



Engineering and Physical Sciences
Research Council

Healthcare Technologies Challenge Awards

Call type: Invitation for outlines

Closing date: 16:00 on 14 May 2015

**Related themes: Engineering, Healthcare technologies, ICT,
Manufacturing the future, Mathematical sciences, Physical sciences**

Summary

The EPSRC Healthcare Technologies theme invites applications to an initiative designed to create a cohort of the most promising future leaders who will develop new research capabilities across the EPSRC portfolio to address unmet healthcare needs. This call is intended to support early career researchers (ECRs) to develop a personal programme of high quality, creative, and multidisciplinary research, and to build and grow their research group. A budget of £10 million is available to support around ten personal awards.

This call seeks to enable ECRs to realise their vision of transformative research which addresses long term health challenges, through a flexible and high profile award. Applicants to this call should have demonstrable leadership potential, both in terms of team leadership and research field leadership, and they should be strongly supported by their host institution. EPSRC seeks applicants who want to revolutionise healthcare technologies both through the development of field changing fundamental research, and through the integration of approaches which ensure user needs are considered. Furthermore, applicants should seek to design their research to minimise the barriers to its implementation in a healthcare context.

This call is closely aligned to the Healthcare Technologies strategy; a new way to think about how Engineering and Physical Sciences researchers can tackle current and emerging health challenges facing society. Applications to this call should bring a creative and multidisciplinary approach to one of the four grand challenge areas, and should also clearly identify how the proposed research and collaborations have been designed to shorten the pathways to translation and/or clinical adoption.

This call is suitable for academics that have held a permanent academic post at an eligible institution for a maximum of eight years at the point of application. Peer review for this call will consist of a multi-stage process, with applicants initially submitting outline applications, with those selected at this stage invited to submit a full proposal for peer review and interview.

Background

This initiative aims to enable the most promising ECRs to develop new research groups and capabilities which address long term health challenges and have the potential to become new centres of critical mass in multidisciplinary Healthcare

Technologies research. Applicants to this call will have demonstrable potential to become a national and international research leader, and should have ambitious but achievable plans for establishing collaborations which will develop and sustain their research team and agenda. Successful applicants will be able to take a long term and strategic view of their research; to discuss their research vision and the role this award would play in its realisation, as well as their broader research and strategic context.

Researchers funded through this call will not be looking to perform one-off research projects, but instead to embark on the development of an ambitious and coherent programme of research. To this end, applicants should have clear plans for the creation and leadership of a strong multidisciplinary team, designed to implement their research programme and position them as a research leader. The flexible resources available through this call should be clearly aligned to these aims, and should be deployed strategically to develop adaptable research strategies including high risk components, and to provide continuity in terms of people and resources.

Applicants should ensure that they have the support necessary to achieve their aims from both their host institutions and collaborators, and that the research environment within which they work will enable them to become a multidisciplinary research leader. Institutions are expected to provide specific and tailored support to applicants to this call.

EPSRC intends that as well as high quality fundamental research, this call will enable ECRs to perform research which is truly relevant to health practice and care through understanding and integration of user needs and planning of translational pathways. A wide range of approaches might be taken to ensuring end user relevance of research, including the formation of collaborations with users, clinical or industrial partners, the integration of regulatory understanding and training, or the incorporation of user centred design, translational and manufacturing components into the proposed research. This emphasis on end user engagement is a key component of the strategy of the Healthcare Technologies theme, which aims to establish clinically and translationally oriented research as the status quo for all relevant EPSRC sponsored researchers.

This call is closely linked to the Healthcare Technologies Grand Challenges, and all applications to this call should clearly demonstrate their alignment to one of the four challenges, as detailed below in the 'Scope of the Call'. These challenges, which have been identified through extensive community consultation, are significant health problems which need to be addressed by a long term, multidisciplinary, coordinated approach from researchers. The Healthcare Technologies theme hopes that these challenges will provide a focus for interdisciplinary and international collaboration, lead to world leading discoveries in computational, engineering, mathematical and physical sciences, and develop the next disruptive or transformative healthcare technologies and systems.

This call fits closely with EPSRC's priority of Building Leadership, as outlined in the current Strategic Plan. The Building Leadership strategy is focussed on supporting the very best researchers throughout their careers; developing the research leaders of today and tomorrow. This call is complementary to the EPSRC Fellowships scheme, and builds on the successes of the previous Challenging Engineering scheme, which has enabled a number of early career

medical engineers to rapidly build their profile and portfolio to nationally and internationally leading levels on markedly short timescales, becoming key leaders in their fields within five years of award. EPSRC intends the awards made through this call will similarly act as a springboard for the most outstanding early career researchers, and that each successful researcher will have established a leading position in their field by the end of the award, accelerating their career trajectory.

For more information about EPSRC's portfolio and strategies, see our website: <http://www.epsrc.ac.uk/research/ourportfolio/>

The new Healthcare Technologies Strategy can be found here:

<http://www.epsrc.ac.uk/research/ourportfolio/themes/healthcaretechnologies/strategy/>

The EPSRC strategic plan can be found at:

<http://www.epsrc.ac.uk/newsevents/pubs/strategic-plan-2015/>

The Maxwell report can be found at:

<http://www.epsrc.ac.uk/newsevents/pubs/the-importance-of-engineering-and-physical-sciences-research-to-health-and-life-sciences/>

For more information on EPSRC's Building leadership strategy please see:

<http://www.epsrc.ac.uk/skills/>

Scope of the Call

Scientific Scope: Healthcare Technologies Grand Challenges

Applications to this call must be clearly aligned to the recently released Healthcare Technologies Grand Challenges. Applicants should discuss how their proposed research will address one of the challenges. EPSRC reserves the right to reject applications which do not fit the remit of the Healthcare Technologies Grand Challenges.

The four Grand Challenges are:

- **Developing Future Therapies** - Supporting the development of novel therapies with technologies to enhance efficacy, minimise costs and reduce risk to patients.
- **Frontiers of Physical Intervention** - Restoring function, and optimising surgery and other physical interventions to achieve high precision with minimal invasiveness.
- **Optimising Treatment** - Optimising care through effective diagnosis, patient-specific prediction and evidence-based intervention.
- **Transforming Community Health and Care** - Using real-time information to support self-management of health and wellbeing, and to facilitate timely interventions.

Applicants should also state how they will advance the cross-cutting research capabilities relevant to their proposal. The six capabilities are:

- Advanced Materials
- Disruptive Technologies for Sensing and Analysis
- Future Manufacturing Technologies
- Medical Device Design and Innovation
- Novel Computational and Mathematical Sciences
- Novel Imaging Technologies

For more information on the challenges and cross cutting themes please see: <http://www.epsrc.ac.uk/research/ourportfolio/themes/healthcaretechnologies/strategy/>

Expectations of Applicants and Host Institutions

Requirements of Applicants:

All applicants to this call should be able to demonstrate:

- **Strong leadership abilities and attributes:** You should be able to explain how your skills and experience to date will enable you to build a multidisciplinary group and network of collaborations, and develop a strong international research profile.
- **Plans to perform high quality research to tackle an unmet health need:** Applicants will be judged on the quality of their novel, creative and adventurous research, in conjunction with the potential of such research to tackle a current health challenge.
- **Long term vision along with plans for its realisation:** You should be able to clearly discuss your long term research vision, along with a clear plan for how you would use this flexible award to realise your vision.
- **A strong and supportive research environment:** You will need to discuss how your current institution and environment will enable you to become a strong leader of multidisciplinary research. Your institution will also need to demonstrate its commitment to you, as discussed below.
- **An understanding of current healthcare needs:** You will need to understand how your research can tackle a current health need, and how it fits into the national and international research and strategic landscapes.
- **A clear methodology for ensuring the research is translationally oriented:** Applicants should discuss how they will ensure that their research is relevant to the needs of end users, as well as the anticipated pathways to translation and use. Specific topics and issues that we encourage researchers to consider are highlighted in the impact and translation toolkit which is part of the new Healthcare Technologies Strategy.

Support from Host Institutions:

EPSRC expects that each applicant's host institution will provide them with significant and sustained support aligned to their award. It is expected that your host institution will work with you to ensure that you have the flexibility and environment necessary for you to pursue your independent research agenda, that your teaching and administrative workload is commensurate with the needs of an early career research leader who is establishing a new world-leading research group throughout the period of the award.

It is expected that the institutional support provided to applicants will be tangible, and appropriate to the proposal and researcher in question. EPSRC does not mandate the form of this support, however demonstration of clear institutional support will be a significant criterion for success of applications to this call, and host institutions will be required to outline this in a letter of support.

Beyond aligned funds, resources, and environments, EPSRC also expects applicants' host institutions to offer the applicant coaching or mentoring from senior colleagues. Mentoring should be designed to aid the candidate's strategic planning and implementation of interdisciplinary research activities, to help them develop their leadership abilities, and to further their personal development.

In addition to the institutional support, applicants are also required to discuss the research environment within which they propose to carry out their research, detailing how this environment will benefit them. Applicants are asked to discuss how the research environment may be one of specific encouragement for ECRs, or there may be significant resource and expertise in related work, such as current critical mass investments, experience in translation of health relevant research, or existing strategic partnerships with businesses and/or charities. Both the candidate's research environment and the institutional support will form a key part of the assessment of the potential of the applicant to become a research leader over short timescales.

EPSRC intends to actively engage with the cohort of researchers successful through this call, providing them with opportunities to develop their leadership skills through grant holder workshops which are an opportunity for grant holders to share experiences, provide mutual support, network and build new collaborations. These workshops will also be an opportunity to build relationships between EPSRC and our future leading researchers, and to discuss and influence policy and strategy.

Funding available

Up to £10 million is available through this call, and the EPSRC anticipates making approximately 10 awards.

Funding is available for all resources standardly requested in EPSRC grants, as detailed in the funding guide:

<http://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>

It is expected that applicants to this call will devote a significant amount of effort to the activities associated with this award; however the EPSRC expects that you will not be devoting all of your time to this award, and that you will use this award as a platform from which to broaden your funding portfolio. As a

consequence, the proportion of the time which the PI can request on an application to this call is 35%.

Other anticipated costs include staff time, consumables and equipment, user engagement, impact and dissemination activities, and partner collaborations and exchanges. Additionally, EPSRC strongly encourages you to consider requesting activities associated with your own training and development needs, as well as plans for obtaining further leverage and future funding.

Whilst these are individual awards, applications may include a limited number of co-investigators if they are from a complementary discipline to the principle investigator, and their participation in the award can be shown to be crucial to the interdisciplinary nature of the work. Co-investigators should primarily be included for the purposes of establishing new collaborations to meet the vision presented in this. You are reminded when designing your resource package that this call intends to support future research leaders, and not to support existing research groups or collaborations.

Equipment

Where possible, researchers are asked to make use of existing facilities and equipment, including those hosted at other universities. If equipment is needed as part of the research proposal, applicants must follow EPSRC's rules for requesting equipment over £10,000 in value. Individual items of equipment up to the current OJEC (Official Journal of the European Communities) procurement threshold can be included on research proposals submitted through this call, but research organisations will be expected to make a contribution to the cost. All requests for single items of equipment above the current OJEC threshold will need to go through a separate process which will assess the strategic need for the equipment and how to ensure maximum usage. These proposals will be assessed through the separate Strategic Equipment peer review process.

For more information on equipment funding, please see:
<http://www.epsrc.ac.uk/research/facilities/equipment/>

The current OJEC threshold can be found at:
<http://www.epsrc.ac.uk/research/facilities/equipment/process/>

Eligibility

This call is suitable for academics that work at an eligible institution, and have held a permanent academic post for less than eight years at the point of application. Researchers without a permanent academic post, or those who have held a permanent post or combination of posts for more than eight years are not eligible for this call.

Applicants who have been in post for more than eight years but who have followed a non-standard career path which might include (for example) a career break, can be flexibly accommodated by this scheme, as EPSRC welcomes applications from applicants who wish to re-establish themselves in research. In such a case, applications should be within the spirit of the scheme, and any applicants with questions should contact the EPSRC.

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:
<http://www.epsrc.ac.uk/funding/howtoapply/fundingguide/>

As this call is a targeted funding opportunity provided by EPSRC, higher education institutions, and some research council institutes and independent research organisations are eligible to apply. A list of eligible organisations to apply to EPSRC is provided at: <http://www.rcuk.ac.uk/funding/eligibilityforrcs/>

How to apply

A two-stage application and assessment process will be used.

- **Stage 1: Outline proposal** - application details are detailed below.
- **Stage 2: Full proposal**- Only applicants shortlisted at stage one will be invited to submit a full proposal. Guidance for the submission of a full proposal is given in Annex One for information, and more detail on the assessment process is given in the 'Assessment' section below.

Submitting your outline application

You should prepare and submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new outline proposal, you should select:

- Council 'EPSRC'
- Document type 'Outline Proposal'
- Scheme 'Outline'
- On the Project Details page you should select the 'Healthcare ECR Platform' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by 16:00 on 14 May 2015.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<http://www.epsrc.ac.uk/funding/howtoapply/>) which should be consulted when preparing all proposals.

Guidance on Your Outline Proposal (Stage One):

Your completed Je-S application form should be accompanied by three documents:

1. **A Case for Support (max four sides of A4)**. Within this document you should include information under the following headings:
 - **Track Record**: Within this section you should discuss your track record of delivering high quality research and impact, as well as demonstrating your leadership experience and consequent potential to become a strong leader of a team and research field.
 - **Proposed Research**: You should discuss your long term research vision for performing high quality, innovative, multidisciplinary and

creative research. Furthermore, you should detail how the activities funded by this award would enable you to realise this vision.

- **Research Environment:** You should discuss how the environment around you and the support at your host institution will enable you to become a multidisciplinary research leader.
 - **Fit to Wider Context:** You should put your research into the wider UK and international context, and discuss how it fits with current strategic drivers including the Healthcare Technologies Grand Challenges.
 - **Delivery of Health Impact:** You should discuss how you will ensure that your health relevant research will benefit end users, and the methods by which impact will be delivered. Specific topics and issues that you may wish to consider are highlighted in the impact and translation toolkit.
2. **A statement of support from your host organisation (max two sides of A4).** This document should describe the institutional commitment to the development of your research group and vision. Given the level of support from EPSRC, it is expected that this statement will indicate a long-term strategic level of support from the organisation, and a commitment to the career of the applicant. It may be that institutions wish to pre-select the applicants whom they most wish to support. If this is the case, the institution should explain why this applicant was selected. The commitment of the organisation to support the applicant will be a major factor in determining whether or not the applicant is invited for interview. More information on the expectations of host institutions is given above in the section 'Support from Institutions and EPSRC'. Applicants should be advised that the panel will be asked to consider whether institutional support will enable the applicant to implement their research and leadership vision. If the panel takes a view that the institutional support offered is inadequate, this will be taken into account in the ranking of proposals.
3. **A Justification of Resources (max one side of A4)** which outlines how you would use the available resources to build your group and achieve your vision. Please be aware that only a 10% variance will be permitted between the resources requested at this point and those requested in a potential full proposal.

Assessment

Assessment Process

- **Stage 1: Outline proposal** - Outline proposals will be assessed by an expert panel consisting of representatives from across the Healthcare Technologies community. This panel will recommend a ranked order of applicants to invite through to the second stage. EPSRC will decide, on the advice of the peer review panel, which applicants to invite through to the second stage.
- **Stage 2: Full proposal-** Full proposals will be peer reviewed by experts from the UK and international research and user communities. Peer

reviewers will be asked to comment on all of the assessment criteria, but primarily on the research quality.

Applications with sufficiently supportive peer review comments will be invited to interview. The interview panel, which will consist of members from across the Healthcare Technologies community, will rank order candidates based on their interview performance, reviews and PI response. The EPSRC will decide, on the basis of advice from the interview panel which proposals to fund.

EPSRC expects to invite approximately 20 candidates through to the second stage. It is anticipated that interviews will occur in the week commencing 23 November 2015. Applicants are requested to ensure that they will be available for interview during that week.

Assessment criteria

Stage One: Outline proposal

The Criteria for the assessment of Outline proposals will be (in no particular order):

- The potential for high quality research to be delivered by the applicant and their team, including the degree of novelty, creativity and adventure.
- The leadership potential of the applicant, both in terms of building and leading a research team, and becoming a leader of a research field.
- The strength of the research environment within which the applicant will work, and the level of appropriate support offered to them by their host institution.
- The applicant's research vision, and the extent to which the activities and resources requested will enable this vision to begin to be realised.
- The extent to which the proposed research will meet a currently unmet healthcare need, and the fit of the research within the UK and international research and strategic landscapes, with particular focus on the Healthcare Technologies Grand Challenges.
- The potential the outcomes of research to be implemented in a health context through the suggested activities, including (but not limited to) the integration of user needs into the research and collaborations with clinical and industrial partners.

Stage Two: Full Proposal

Full proposals will be assessed against the criteria below. For expert peer reviewers there will be a strong emphasis on research quality, whilst at the interview stage the generalist Healthcare Technologies panel will focus on the individual candidate.

Research Quality:

- Applicants should propose a programme of high quality creative research with a high degree of novelty in comparison to the broader international context of the research.

- You should articulate a strong vision for your future research agenda, and detail how this award will allow you to begin to achieve this vision, including the building of a team to help you in delivery of your vision.
- You should have a track record of delivering high quality research and impact, and the drive to apply this experience to research which meets currently unmet health needs.

The Candidate

- Applicants should demonstrate evidence of strong leadership potential, both in terms of team leadership and leadership of the broader research community.
- You should outline your ambitious plans for building both a team and your collaborative network, and discuss the relevant previous experience which will enable you to take full advantage of this opportunity.
- You should exhibit ability and experience of working across different interfaces, including building and sustaining multidisciplinary collaborations.
- All applicants to this call should demonstrate their desire to see novel engineering, computational, physical and mathematical sciences research and knowledge applied to the solution of current health challenges. Applicants should demonstrate the desire and ability to act as an ambassador for such research on a wider stage.

Research Environment

- Both the candidate and host institution should clearly discuss how the research environment around the candidate and the tangible tailored support offered by the institution will enable them to become a multidisciplinary research leader.
- Institutions should clearly explain both their selection of and commitment to the applicant.

Resources and Planning:

- Applicants should discuss the planned flexible and innovative use of the award, and the contribution of this to the achievement of their goals.
- You should be able to justify the planning and project management of the proposed research programme, and demonstrate that the resources requested are appropriate for the delivery of the research.
- You should identify the main risks in your approach, and discuss the risk-mitigation strategies you have put in place.

Importance

- Applicants must evidence how the proposed research will contribute to the health of UK research disciplines, address societal challenges, and/or contribute to UK economic success or future development of emerging industries.

- You should demonstrate your awareness of where your proposed research is positioned within the UK and global landscapes, and discuss exactly how you see it meeting an unmet health need identified in the Healthcare Technologies Grand Challenges.

Impact

- You should demonstrate the extent to which the research is translationally oriented, and the extent to which end user requirements are appropriately integrated into the design and implementation of the research vision.
- You should demonstrate the appropriateness of the proposed pathways to translation and use for the outcomes of the proposed research, and the extent to which the probability of translation or clinical adoption has been maximised
- EPSRC reserves the right to alter the assessment criteria between the outline and interview stages based on the feedback of the outline panel, however if this occurs all applicants successful at the outline stage will be informed.

Key dates

Activity	Date
Call open for outline proposals	24 March 2015
Closing date for outline proposals	14 May 2015
Outline sift panel	Late June 2015
Outcomes of Sift Panel given	Early July 2015
Deadline for full proposals	04 August 2015
Interviews	w/c 23 November 2015
Funding decisions announced	End of December 2015

Contacts

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Change log

Name	Date	Version	Change
Anna Angus-Smyth	05/03/2015	1	N/A

Name	Date	Version	Change

Annex One: Full Proposal Applications

Applicants must have been successful at the first stage and invited through to the second stage in order to submit an application.

Please note that EPSRC reserves the right to reject a full proposal where the requested resources differ by more than 10% from those indicated in the outline proposal or where there have been other significant changes from the outline proposal that have not been discussed with EPSRC.

Submitting application

You should submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

Further details of the Je-S submission route will be made available to the successful outline proposals.

Guidance on writing a full application

Your full proposal should consist of:

- Je-S Form
- Case for Support (8 Pages, Including two pages of Track Record)
- Host Organisation Statement (Two Pages) - this is mandatory
- Pathways to Impact (Two pages)
- Work plan (One page)
- Justification of Resources (Two pages)
- Project Partner's letters of support (if appropriate)

Brief guidance on what is required in the proposal sections is below, **for more information please refer to the assessment criteria for full proposals, given above.**

Case for Support: This should include details on:

- Your track record of delivering high quality research and impact, in a multidisciplinary environment.
- Your leadership potential, as a team and research leader.
- Details of your research vision and the planned activities for its realisation, and for the building and development of your research team.
- A discussion of the research environment, and how it will enable you to become a leader of multidisciplinary research.
- Your understanding of how your research fits into the wider research and strategic context.

Host Organisation Statement: As at the outline stage, the host organisation's support will be a key criterion for success, and this statement should outline the institution's specific targeted support for the individual, as outlined above in the 'Expectations of Host Institutions' section.

Pathways to Impact: In this document you should explain the approach which will be taken to ensure that the research performed is truly relevant to health practice and care through understanding and integration of user needs and planning of translational pathways. This might include collaborations with clinical or business partners, integration of regulatory understanding, or translational

and manufacturing aspects. Not all impact activities must be undertaken by the researcher, but it is expected that appropriate activities are identified to ensure that research outputs can and will be implemented in a healthcare context.

Workplan: This should detail the intended approach and timescales, and demonstrate the intended approach to ensuring both flexibility and risk mitigation.

Justification of Resources: This document should clearly outline how you intend to use the flexible funds available through this call. Emphasis should be placed on clear justification of all resources requested, in order to enable peer reviewers and the panel to assess the appropriateness of the resources.

Project Partner Letters of Support: Project partner letters of support should be attached where there is a clear and tangible commitment from another organisation to support your research. General letters of support which do not offer tangible commitment to the project will not be accepted.