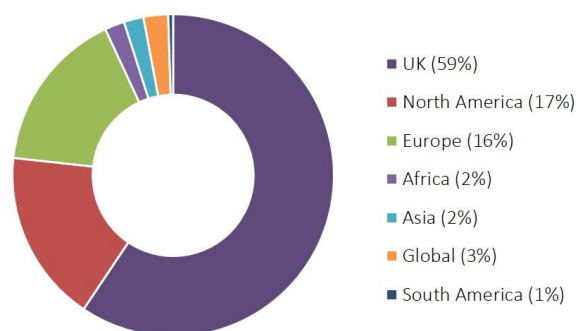


Figure 14 – Location of newly reported collaborating partners in 2016/17.

To date, 167 of the 270 Starter Grants holders whose outputs have been captured via Researchfish reported collaborations linked to their project. Together, they have reported 404 collaborations totalling 509 partners.

Influences on policy and practice

New outputs captured in the 2016/17 submission window:

- Starter Grant holders reported **23** new activities influencing policy and practice (Table 5).
- 52% of these influences were at the **National level**, with the remaining at the local (39%), European or international level (8%).

Table 5 – New Influences on policy and practice reported in 2016/17

Type of influence	Instances
Participation in an advisory committee	8
Influenced training of practitioners or researchers	5
Membership of a guideline committee	5
Citation in clinical guidelines	2
Participation in a national consultation	2
Citation in systematic reviews	1
Grand Total	23

To date, 39 of the 270 (16%) Starter Grant award holders who have made Researchfish reports have reported a total of 80 policy influences. The most frequently reported influence types were influencing the training of practitioners or researchers, and participation in advisory committees.

Awards and markers of esteem

New outputs captured in the 2016/17 submission window:

- **57** of the Starter Grant holders (25% of those reporting this period) reported receiving **112** new awards or other markers of esteem.
- Together, personal invitations to speak at conferences, research prizes and poster/abstract prizes accounted for 79% of the instances reported (Table 6).
- Starter Grant holders also reported **16** appointments to external bodies or editorial boards.

Table 6 – New awards and markers of esteem reported in 2016/17

Type of award	Instances
Research prize	36
Personally invited as conference speaker	30
Poster/abstract prize	23
Appointed as editor to journal or book series	8
Honorary/advisory position to an external body	8
Awarded membership, or a fellowship, of a learned society	3
Attracted visiting staff	2
Honorary Degree	1
Medal	1
Total	112

To date, 116 of the 270 (43%) award holders whose awards have been captured via Researchfish have reported a total of 331 awards and markers of esteem.

“This has been a fantastic period of research. I have set-up international collaborations, gained publications, presented worldwide and expanded our knowledge of the field. It has spawned more projects and ongoing research themes.”

Andrew Monk, Round 9

Case Studies

In this section, we present case studies from selected Starter Grants holders. These case studies complement the quantitative analyses reported so far from the of Researchfish data by exploring single awards in greater detail. Information detailed in these case studies may go beyond the end of the 2017 submission window. Awards were selected to cover a range of research areas, institutions, award holder medical specialties and gender. The selected case studies are from awards ranging from rounds 9 to 13 (i.e. awarded between 2013 and 2015) and so capture awards that are recently completed.

The selected award holders were asked to complete a short questionnaire on the research that was supported through their Starter Grant, and the impact of this award on their career.

Case studies were formed from the following awards:

- **Simon Bomken**, Newcastle University (Round 10)
Pre-clinical modelling and functional analysis of childhood Burkitt lymphoma
- **Laura Coates**, University of Leeds/University of Oxford (Round 9)
Investigating the phenotype of axial psoriatic arthritis
- **Fergus McCarthy**, King's College London (Round 13)
The role of the Unfolded protein Response in the Aetiology and Prediction of Pre-eclampsia
- **Noemi Roy**, University of Oxford (Round 12)
Investigating the function of Codanin1 in haematopoietic cells: creating and analysing a murine conditional knock-out of Cdan1
- **Laura Shallcross**, University College London (Round 11)
The impact of antibiotic treatment on impetigo incidence, outcome and disease transmission: an observational study from the THIN primary care database

Simon Bomken

Starter Grant awarded December 2013 Newcastle University

Pre-clinical modelling and functional analysis of childhood Burkitt lymphoma

What did you seek to do with your Starter Grant?

The aim of my project was to develop the resources needed to identify and test new therapies for Burkitt lymphoma, an aggressive cancer of white blood cells. By developing improved therapies I hope to continue to improve rates of cure whilst reducing the current toxic side effects of treatment.

The first part of the project was to collect lymphoma cells directly from newly diagnosed patients and transplant them into mice, generating experimental models of the disease. These can be used to both learn about the disease and investigate new treatments in “pre-clinical” trials before testing them in children. The second was to look at a group of proteins involved in telling lymphoma cells to survive and grow, known as the B cell receptor, to identify which are most important in Burkitt lymphoma. A number of drugs already exist targeting this receptor, but choosing the best drugs to test in patients requires good experimental evidence.

How did it go?

Over the period of my award we have developed a range of animal models, including five derived directly from Burkitt lymphoma patients, providing us with the opportunity to test new drugs in a setting most closely resembling patients’ disease. Identifying the preferred drug continues to prove challenging, but the work performed during my award has provided new information to help guide the next set of experiments.



What has been the impact of the award on your career?

The starter grant has provided me with the opportunity to develop experimental models of Burkitt lymphoma which will form a core component of my near-future Intermediate Fellowship grant application.

I have also been able to develop my network with the childhood lymphoma field in Europe. I now participate in a pan-European task force to develop our understanding of genetic pre-disposition to lymphoid malignancy and sit on a working group which brings together representatives from both paediatric oncology and immunodeficiency fields. I also represent the UK on a new grant to promote collaborative data-sharing for research into these rare diseases.

Research highlights

- *Inhibition of monocarboxylate transporter 1 by AZD3965 as a novel therapeutic approach for diffuse large B cell lymphoma*, published in *Haematologica*, 2017
- Poster presentation at 5th International Symposium of Childhood, Adolescent and Young Adult non-Hodgkin Lymphoma, Varese, Italy, 2015.
- Funding application to JGW Patterson Foundation, for pre-clinical modelling and functional analysis of childhood Burkitt lymphoma, £36 407, Jan 2016-Dec 2016.

Laura Coates

Starter Grant awarded June 2013

University of Leeds/University of Oxford

Investigating the phenotype of axial psoriatic arthritis

What did you seek to do with your Starter Grant?

The project aimed to collect clinical details and questionnaires about spinal symptoms and x-rays for patients with spinal psoriatic arthritis (PsA), an inflammatory arthritis associated with the skin disease psoriasis. In PsA, inflammation can occur in joints like knees or wrists, but in around half of patients it also occurs in the spine. This causes severe back pain and stiffness with damage to the joints. In some cases, this looks very similar to another type of spinal arthritis called ankylosing spondylitis (AS) but previous studies have shown that PsA often has different patterns of involvement in the spine and pelvis. At the moment there are no agreed criteria for spinal PsA and the only therapies approved for spinal PsA are physiotherapy and painkillers.

I think that a particular gene called HLA-B27 which is important in spinal arthritis may be the key to identifying two different patterns of disease. With these clinical and x-ray details, I hoped to be able to compare patients with and without the gene to see if there are two different types of spinal PsA. I would then develop new diagnostic criteria for spinal PsA, split according to the presence of this gene. In the future, these criteria could be used for clinical trials to investigate new therapies. Such therapies have revolutionised the management of AS and could do the same for patients with spinal PsA.

How did it go?

Unfortunately I have encountered delays. However, we now have all the data from our collaborators and the data has been entered and cleaned and I hope to submit an abstract to the European Rheumatology



Meeting in January 2018. We hope to create better classification criteria for the identification of axial disease in psoriatic arthritis, which would enable future epidemiology and therapeutic studies to improve care for patients with this condition.

What has been the impact of the award on your career?

The starter grant helped me to obtain funding for new work in my Clinical Lectureship following my PhD and helped to establish collaborations with other centres. It also encouraged me to reflect on my career plan through the application process and boosted my CV. For example, I applied for an NIHR Clinician Scientist Award in 2016 and was successful.

I think this is a valuable scheme to allow researchers just after their PhDs the chance to apply for a small amount of funding in their own name. The feedback from reviewers was helpful and the general support from the Academy has been very useful in career planning, mentoring and for practical skills.

Research highlights

- Starting my 5 year Clinician Scientist Award looking at personalising care for patients with PsA in routine clinical practice.

Fergus McCarthy

Starter Grant awarded July 2015
King's College London

*The Role of the Unfolded Protein Response
in the Aetiology and Prediction of Pre-
eclampsia*



What did you seek to do with your Starter Grant?

I aimed to investigate the use of an insoluble protein called amyloid in the urine of women with pre-eclampsia (high blood pressure and urine in pregnancy).

How did it go?

The project has come to an end and we have published the findings. We demonstrated that women with pre-eclampsia have this protein which stains a colour called Congo red. However, it was not specific to pre-eclampsia and also occurred in non-pregnancy and other conditions which affect the kidneys. It helped to figure out potential therapeutic targets and markers of disease in pregnancy. I also presented the work at several research days including the Annual Trophoblast Meeting for Centre for Trophoblast Research at Cambridge University in July 2016.

What has been the impact of the award on your career?

The award provided me with an opportunity to collaborate with researchers in Cambridge and I achieved a first author publication which received quite a bit of publicity as it refuted and clarified findings from other international groups.

It also helped me achieve my first independent NIHR grant of £360k in January 2016 and I believe this AMS Starter Grant gave the springboard to achieve this. I hope to obtain a Senior Lecture post and achieve a career development grant in the near future.

Research highlights

- Urinary congophilia in women with hypertensive disorders of pregnancy and pre-existing proteinuria or hypertension, published in the [American Journal of Obstetrics and Gynaecology](#) in 2016

The Academy of Medical Sciences

Noémi Roy

Starter Grant awarded December 2014
University of Oxford

Investigating the function of Codanin1 in haematopoietic cells: creating and analysing a murine conditional knock-out of Cdan1

What did you seek to do with your Starter Grant?

My work focuses on a very rare type of inherited anaemia (CDA-1) where the bone marrow is unable to make normal red blood cells. We understand what causes it in 85% of cases, but even the cases where we know which gene has gone wrong (e.g. Codanin), we do not know how those genes work in normal individuals or how they go wrong in CDA-1. Therefore we decided that it would be necessary to develop a mouse model called “conditional knock-out” where we were able to delete codanin only in the developing red blood cells of mice. The ultimate aim of the project was to find new partners of codanin, which would allow us to be able to diagnose the remaining 15% of unexplained cases, but also to improve the treatment options available for patients with anaemia.

How did it go?

This project has definitely not been short on challenges! Initial attempts to knock out the gene only in developing red blood cells were unsuccessful. The next step was to try and control more precisely when the knock-out was happening, but these attempts were also unsuccessful. The inability of the cells to survive when we removed this gene completely meant that we had to start looking for alternative ways of studying how this gene goes wrong. We turned to 2 alternative sources- samples from patients themselves, and modifying immortal red blood cell lines using genome editing so that we introduce the same mutations as in patients. This work is ongoing. The samples from patients were identified by developing and implementing within the NHS the first high-throughput sequencing genetic test for rare inherited anaemias in the UK: [link](#).



What has been the impact of the award on your career?

It has allowed me to consolidate and expand my involvement in research. I will now start a post as an NHS consultant with one day a week for research, which will allow me to continue supervising my research assistants and clinical fellow and also allow me to continue my translational research.

I was also delighted to be allocated a mentor from the Academy, as the mentor has given me great confidence and perspective, made me see all of the achievements I had attained and allowed me to see more clearly how certain decisions I had to make would be able to lead me to my long term aspirations. I feel very privileged to have received this grant. It has opened a lot of doors for me, and given me the chance to develop and expand my own research.

Research highlights

- Further funding from three charities; sole applicant on a grant from the Congenital Anaemia Network and a co-applicant on grants from Action Medical Research and from Reuben and Friends.
- A novel 33-Gene targeted resequencing panel provides accurate, clinical-grade diagnosis and improves patient management for rare inherited anaemias, published in *British Journal of Haematology*, 2016
- Becoming the clinical lead on a James Lind Alliance Priority Setting Partnership on rare inherited anaemias.

Laura Shallcross

Starter Grant awarded June 2014
University College London

The impact of antibiotic treatment on impetigo incidence, outcome and disease transmission: an observational study from the THIN primary care database

What did you seek to do with your Starter Grant?

The aim of my research was to investigate how much variation exists in the frequency of antibiotic use between individuals in primary care. Are there some patients who are prescribed very many courses of antibiotics and others who rarely receive them? What types of patients receive lots of antibiotics? Does being socially deprived increase the chance of being prescribed an antibiotic? Does having a chronic lung or heart condition increase the likelihood of being prescribed an antibiotic and how big is this effect? The reason for undertaking this research was to understand how we might reduce unnecessary antibiotic use in primary care. This is important because antibiotic use is one of the main factors that drives antibiotic resistance – a global health priority. To do this work we analysed electronic medical records from almost 2 million patients in primary care.

How did it go?

The project evolved from my original plan which was to focus on antibiotic treatment for skin infections. However, we found that half of the total amount of antibiotics were prescribed to just 9% of patients. Compared to men, women were 62% more likely to be prescribed antibiotics. Patients with chronic illnesses were 44% more likely to be prescribed an antibiotic than patients who were otherwise healthy. We are continuing this work to progress our understanding of when antibiotics should be prescribed to patients with co-morbidity. I hope the work will contribute to improvements in how antibiotics are prescribed in primary care. I am also building on this work through my Clinician Scientist award - analysing electronic health records from secondary care to investigate patterns of antibiotic prescribing in hospital.



What has been the impact of the award on your career?

The starter grant has helped me progress to the next career stage by allowing me time to build up expertise in the research area that I wish to work in (antimicrobial resistance), which supported my application for a Clinician Scientist Fellowship. It also allowed me to participate in the Academy's mentorship scheme as a mentee and I found this experience very useful.

Research highlights

- Awarded an NIHR Clinician Scientist Fellowship
- Antibiotic prescribing frequency amongst patients in primary care: a cohort study using electronic health records, published in *Journal of Antimicrobial Chemotherapy*, 2017
- Preserving Antibiotics through Safe Stewardship - £2M funded ESRC programme grant - my work was used as pilot data to support this application

Closing Remarks

This report has demonstrated, in numbers and narrative, the variety, progress and impact of the research conducted by our Starter Grants holders. Data in this report were taken from the Academy's fourth Researchfish submission window in early 2017 and shows the research outputs reported in the period running April 2016 to March 2017, while also highlighting emerging cumulative trends.

The data collected through this submission period shows the continued outputs of our Starter Grant holders. As the awards captured via the system have started to mature, longer term trends are continuing to emerge which are consistent with the previous years' reports. It is apparent that the overwhelming majority of Starter Grants holders produce publications relating to the research funded by their Starter Grant, and just over half go on to leverage further funding for their research as a result of the award. Their research is also being recognised through awards and prizes, and collaborations are numerous and diverse with many spanning international settings. It was especially encouraging to see the increasing number of senior clinical fellowships reported to have been secured this period, with just over half being awarded to female clinicians, aligning with the purpose of the Starter Grant scheme in facilitating retention of awardees in research-active roles.

With the [2017 survey of Clinical and Health Research Fellowships](#) showing a reduction in the overall number of senior fellowships being awarded in the last several years, thus creating a potential bottleneck for clinical academics transitioning to independent positions, the Starter Grants scheme still remains an important and relevant funding stream to support Clinical Lecturers at a this critical career stage.

In addition to the quantitative analysis awardee case studies highlight the range of the projects funded via Starter Grants, which generate new knowledge and tools that have the potential to inform further research and patient care. A common thread throughout the case studies is how the grant allowed them to generate important data to strengthen future funding applications and secure promotions and also enabled them to develop collaborations. The Academy recognises the benefit of building collaborations at the early stage of a researcher's career. To facilitate this, Starter Grant holders are invited to the Academy's annual Winter Science Meeting, which provides them with an opportunity to network and build collaborations with other awards holders from across different funding schemes and Fellows of the Academy.

Overall, the present report demonstrates the continued progress made by Starter Grant holders and celebrates their achievements to date. As one of the National Academies, we are committed to celebrating individuals and their achievements. We pride ourselves on our ability to develop talented researchers and lead innovation in doing so. We add value for our award holders by providing not only funding and career support, including access to our acclaimed mentoring scheme and also extensive opportunities for networking, interacting with Fellows and participating in policy activities.

"I am very grateful for the opportunity this award has given me and plan to continue this momentum in my next award with my goal remaining to lead a research group and deliver clinical research of the highest quality, striving to develop new and much needed clinical therapies for patients."

Thomas Bird, Round 7

Annex 1

Fellowships reported in 2016/17

Round	Award Holder	Funding body and award name	Value (£)
Clinical Scientist Fellowships (or equivalent)			
3	James O'Connor	Cancer Research UK, Advanced Clinician Scientist Fellowship	1,450,000
7	Mariya Moosajee	Wellcome Trust, Clinical Research Career Development Fellowship	1,133,875
8	Shelley Potter	National Institute for Health Research, Clinical Scientist Fellowship	1,118,847
9	Laura Coates	National Institute for Health Research, Clinical Scientist Fellowship	1,072,873
10	Tomoki Arichi	Medical Research Council, Clinical Scientist Fellowship	1,082,999
10	Simon Rinaldi	Medical Research Council, Clinical Scientist Fellowship	1,019,211
11	Kathryn Peall	Medical Research Council, Clinical Scientist Fellowship	800,000
11	Laura Shallcross	National Institute for Health Research, Clinical Scientist Fellowship	1,127,089
12	Charlotte Warren-Gash	Wellcome Trust, Intermediate Clinical Fellowship	767,900
13	Benjamin Fairfax	Wellcome Trust, Intermediate Clinical Fellowship	1,068,876
13	Golam Khandaker	Wellcome Trust, Intermediate Clinical Fellowship	792,119
13	Rimona Weil	Wellcome Trust, Clinical Research Career Development Fellowship	1,223,282
Senior Postdoctoral Fellowships			
11	Tracy Briggs	National Institute for Health Research, Transitional Research Fellowship	331,842
11	Vasilis Kosmoliaptis	National Institute for Health Research, Postdoctoral Fellowship	388,032
13	Andrew Conway-Morris	Wellcome Trust, Clinical Research Career Development Fellowship	500,000
14	Louis Grandjean	Wellcome Trust, Postdoctoral Research Training Fellowship for Clinicians	390,000



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