

Developing a Consolidated Research Career Competency Framework for Allied Health Professionals

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Abstract

Background Allied Health Professionals (AHPs) form a significant part of the healthcare workforce, and have a great potential to improve services through research and research informed practice. However, there is a lack of tradition in undertaking research alongside practice in these professional groups. Barriers include clinical caseload pressures, a lack of training and consequent lack of confidence in practitioners. Practice managers are ill-equipped to monitor and guide staff research development. Uni-professional competency frameworks can act as further barriers to research culture across the healthcare system that is moving toward multi-disciplinary research focussing on the patient. A common framework, acceptable to all AHPs might be helpful in planning and developing clinical career pathways. Methods Aim: to develop a consolidated framework of research competency to help plan and guide research activity throughout AHP clinical-academic careers. The study was conducted in three phases. Phase one identified existing AHP research frameworks (AHPRF) through expert consultations and literature searches. Phase two involved thematic content of the AHPRFs to develop a single consolidated framework. Phase three included a workshop with experts to validate and adapt the framework for practice. Results 19 AHPRFs were identified. A consolidated framework was shaped by content analysis of the AHPRFs resulting in a consolidated framework of eight sections, each containing a series of competencies. Each section relates to an analytic theme within the content analysis, and the competencies were based on analytic sub-categories of themes. The final framework was further shaped by the phase three workshop into a set of 'stem' competency statements that can be adapted to reflect different levels of expertise. It also includes a set of guiding principles for use. Conclusion The consolidated framework was entitled 'Shaping Better Practice Through Research: A Practitioner Framework' by stakeholders, thus emphasising its ambition to embed research activity into practice. It instigates a new perspective within AHP research by offering practitioners and managers a tool that can be applied across public, private and voluntary settings for AHPs in all disciplines. Its ambition is to develop capacity in the AHPs that can undertake research to improve services and the health of service users.

Background

Allied Health Professionals (AHPs) are a large and internationally recognised group of the healthcare workforce and have a great potential to improve services through research [1]. AHPs make up approximately one third of the health and social care workforce in the UK with over 65,500 qualified staff registered with the NHS in 2018 [2]. The term 'Allied Health Professionals' is used within the UK to describe a diverse range of 14 autonomous professionals including physiotherapists, occupational therapists, radiographers, paramedics, speech and language therapists, podiatrists, dietitians, operating department practitioners, orthoptists, osteopaths, prosthetists and orthotists, art therapists, music therapists and dance therapists [3]. Although the scope of each of these professions is unique, they collectively offer holistic care within the domains of prevention, health promotion, diagnosis, treatment, support and enabling independence [4]. The breadth and range of skills and delivery of care within the public, private and voluntary sector offer AHPs unique opportunities to impact lives and transform the health and wellbeing of our changing population [5].

Research informed practice is a core principle across all allied health disciplines and is a key component of pre-registration training [6-8]. Many initiatives support engagement, involvement and the delivery of research-informed practice, and skilled AHP researchers add impact and value to all levels of health and social care [9-12]. Health and social care organisations that engage in high quality and person-centred research activity have demonstrated higher rates of patient satisfaction, reduced mortality, improved quality performance, and improved organisational efficiency [12, 13]. A strong research culture is associated with reduced staff turnover and faster translation of evidence into practice, and individual practitioners report improved job satisfaction and career progression, recognition and professional kudos, increased awareness of research findings and the reward of seeing impact on practice [9, 12, 13]. The National Institute for Health Research (NIHR) Clinical Research Network's AHPs Strategy 2018-2020 [7] recognises that realising the research potential of AHPs is core to delivering the NIHR's mission "to provide a health research system in which the NHS supports outstanding individuals, working in world class facilities, conducting leading edge research which is focused on the needs of patients and the public". This reflects global health and social care policies [14-17].

Research capacity building is defined as "a process of individual and institutional development which leads to higher levels of skills and greater ability to perform useful research" [18, p. 1322]. Building research capacity in frontline health and social care practitioners is essential to the development of a thriving research culture that offers value and meaning to patients and the public [19]. Within the context of allied health, the aim of this process is to "strengthen existing practitioner expertise with complementary research" [19, p. 56] in order to enable high quality practice and advancement of the profession. Much effort has been made in recent decades to build research capacity and embed research cultures within the allied health professions [20-24]. Despite this, several barriers have been identified to establishing an effective research culture within this sector [8, 25].

A recent systematic review by Borkowski, et al [8] highlighted a lack of confidence in research skills to be a major barrier to a research culture. Many AHPs perceive their knowledge and skills to be inferior, and opportunities for continued learning and development in research is considered lacking for practising clinicians [8, 25]. Lack of time, and sporadic organisational support can be exacerbated by managers ill-equipped to monitor and guide staff research development, participate, and provide appropriate resources and support learning activities [25, 26]. The research literacy of individual managers within allied health is varied and access to support from experienced clinical academics is limited [11, 27, 28]. This suggests further support is needed to enable all individual practitioners to continue to develop research skills, and for allied health leaders to track and support the research competency of others.

Although many allied health disciplines provide frameworks for continuing professional development, the breadth and depth of research knowledge and skills described within these is variable. The field of clinical and applied research is an increasingly multi-disciplinary context in which the same standards, regulatory requirements, and responsibilities are applied regardless of professional background [29]. Potential convergence and divergence in guidance by individual professional bodies is likely to act as a further barrier to research activity and engagement, and could create challenges for recruitment of appropriately skilled and competent researchers [8, 25, 29]. Language used to refer to research within academic institutions can also be perceived as intimidating to AHPs applying research to their own practice [25]. This suggests a common framework, acceptable to AHPs practising in all applied health and

social care systems and consolidating key research skills, knowledge and competency across the professions would be helpful in supporting a strong AHP research culture.

The Council for Allied Health Professions Research (CAHPR) consists of a strategic committee, regional hubs in the UK representing 13 AHP member professions in the development of research capacity and capability in the UK [30]. Funded by proportionate subscription made by each professional body, CAHPR aims to

“develop AHP research, strengthen evidence of the professions’ value and impact for enhancing service user and community care, and enable the professions to speak with one voice on research issues, thereby raising their profile and increasing their influence”[30]

The NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) is a UK based network of collaborative partnerships between health, public services and higher education [31]. NIHR CLAHRC Yorkshire and Humber aims to improve patient outcomes through applied health research, implement findings into practice, and increase research capacity and engagement in NHS organisations [32]. This project was developed through a secondment opportunity co-funded by the CAHPR Yorkshire and South Yorkshire regional hub and NIHR CLAHRC Yorkshire and Humber following recognition of local and national need.

Methods

Aim

To develop a consolidated framework of research competency that supports allied health professionals practising in all public, private and voluntary sectors of health and social care to help plan and guide research activity throughout their career.

Design and Objectives

A three phase pragmatic approach was applied to develop this consolidated framework. Each phase aimed to achieve the objectives listed in table 1.

Table 1

Phase one: Identifying AHP Research Frameworks

This phase aimed to identify the scope and range of existing frameworks designed to support AHPs to develop research skill and competency.

Expert consultation was performed with key leaders within AHP research and professional development across the UK and with the authors and developers of AHPRFs identified through original literature searches and expert consultation[33]. Representatives from organisations listed in Table 2 were consulted in phase one. References of key AHPRFs were tracked and judgement used to determine relevance to the research question [33].

Table 2

Phase two: Thematic content analysis of AHPRFs to develop a consolidated framework

In phase two, the AHPRFs identified in the first phase underwent content analysis to determine key themes applicable to research within allied health. Gale, et al's 2013 [34] adaptation of Ritchie and Spencer's Framework Method [35] offered the flexibility to compare and contrast data across numerous cases (AHPRFs) whilst maintaining clear steps and outputs.

After familiarisation with the AHPRFs, their contents were extracted and coded using an analytical framework based on the Royal Pharmaceutical Society Research, Evidence Evaluation Toolkit [36]. Data were organised and charted using Microsoft Excel software by JH. Emergent themes were identified during the analysis that further shaped the analytic framework. Themes included subcategories of competency.

JC acted as independent reviewer during coding for data comparison and agreement [37]. JC and KG independently reviewed the data to identify additional patterns, consider outlying codes, and offer multiple perspectives as to relevance and repetition / duplication. JH, JC and KG then met to convert the categorical data into statements of competency organised under theme headings to create a new consolidated framework. The research team met to review language and terminology to ensure consistency throughout this new consolidated framework, and ensure that themes and competency statements remained true to the original cases (AHPRFs). At the end of phase 2, a draft consolidated framework was produced ready for wider consultation with stakeholders.

Phase three: consultation about content and next steps

The relevance and validity of the consolidated framework was established through multi-stakeholder consultation and peer review. A purposive sample of participants were invited to the workshop that included representatives from AHP professional bodies; clinical research capacity-building leads, clinicians and managers from a range of organisations, and CAHPR strategy group members. Authors of some existing AHPRFs including the national NIHR workforce group were also participants.

The workshop also aimed to consider practical application and next steps in development. Following electronic distribution of draft consolidated framework, participants attended a face-to-face workshop facilitated by JH, JC & KG. Following introduction and overview of the project, participants were separated into three pre-determined groups offering diversity in professional, research and practice backgrounds. Each group reviewed 2-3 themes of the consolidated framework to consider accuracy of statements, clarity of description, missing or superfluous statements. Comments were recorded on flip chart paper. Larger

group discussions offered opportunity for participants to share knowledge and expertise on research competency within allied health and to make recommendations on how, and in what format, the consolidated framework could be used in practice. Group discussion and interaction were complemented by Padlet collaborative interactive tool [38] to allow anonymous commentary from workshop participants and from those unable to attend in person.

Feedback and recommendations from this workshop were collated by the study team (JH, JC, KG) to shape the final consolidated framework.

Results

The AHPRFs identified

A total of 19 profession-specific and generic health and social care AHPRFs were identified in phase one. These reflected the breadth and diversity of applied clinical research knowledge, skills and behaviours relevant to AHPs in a variety health and social care settings and contexts. Please see table 3 for details of the AHPRFs.

Themes and subcategories identified to shape the draft framework

Eight broad themes of AHP practitioner research knowledge, behaviour and skill were identified in phase two. These were:

1. Research methodology and methods
2. Research strategy and planning
3. Research delivery
4. Research management and leadership
5. Research education and training
6. Working with others and collaborating in research
7. Research-informed practice, dissemination and impact
8. Own career development

An emergent theme arising from the content analysis resulted in an additional area of 'research delivery'. A theme was also adapted from the original REET framework used for analysis and changed from 'research knowledge, intellectual ability and personal qualities' to include all aspects of career development.

A review of how the themes mapped against the original AHPRF can be seen in Table 4.

It can be seen that the area that is not included in most of the original AHPRFs is that of career development and planning. Gaps in the education and planning were also evident in many. Three [39-41] of the original frameworks did include some content within all of the themes of the consolidated framework, but they did not include the full range of subcategories identified through this content analysis of all of the documents. A few addition elements were included from the learning of CLAHRC including developing skills in co-production of research with stakeholders, and supporting outputs from research that are directly useful for practice, which the CLAHRC defines as 'actionable outputs' [42]. Thus the consolidated framework helped to include a full and comprehensive addition to the existing AHPRFs.

The content analysis revealed subcategories within each of the themes listed above. A series of statements were developed to reflect the research competency of these subcategories, thereby generating the detail of the draft-consolidated framework. In doing this we reflected that competencies identified operated at a range of expertise, from research awareness needed for most practitioners to an advanced level for research leaders. Before going out to consultation, the research team tentatively allocated the level of experience for each subcategory statement using four the NIHR CRN Integrated Workforce Framework expertise levels of awareness, core, intermediate and advanced levels [43] to encourage discussion at the phase three workshop. A selected example of the draft framework that went out to consultation is given in table 5.

Table 5

Findings from the workshop regarding content and next steps.

Twelve participants attended the workshop, and a further two participants provided written comments on the draft-consolidated framework as they were unable to attend. Invited participants included people with wide range of experience and expertise including four members of the CAPHR strategy group, three representatives from NIHR Clinical Research Network (CRN), two regional research training providers, and three clinicians who were both research and clinically active. Two national workforce planning policy representatives also attended. Most of the group were AHP trained including three radiographers, an SLT, three physiotherapists and a dietician, an orthoptist and an occupational therapist.

Workshop participants reviewed each theme of the consolidated framework. Statements were adjusted to ensure consistency in language, clarity and suitability across the range of practice settings and AHP roles. It was highlighted that many AHPs work across the health and social care system, and that some work in private practice. The final framework needed to embrace this, and so participants advised that the terminology moved away from clinical research language and be replaced with the term 'applied research' that reflected its application in different contexts.

The title was also changed from 'Clinical Research Skills and Knowledge Framework' to 'Shaping Better Practice through Research: A Practitioner Framework' to reflect a practitioner and practice focus.

A small number of additional statements were incorporated after this consultation, which included an expansion of competencies around public and patient involvement, and a stronger emphasis of working with wider stakeholders. Developing and influencing research capacity was thought to be an important element of research leadership. An increased focus on research-informed teaching in clinical practice was also expanded upon. Some statements were re-categorised. For example, statements related to grant and fellowship were moved from the 'research strategy and planning' section to 'research methodology and methods'. Other skills were incorporated within overarching principles as they were considered pertinent to all research activities across the consolidated framework, for example team-working skills were incorporated into overarching principles (see Figure 2 VII and VIII).

Workshop participants made recommendations regarding presentation of the consolidated framework including techniques to make the framework easier to navigate and increase usability.

Discussions ensued about expertise level and competency. As a result of this, competency statements were developed to a series of 'stem statements' where the important aspect of the competency was highlighted in bold. The entry level could be considered the start of a spectrum of competencies linked to the stem statement. In practice subsequent levels will build on the entry-level competency. An example of how a stem statement can be developed to reflect increase in expertise is given in table 6.

Table 6

There was some debate about the entry level for each competency and changes made. It was agreed that the entry level for some stem statements would start at the higher entry level, for example in those relating to research leadership, applying for research grants and external funding, and co-ordination of research programmes. The final framework includes competency stem statements with a suggested entry level, but these are only tentative and more work is needed here to establish consensus. A section of the resultant consolidated framework is given in Figure 1.

How the consolidated framework should be used: principles for application

Participants considered that the consolidated framework should be implemented flexibly to inform conversations about research competency and career development with practitioners, managers and policy-makers. It was advised that the consolidated framework should not be used as a linear model to map performance objectives or pay, but should inform discussions for career planning, and support integrating research activity into everyday practice. It could be incorporated into, or used alongside existing appraisal systems, and in local and national workforce planning, policies and guidance. The ambition would be to develop a space for discussion and reflection, to help plan a future practice-based workforce that conducts and delivers research alongside practice.

As a result of the phase three workshop guiding principles were developed reflecting the workshop discussions, and these are given in box 2.

A further AHPRF was identified during the workshop [40], but its content was covered in the consolidated framework, implying a saturation of the data.

Discussion

'Shaping Better Practice Through Research: A Practitioner Framework' offers a consolidated framework of allied health research competency with potential to enhance and support AHP research capacity and culture in practice. It offers a new perspective within AHP research by offering practitioners and managers a tool that can be applied across public, private and voluntary settings for AHPs in all disciplines.

Although there were many similarities across the AHPRFs analysed within this project, 'delivery of applied research' was a useful emergent theme that offered guidance on specific competencies required by AHPs engaging in, and delivering research in practice settings. It reflects an important development in the UK in the role of the NIHR CRN which supports centrally funded research delivery across the whole of the NHS by practitioners including AHPs. Stem statements within this category offer consistency in expectations across AHPs but also reflect knowledge, skills and behaviours identified as critical in research delivery across fields of medicine, nursing and other non-medical professions such as pharmacy [36, 44, 45]. Opportunities to develop competence and confidence in the operations of research delivery will promote safety, ethics and legal regulations to build research capacity [24] and reflect international regulation [46].

A further emergent theme within the consolidated framework was 'own career development'. Over recent decades, allied health roles in high-income countries have developed in response to changing health and social policy to accommodate the needs of an aging population [47, 48]. This has included flexibility in role boundaries, extended scope or advanced clinical practice, and emergence of allied health research positions [10, 49]. Although individual career progression within allied health is likely to be informed by profession-specific requirements and health and social care policy, engagement in research is considered the most over-looked of the four pillars of advanced practice [50]. Frameworks such as the Vitae Researcher Development Framework [39] have been traditionally used within academic settings in the UK to map research career development but is not commonly implemented in practice-based environments. This was a useful addition to the consolidated framework and may facilitate discussions across sectors enabling joint appointments and other new career pathways.

The consolidated framework ensures knowledge, skills and behaviours associated with individual AHP research practice reflects national and international policy and regulation. The inclusion of internationally recognised competency frameworks [44, 51, 52], and to national job profiles [41, 43] as well as expertise gained from phase three of this project will facilitate workforce planning across practice settings. This combination of competencies and review by a multi-stakeholder audience can promote a shared research language amongst AHP disciplines including practitioners, managers, academics and policy-makers. Pager, et al [25] found 25% of AHPs reported they were intimidated by research language. More recent systematic reviews have acknowledged the value of

effective communication from leaders and recommended a coordinated approach with a shared purpose that can offer collaboration across teams, services organisations including universities and industries [24, 26].

Future developments

The current iteration of 'Shaping Better Practice Through Research: A Practitioner Framework', offers stem-statements under eight theme headings that can be used by the range of AHPs. It is acknowledged that the level and rate at which a practitioner will advance through each category or will vary according to the specific AHP role.

In common with international frameworks, future developments of the consolidated framework are likely to benefit from statements that identify both "what to do" and "how to do it" [29]. Although early iterations of the consolidated framework mapped competency levels in line with NIHR / CRN Integrated Workforce Framework (IWF) levels [43], it was not within the scope of this project to gain consensus on levels of progression that reflected all professional roles and practice settings and international qualifications frameworks. This is a limitation of the findings. Additionally, phase three of this project recognised further iterations of the consolidated framework should include case exemplars mapping elements of the framework against research-specific roles.

Future iterations of 'Shaping Better Practice Through Research: A Practitioner Framework' are likely to require consensus through Delphi study including input from international AHP representatives and further consultation and piloting in practice-based environments.

Limitations

This project was completed with time and resource constraints and, therefore, followed a pragmatic approach that reflected the funding available. The data that informed the consolidated framework reflects the analysis of existing framework with expert opinion and experience. The wider literature was not used and therefore is a limitation. We were also unable to establish consensus on the entry level of each stem statement due to time constraints, and this requires further work.

Conclusions

'Shaping Better Practice Through Research: A Practitioner Framework' offers a consolidation of existing AHP research frameworks developed through thematic analysis and expert consultation. This consolidated framework has the potential to support AHPs to fulfil their research potential by facilitating research career and activity planning across a variety of practice-settings. By offering a coordinated approach and shared language, this framework provides a unique opportunity to build research capacity in the allied health workforce and work together across health and social care systems to plan clinical academic careers, and to improve services and health of service users.

Abbreviations

AHP Allied Health Professional

AHPRF Allied Health Profession Research Framework

BDA The British Dietetic Association

CAHPR Council for Allied Health Professions in Research

CRN Clinical Research Network

CSP Chartered Society of Physiotherapists

NHS National Health Service

NIHR National Institute for Health Research

NIHR CLAHRC YH National Institute for Health Research Collaboration for Leadership in Applied Health Research & Care Yorkshire & Humber

NMAHPs Nurses, midwives and allied health professionals

RCN Royal College of Nursing

REET Research Evidence Evaluation Toolkit

RESSAT RESEARCH Self-Assessment Tool

RPS Royal Pharmaceutical Society

RCSLT Royal College of Speech and Language Therapists

SPOR Strategy for Patient-Oriented Research

UK United Kingdom

Declarations

Ethics approval and consent to participate

Informed consent for participation was discussed and verbally agreed at the start of the workshop and assumed with any written submissions. This procedure was approved by Sheffield Hallam University Ethics Review Panel on 2nd October 2018 [Ethic Review ID: ER9492717] and considered low risk to participants.

Consent for publication

Not applicable

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

K.G. and J.C. conceived the project. J.H. undertook the majority of phase one and phase two activities with independent review and analysis by J.C. and K.G. J.C., K.G and J.H facilitated phase three workshop and outcomes. J.H. was a major contributor to writing the manuscript with support from J.C. and K.G. All authors read and approved the final manuscript.

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Figure Legends

Table 1 Study phases and objectives

Table 2 CAHPR member organisations and other multi-professional research organisations consulted within phase one

Table 3 Research Frameworks identified in phase one of project

Table 4 Content of existing AHPRFs and how they map against consolidated framework categories

Table 5 Example of subtheme statements in draft consolidated framework

Table 6 How stem statement can be adapted to reflect range of expertise

Figure 1 A selected example of the consolidated framework

Figure 2 Guiding principles to set the context of using the consolidated framework.

Tables

Table 1

Study phase	Objective
Phase one	Identify existing AHP research frameworks (AHPRF) or research frameworks for other relevant non-medical health professions that was relevant.
Phase two	Thematic analysis of AHPRFs to produce one consolidated framework.
Phase three	Workshop of national experts to explore content and face validity of the consolidated framework, and develop next steps.

Table 2

NIHR Clinical Research Network	The College of Podiatry
College of Paramedics	College of Occupational Therapists
Chartered Society of Physiotherapy	The British Association of Drama Therapists
Royal College of Speech & Language Therapists	The Royal Pharmaceutical Society
Society and College of Radiographers	Research and Development North West
British and Irish Orthoptic Society	

Table 3 AHP Research Frameworks identified in Phase one of project

Original AHPRF	Author / developer	Year of publication	Publishing body	Professional background	Country of origin
RCN Competency Framework for Clinical Research Nurses [41]	RCN Competency Working Group	2011	Royal College of Nursing	Nurses	UK
Harmonized Core Competency Framework Vs. 2 [40]	Joint Task Force for Clinical Competency	2017	Joint Task Force for Clinical Competency	Clinical Research Professionals	Global
Vitae Researcher Development Framework [47]	Vitae	2010	Vitae Careers Research and Advisory Centre (CRAC) Limited	Researchers in Higher Education	UK
Clinical Academic Careers Pathway Capability Framework[51]	Westwood, G & Richardson, A	2012	The Association of UK University Hospitals	Nurses, Midwives and Allied Health Professionals	UK
NHS National job profile: Allied Health Professionals (Clinical Researcher) [50]	NHS Employers	2008	National Health Service	Allied Health Professionals	UK
Health Services & Policy Research Enriched Core Competencies[48]	Canadian Health Services and Policy Research Alliance Working Group	2017	Canadian Institutes of Health Research (CIHR)	Health services and policy research doctoral graduates	Canada
SPOR Capacity development framework [49]	SPOR External Advisory Committee on Training and Career Development	2015	Canadian Institute of Health Research	Patient-orientated clinical and health researchers	Canada
CSP Physiotherapy Framework [52]	CSP	2011	Chartered Society of Physiotherapy (CSP)	Physiotherapists	UK
Advanced practice in physiotherapy [53]	CSP	2016	Chartered Society of Physiotherapy (CSP)	Physiotherapy Advanced Practitioners	UK
RPS Research Evidence and Evaluation Toolkit (REET) [36]	RPS	2017	Royal Pharmaceutical Society (RPS)	Foundation and advanced pharmacists	UK
Dietitians and Research: A Knowledge and Skills Framework [54]	The British Dietetic Association Research Committee	2015	The British Dietetic Association (BDA)	Dietitians	UK
Speech & Language Therapists working in Consultant Roles [55]	RCSLT	2010	Royal College of Speech and Language Therapists (RCSLT)	Speech and Language Therapists	UK
Education and Career Framework for the Radiography Workforce [56]	Coleman, L	2013	The Society and College of Radiographers	Radiography workforce	UK
Career Framework Guide: Prosthetics & Orthotics [57]	Nicol, A	2013	The British Association of Prosthetists and Orthotists (BAPO)	Prosthetists and Orthotists	UK
Post Registration – Paramedic Career Framework [58]	The College of Paramedics	2018	The College of Paramedics	Paramedics	UK
Career Development Framework: Guiding Principles for Occupational Therapists[59]	RCOT	2017	The Royal College of Occupational Therapists (RCOT)	Occupational Therapists	UK
East Sussex Research Escalator Tool © [18]	Canby, A, McCrum, C & Poole, K	2017	East Sussex Healthcare NHS Trust, NHS England, Council for Allied Health Professions in Research (CAHPR)	Health professionals	UK
RESearch Self-Assessment Tool (RESSAT) [19]	Grafton, K	2017	Sheffield Hallam University	AHPs in Higher Education	UK
[1] Orthoptics Curriculum Framework [60]	Horwood, A	2016	The British & Irish Orthoptic Society	Orthoptists	UK & ROI

[1] Included within phase three iteration

Table 4

Consolidated Framework themes		Integrated workforce framework [39]	RCN Competency Framework for Clinical Research Nurses [41]	Harmonized Core Competency Framework [40]	Vitae Researcher Development Framework [47]	Clinical Academic Careers Pathway Capability Framework [51]	NHS National job profile: Allied Health Professionals (Clinical Researcher) [50]	Health Services & Policy Research Enriched Core Competencies [48]	SPOR Capacity development framework [49] [49]	CSP Physiotherapy Framework [52]	Adv: prac phys: [10]
1.	Research methodology & methods	ü	ü	ü	ü	ü	ü	ü	ü	ü	ü
2.	Research strategy & planning	ü	ü	ü	ü	ü	ü	ü	ü	ü	ü
3.	Research delivery	ü	ü	ü	ü	ü	ü	ü	ü	ü	ü
4.	Research management & leadership	ü	ü	ü	ü	ü	ü	ü	ü	ü	ü
5.	Research education & training		ü	ü	ü	ü	ü				
6.	Working with others & collaborating in research	ü	ü	ü	ü	ü	ü	ü	ü		
7.	Research-informed Practice, Dissemination and Impact	ü	ü	ü	ü	ü	ü	ü	ü	ü	ü
8.	Own career development			ü	ü	ü				ü	ü

Table 5

Research methodology and methods	Level of expertise
Broad awareness of knowledge creation processes	Awareness
Knowledge and understanding of a range of theoretical concepts and methodologies in relation to clinical research	Awareness
Able to differentiate between research, audit and service improvement	Core
Knowledge in the appropriate selection of techniques and principles of research and assesses and validates methods / tools	Core
Applies technical language associated with clinical research	Core
Involvement in reviewing research of others	Core
Awareness of relevant methodological developments in field of interest	Intermediate
Priorities research questions by considering research area and 'real-world' affairs	Intermediate
Considers multiple perspectives and applies independent and critical thinking in research	Intermediate
Articulates own assumptions and constructs and sustains arguments in a clear and concise manner	Intermediate

Table 6

Stem statement: Research, audit and service evaluation	
Awareness	Able to differentiate between research, audit and service evaluation
Core	Able to plan and deliver audit and contribute to service evaluation projects
Intermediate	Able to plan and deliver audit, service evaluation and research projects
Advanced	Uses service evaluations to promote service change and prepare for research grant proposals

Figures

1. RESEARCH METHODOLOGY AND METHODS	
Category	Suggested Entry Level
A. Scientific concepts and application of research knowledge	
Broad awareness of knowledge creation processes	Awareness
Awareness of basic theoretical concepts and methodologies in relation to applied research	Awareness
Able to differentiate between research, audit and service evaluation	Awareness
Applies technical language with applied research e.g. research participant compared to patient data compare to information statistical significance compared to clinical significance	Awareness
Critiques and selects appropriate outcome measures / tools in research projects	Awareness
Develops research questions by considering research area and 'real-world' affairs	Core
Understands appropriate research methods to answer research questions	Core
Application of theoretical concepts and methodologies in relation to applied research	Intermediate
Awareness of relevant research methodological developments in field of interest	Intermediate
Uses multiple sources of evidence (including stakeholder and user involvement / co-production) in research development	Intermediate
Articulates own assumptions and constructs and sustains arguments in a clear, evidenced and concise manner	Intermediate
Work with stakeholders throughout the research process	Intermediate
B. Analysis	
Is aware of appropriate tools and systems in the search for evidence e.g. databases	Awareness
Information Technology (IT) literate For example, use of Excel, word	Awareness
Understands how to interpret qualitative and quantitative research data	Awareness
Understands and appropriate data analysis	Core
Uses appropriate tools to collect data and measure outcomes	Core
C. Proposal Development Level	
Applies for funding grants and fellowships	Intermediate
Designs research studies using appropriate method for the research question	Intermediate
Writes research proposals that adhere to requirements of funding bodies, ethics and governance processes	Intermediate
Plans and leads detailed research programmes	Advanced

Figure 1

A selected example of the consolidated framework

I.	The generation and application of research should be embedded in health and social care practice in order to improve services, promote health, wellbeing and safety of service users, and to optimise the effective use of resources
II.	All AHPs should enter their profession with research skills, knowledge and behaviour at 'Awareness' level. This supports the notion of making research 'core business' to practice
III.	The framework can be used to plan the research element in health and social roles in a range of contexts
IV.	Additional competencies unique to each professional may need to be developed to complement this consolidated framework, and to maximise their contribution to the research endeavour.
V.	The framework portrays linear development but acknowledges that individuals, and the context within which they work will offer different opportunities for progress across different domains at different rates
VI.	The framework should be used flexibly to plan workforce developments, profession career progression, and support systems needed to help 'hard wire' applied research into organisational systems, for example through job descriptions, work plans, appraisal, mentorship and review systems.
VII.	While it is recognised that this framework has been developed to meet the needs of AHPs, it is not exclusive to them and may be relevant to other professional groups
VIII.	Research takes place in multi-professional and multi-disciplinary teams in a wide variety of health and social care settings. Many of the skills which support effective teamwork will also support research activity and are likely to maximise impact

Figure 2

Guiding principles to set the context of using the consolidated framework.

Supplementary Files

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