



Public Health  
England

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# **The role of allied health professionals in public health – examples of interventions delivered by allied health professionals that improve the publics' health**

## About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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# Contents

About Public Health England	2
Introduction	4
About the Allied Health Professionals	5
Methods	6
Results	10
Research gaps	15
Limitations	16
Conclusion	17
Appendices	17
References	19

# Introduction

## Background

The NHS England Five-Year Forward View<sup>1</sup> and Public Health England's (PHE) Evidence into Action<sup>2</sup> highlight the national imperative to focus on a preventative approach to improve population health and wellbeing and to ensure health and social care costs remain affordable. PHE and others have recognised the need to engage a wider public health workforce to achieve these desired improvements in health and wellbeing and reductions in health inequalities<sup>3</sup>. The allied health professions are a group with the enthusiasm, expertise and opportunity to contribute to improving the health and wellbeing of the public<sup>4</sup>.

In April 2014, the professional bodies of the twelve allied health professions (AHPs) in the UK agreed a collective ambition to be recognised as an integral part of the public health workforce. These professions agreed to increase their focus on preventative health care and as a result they have worked with PHE to develop a programme with the following aims:

- increasing enthusiasm for public health among AHPs
- increasing the profile of the contribution of AHPs to public health
- developing the AHP workforce for their public health responsibilities
- developing the evidence of impact of AHPs on public health
- work collectively to focus effort across the professions in 4 priority areas chosen because of their relevance to all 12 professions. These priority areas include giving children the best start in life, making every contact count, emotional health and wellbeing and health and wellbeing of older adults

AHPs in practice and academia have demonstrated a marked increase in focus on population health and health inequalities. Many AHP interventions whilst not traditionally recognised as public health are contributing to prevention and health improvement. It is clear that knowledge about population impact is required to support changes in practice and therefore PHE commissioned this study to assist AHPs to identify the current evidence base for interventions in public health.

PHE commissioned a team of academics led by Sheffield Hallam University to undertake an initial review to:

- identify examples where there is good evidence of impact on public health by AHPs and therefore an opportunity to broaden practice
- identify areas which require more focus to demonstrate impact by AHPs on public health

This report describes the key findings of this work. An academic publication of this work is in press with the Journal of Public Health<sup>5</sup>.

## About the Allied Health Professionals

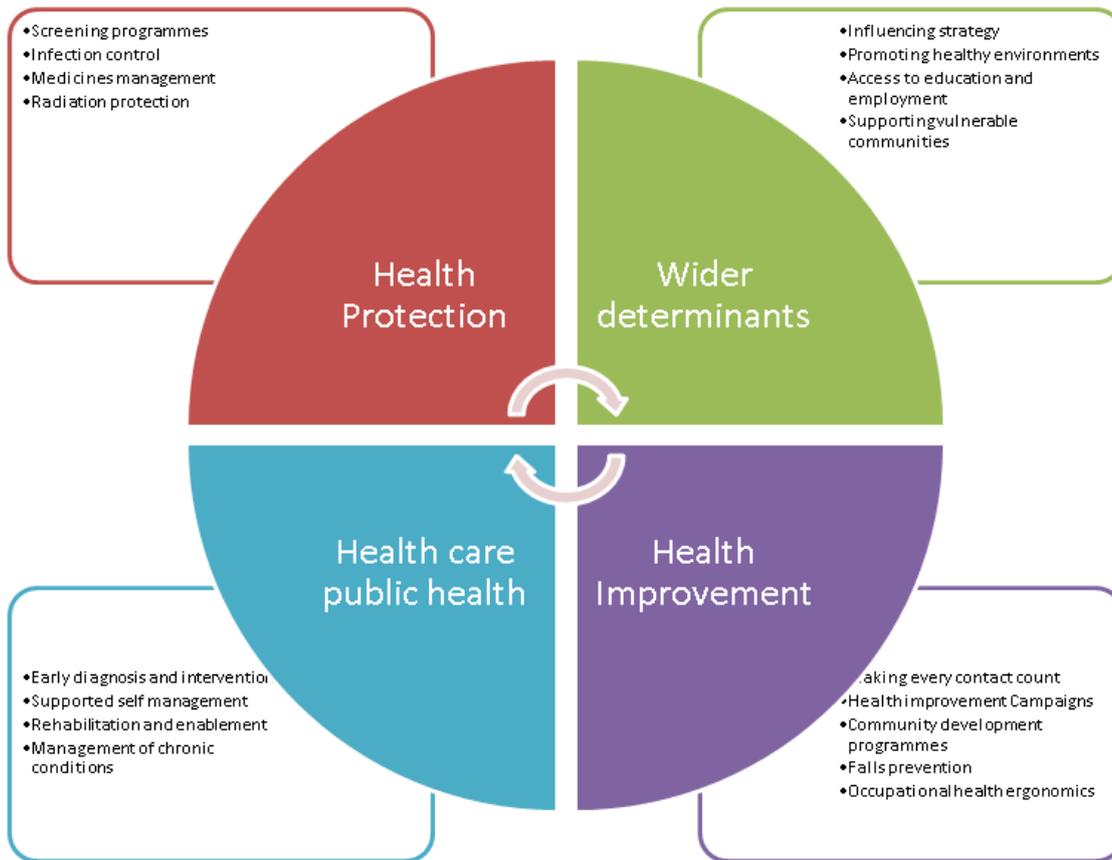
The AHPs include 12 professions regulated by the Health and Care Professions Council (HCPC) who collectively make up the third largest workforce in the NHS. They work across a range of sectors including health, social care, education, academia, voluntary and private sectors; covering the whole life course. The 12 professions include physiotherapists, occupational therapists, podiatrists, dietitians, speech and language therapists, paramedics, radiographers, orthoptists, prosthetists and orthotists, art therapists, music therapists and dramatherapists.

Allied Health Professionals (AHP) deliver services to individuals, groups and in some cases specific populations of children and older adults. They work across sectors providing integrated care in health, social care, education, voluntary sector and private settings.

### What public health means for allied health professionals

Public health is the science and art of promoting and protecting health and well-being, preventing ill-health and prolonging life through the organised efforts of society<sup>6</sup>. AHPs contribute to this through their work on physical, mental and social health with individuals, communities and populations across the 4 domains of public health (Figure 1). AHP's actions contribute to primary, secondary and tertiary prevention and address health inequalities.

Figure 1 AHP contributions across the 4 domains of public health



AHPs contribute to virtually every public health priority as part of their routine work although these professionals have not traditionally described their role as public health. Terms such as primary, secondary and tertiary prevention or health promotion are more familiar. For the purpose of this review we defined the scope of public health work to mean any uni-professional or team activity where AHPs offer a specific professional contribution or service, where the service is designed to achieve positive health outcomes for the population. Of particular interest is the domain of health improvement.

## Methods

The study used several methods to identify evidence of interventions by AHPs that contribute to public health:

1. a rapid review of the literature;
2. a survey of AHP practitioners.
3. a consensus method to select evidence-based AHP interventions

The data collection included both published evidence (empirical and observational) and reported service information related to AHP public health practices. All data yielded was screened for relevancy against pre-agree inclusion criteria (see Appendix 1). Then an expert

advisory group including representation from AHP professional bodies completed a consensus exercise to identify criteria for impact and effectiveness for interventions and selected the AHP examples for inclusion in the final report. Nine examples of AHP interventions were selected because they had sufficient academic and practice based evidence and were deemed to offer opportunity for impact and effectiveness at scale.

### Rapid review

A rapid review of the literature was selected to provide a snapshot assessment of published evidence of public health practice by AHPs. The literature review strategy sought to identify interventions undertaken by AHPs across the four AHP priority areas: giving children the best start in life, making every contact count, emotional health and wellbeing and health and wellbeing of older adults.

The search used terms to describe AHPs, combined with public health terms used to identify interventions prioritised by AHPs in England: in early years, older people services, for emotional wellbeing and 'making every contact count', where the AHP practitioner led or had a critical role in the service or the reported research. All search terms were looked for in the title and abstract fields and controlled vocabulary terms were used where available. The Boolean operators 'AND' and 'OR' were used, alongside truncation, phrase searches and proximity operators.

The following databases were searched: Allied and Complimentary Medicine (Ovid), CINAHL (EBSCO), The Cochrane Library (Wiley), Emerald (Emerald Group), MEDLINE (EBSCO). Only papers situated within a UK context, published between 2004 and 2015 and in the English language were included in the study.

The rapid review was confined to publications since 2009 and identified 864 papers of potential interest and the grey literature search yielded an additional 414 resources. After screening for relevancy, data was extracted from 161 papers. Results from the literature searches are presented in Table 1. A table format has been used because 13 separate search strategies were used; one for each profession and a general one for AHPs as a group.

**Table 1 Results of the literature searches following screening for relevance**

Profession	Screening			
	All results - no duplicates for each profession	Post title screening	Post abstract screening	Post full text screening (data extracted)
Allied health professionals	89	19	all	0
Art therapists	3	2	2	1
Dieticians	187	109	76	33
Dramatherapists	1	0	N/A	N/A
Music therapists	7	6	4	3
Occupational therapists	131	111	71	26
Orthoptists	6	5	4	4
Paramedics	60	17	8	5
Physiotherapists	181	79*		56
Podiatrists	29	23	18	8
Prosthetists/Orthotists	6	6	5	1
Radiographers	45	22	10	8
Speech and language therapists	119	24	19	16

**N/A = not applicable**

\* title and abstract were screened together

The papers yielded from the literature searches were screened by the research team for inclusion in this rapid review. In the first instance, papers were assessed for relevance using the title and abstract. The full text of the remaining, potentially relevant, papers was then screened. All papers deemed relevant were then subjected to a structured data extraction process. The project team appraised a selection of the physiotherapy literature to pilot which data needed to be extracted from each paper. A copy of the data extraction template is included in appendix 2 The data extraction was undertaken by three AHP members of the core team with support from a number of AHP managers, to ensure that professional knowledge was used to inform the extraction. Three stages were used, identifying core literature by title, abstract and then full text where they were deemed to be examples of AHP public health interventions. Exclusions were based on:

- evidence was not relevant to a core area, older people, early years, emotional wellbeing or MECC
- where the data / protocol or method was not deemed relevant to AHP practice.

A critical appraisal process was excluded at this stage although the relevance and completeness of the findings was regarded as a proxy for the quality of the literature.

## Survey of AHP practitioners

A survey was designed and distributed to 1200 AHPs members of the CHAIN Network (Contact, Help, Advice and Information Network) to solicit examples of interventions that could be seen as having an impact on public health, appendix 3. There was a 25% response rate which exceeded expected participation and covered 11 of the 12 professions.

## Appraisal of data

An Expert Advisory group developed a set of criterion, using a nominal group technique<sup>7</sup>, to select the best AHP public health interventions. The technique involved two face to face structured group interactions between senior AHPs, to generate ideas and suggest guidelines which were then presented in the form of a 'group judgment'<sup>8</sup>. The group generated a set of criteria for the identification of AHP interventions as a contribution to public health see Table 2.

**Table 2 Evaluation criteria for an AHP intervention as a contribution to public health**

<b>Does the Intervention offer.....</b>	<b>Measurements</b>
<b>Primary prevention with detection -Does it measure performance in terms of population outcomes</b>	Performance metrics in locality/region: detection rates , levels of false positives, referral rates , patient health status
<b>Secondary prevention and risk management - Does it demonstrate outcomes measures of health improvement</b>	Performance measures; conveyance rates, advisory/ self- management outcomes, therapy outcome measures TOMs, BMI, Quality of life indicators, levels for community engagement, health outcomes
<b>Service quality and innovation- Does the service demonstrate service effectiveness</b>	How services build leadership capacity and support of AHPs to promote public health; workforce roles, commissioning data, public engagement, wider collaborations
<b>Measures of quality of life outcomes</b>	Performance data demonstrating how AHP contribution enhanced health outcomes across sectors and agencies
<b>Service integration for patient-centred care (Is the service delivered as part of an integrated care model)</b>	No metrics envisaged so AHP need to identify how to report the level of integration achieved with patient reported experience and outcomes in each service
<b>User experience of interventions</b>	Metrics associated with CQUIN data and patient experience within the service to demonstrate how AHP intervention results in health outcome
<b>Access and equality of access - Does the AHP service provide access to all patients</b>	Organisational measures to ensure equality of access to AHP services across sectors and relative to population
<b>Optimal activity and participation - Does the intervention demonstrate quality of co-production</b>	Measures of quality and cost effectiveness and outcome demonstrating co-production and efficiency and is a community engaged in planning and improvement

The Expert Advisory Group then selected examples of AHP interventions based on strength of evidence, current practice and expert opinion. They used the data extracted from the literature searches and examples gathered from the survey and then judged the degree to which an intervention met the criteria for good practice and made a public health contribution that could be developed for wider implementation. The selected examples demonstrated AHP interventions that contribute to health improvements in early years, with older adults, emotional wellbeing and by 'making every contact count'.

## Results

The nine examples in table 3 have a published evidence base and examples of practice, demonstrating impact. There is no ranking of priority.

Table 3 Summary of Intervention examples with both evidence of impact and practice examples of implementation.

Intervention examples	References
Orthoptic led eye screening for children aged 4-5 years	9-10
Radiographer led breast screening	11
Early intervention by podiatrists to reduce amputation risk in people with peripheral neuropathy	12-16
Speech and language therapy interventions to improve communication skills, academic success, emotional development and social inclusion in children and young people	17-21
Dietetic interventions for weight management in adults and children	22-31
Occupational therapy, physiotherapy and paramedic interventions to prevent falls in older adults	32-39
Physiotherapy interventions to manage incontinence supporting adults to engage in normal activities, remain in work and improve emotional wellbeing	40-41
Physiotherapy interventions to reduce musculoskeletal pain	42-48
Speech and language therapy support to improve speech and swallowing in people post stroke impacting on quality of life, improved morbidity and mortality and reduced hospital stay	50-52

## Orthoptic Led School Entry Vision Screening

The UK National Screening Committee recommends that screening of children's eyes should continue to be offered to all children aged 4 – 5 years<sup>9</sup>. The committee recommends screening should be organised and led by orthoptists. The review found that:

- amblyopia, when the eye doesn't work properly even though it appears normal, is the main problem found by screening in this age group.
- treatment by covering the good eye with a patch has been shown to help correct sight in the affected eye. However, it is possible that the problem with the child's eye can come back again after treatment has stopped

Anecdotally, children whose visual problems have been detected and corrected demonstrate benefits in many ways. They can demonstrate less challenging behaviour and cope better with school work, leading to improved achievement in the Foundation year.

The screening of children for poor vision at school entry age (4-5 years) has a strong evidence base<sup>10</sup> with the screening capture rate of participating children reported in trials as 99.7 per cent. Of the children referred, 53 per cent had refractive errors and required glasses and 42 per cent had squints.

## Diagnostic Radiography - Breast Cancer Screening

Cancer screening involves testing apparently healthy people for signs that could show that a cancer is developing; the goal of breast cancer screening is to reduce breast cancer mortality rates based on early diagnosis and referral for interventions. There is evidence of the effectiveness of radiography led breast screening, as a result the UK, National Screening Committee recommends systematic population screening for all women aged 50-70<sup>11</sup>.

## Podiatry Management in Peripheral Arterial Disease (PAD)

A recent commissioning specification for foot care by NHS England<sup>12</sup> identifies the importance of early intervention by podiatry services as a preventative intervention for people at risk of peripheral neuropathy that can lead to ulceration and possible leg, foot or toe amputation. 6,000 people in the UK, with diabetes underwent lower extremity amputation as a result of ulceration and the amputation substantially reduced their quality of life and is associated with high mortality<sup>13</sup>. Preventative podiatry; early diagnosis of PAD by a vascular MDT/diabetic foot team, followed by specialist advice and treatment results in better outcomes for patients. The interventions can include further guidance and education on smoking cessation and exercise to support self-management of diabetes<sup>14</sup>.

The evidence for a change in commissioning practices to include routine podiatry intervention is strong based on prevalence of PAD and in terms of cost<sup>11</sup>. The critical impact data on the wider population is yet available but is expected to lead to a significant increase in wellbeing and significant social and economic benefits through self-management, foot care and regular health checks to prevent ulceration and deterioration in vasculature<sup>11</sup>.

International evidence is available for a Podiatrist to be included in early interventions to manage foot care, which results in a reduction in incidence of major amputations in patients with diabetes<sup>15, 16</sup>.

### Speech and Language Therapist management of communication disorders in children

A Cochrane Review<sup>17</sup> shows that overall there is a positive effect of speech and language therapy interventions for children speech and language difficulties. Approximately 6 per cent of children have speech, language and communication difficulties, of which the majority will not have any other significant developmental difficulties. Whilst most children's speech and language communication difficulties resolve, children whose difficulties persist into primary school may have long-term problems concerning literacy, socialisation, and behaviour and school attainment.

The impact and effectiveness of speech and language therapy interventions with pre-and primary school age children with speech, language and communication needs and social and emotional behavioural difficulties has been evidenced in a systematic review which synthesised data from 19 studies<sup>18</sup>. This review provides evidence of improvements in behaviour, in spontaneous speech, imitative speech and language. In addition, classroom based co-operative skills programmes improve expressive and, receptive language and social skills<sup>19</sup>. Without support, poor communication can impact on a young person's academic success as well as their social and emotional development<sup>20</sup>.

Furthermore, the impact of speech, language and communication interventions as prevention can be seen across the life course, with evidence of offending behaviour and low employment being associated with having communication difficulties. A longitudinal intervention programme delivered to 72 young offenders, included the assessment of communication needs and treatment by speech therapists was found to prevent further social exclusion<sup>21</sup>

### Dietitians - weight management for adults and children

Dietitians promote weight management through behaviour change techniques<sup>22</sup>, motivational interviewing<sup>23</sup>, patient centred approaches<sup>24</sup>, and technological methods. In general, calorie counting, contact with a Dietitian and use of behaviour change techniques that compare participants' behaviour with others were associated with the greatest weight loss<sup>25 26</sup>. Brandt *et al.*<sup>27</sup> demonstrated the effect of Internet-based complex interventions aiming to promote weight loss and optimise healthy behaviours. Specialist roles and evidence for Dietitian interventions with people with diabetes show significant reductions in weight based on weekly consultations<sup>28</sup>. These interventions are effective because they can demonstrate quality of life outcomes and in addition act as a preventative measure for a range of conditions including reduced incidence of co-morbidities<sup>29 30 31</sup>.

## Occupational therapy, physiotherapy and paramedic interventions as secondary prevention and risk management in falls

When an older person falls there are a number of services they can access where AHPs are leading physical, psychological and social interventions to minimise recurrence, maximise recovery and prevent further disability. There are three million reported falls per year in the UK, resulting in considerable cause of morbidity and mortality in over 65s and in major health care spending<sup>32</sup>. Falls cost the NHS £4.6 million each day and £1.7 billion per year<sup>33</sup>. In a trial of a clinical decision-making tool, twice the number of fallers were referred to falls services and costs per patient reduced from £22K to £15K<sup>34</sup>. However the literature suggests that falls reporting and falls management as a secondary prevention is by no means secured and in many cases national guidance is not followed<sup>35</sup>.

Occupational therapy interventions include compensatory interventions using assistive technology and rehabilitation. There are high user-satisfaction rates for aids and adaptation provision when they are provided in a timely way<sup>36</sup>. Older people should be offered a home hazard assessment and safety interventions/modifications as part of discharge planning and activities should be carried out within a timescale agreed by the patient or carer and appropriate members of the health care team. Independence at Home Service<sup>37</sup> suggests a time-limited intervention to promote community independence and reduce dependency on services. Interventions addressed activity and participation through provision of aids/adaptations and rehabilitation. The study evaluates service effectiveness based on the impact of an occupational therapy environmental assessment and modifications to prevent falls (57 modification to prevent falls based on a three armed randomised controlled trial (238 total cohort: 78 in control, 78 received intervention from a trained assessor, 87 received intervention from an OT) with follow up at 3, 6, and 12 months. The group receiving the intervention from the Occupational Therapist had significantly fewer falls than the control group at 12 months follow up<sup>38</sup>.

Physiotherapy led group exercise programmes have been shown to be effective and to reduce falls by 29% and the risk of falling by 15% and individual exercise programmes by 32% and 22% respectively. Community based falls prevention programmes targeting older adults particularly older women, can be highly cost effective with the value of benefits from reduced hospital admission significantly exceeding cost of intervention. For community living older adults tailored exercise programmes delivered as part of a multidisciplinary co-ordinated intervention reduced the rate of falls by 31% and the risk of falling by 27%. The Chartered Society of Physiotherapy has published an economic modelling tool for falls

Paramedic interventions are also recognised as being effective as hyper-acute risk management interventions<sup>39</sup> particularly for those older people who repeatedly fall, resulting in a high number of conveyances to Emergency Departments. A study of the effectiveness and outcomes of patient care undertaken by Emergency Care Practitioners (ECPs) across five care settings, (ambulance services, GP out of Hours, urgent Care Centre, care home, and Minor Injuries Unit) undertaking an 'extended role' in ultra acute/ emergency settings over 5525 patient episodes, showed some evidence of patient benefit, measured in terms of reduced admissions

### Physiotherapy and incontinence as a secondary prevention intervention

It has been estimated that urinary incontinence affects 20.4 per cent of people aged 40 years and over and this equates to five million people in the UK. In women, this figure increases to 35.6 per cent at aged 80 years and over. Physiotherapists offer exercise based advice to develop pelvic floor muscles, lifestyle advice and counselling based on NICE guidance and expert consensus. Of significance in a number of studies associated with gynaecological recovery, are the positive effects of goal setting and professional contact<sup>40</sup>

The intervention can be offered as a primary prevention in pregnancy or as a secondary prevention where urinary and faecal incontinence may cause challenges to emotional wellbeing or limit normal activity and work retention in pregnancy or maternity<sup>41</sup>.

### Physiotherapy Musculoskeletal Pain Management

Musculoskeletal health and pain management for the back, neck and shoulders are now recognised as requiring public health scrutiny and increased focus within priorities for research. MSK conditions account for the largest number of years lived in disability in the UK<sup>42</sup> The Arthritis Research UK report on musculoskeletal health makes a case for maintaining a healthy weight and increasing physical activity to reduce the risks of osteoarthritis and osteoporosis in later life by offering a range of preventative management methods and for more attention to be given to the risk factors for developing arthritis<sup>43</sup>. The World Health Organisation is leading on the development of a simple, universal educational tool that informs individuals on positive behaviour and lifestyle changes to avoid chronic or non-communicable diseases (NCDs); this includes musculoskeletal conditions, e.g. the Health Improvement Card<sup>44</sup>.

A number of protocols are published that identify randomised controlled studies that are currently seeking to identify the impact of exercise on musculoskeletal health in so far as exercise and self-management to alleviate pain and improve emotional wellbeing<sup>45 46 47</sup>. Some studies were found that demonstrated how physiotherapy interventions reduced pain and disability in neck pain<sup>48</sup> (72) and in shoulder pain<sup>49</sup> (73) which showed specific improvement in a single site controlled study.

### Speech and Language Therapy in speech or swallowing impairment following stroke

People with speech impairment (aphasia) post stroke are at risk of depression and have been shown to benefit from group therapies and individual counselling<sup>50</sup>. A quantitative measure shows improvements in communication/quality of life and self-reports of improved self-confidence. These interventions align with a growing concern about the integration of services for people surviving stroke and the need to extend the expectations of optimal activity and participation as a secondary prevention and quality of life imperative. Similarly, interventions undertaken by Speech and Language Therapists include the management of dysphagia/swallowing disorders which reduces morbidity, mortality and length of stay in hospital whilst also being associated with improved quality of life<sup>51 52</sup>.

## Research gaps

Three further examples of AHP contributions to public health were identified as part of this work but further evidence of effectiveness or service and workforce development is needed to qualify and clarify the public health contribution:

### Occupational Therapists and Music therapy led interventions in dementia services

Occupational Therapists have a role in memory service<sup>53</sup> supporting the multidisciplinary diagnostics plus added benefit to patients and reporting patient satisfaction. In addition, the Expert Advisory Group identified a randomised controlled trial demonstrating significant outcomes for occupational therapy input such as improvement in activities associated with daily living and a sense of competence<sup>54</sup>. These types of improvements were associated with a decrease in a need for assistance, long term impact of less dependence on social and healthcare resources, and less predicted need for institutionalisation. OT roles and interventions in dementia services are well established and recognised in most areas along entire dementia pathways and work-streams.

Musical awareness and musical communication for care home staff, families and carers is gaining an evidence base, with recognition that individuals and carers can better manage the symptoms of dementia (non-cognitive symptoms and comorbid emotional disorders such as agitation, apathy, anxiety, depression, aberrant motor behaviours with the additional use of music<sup>55</sup>. Active engagement can minimise symptoms of dementia, depression and, anxiety, whilst promoting cognitive functioning<sup>56</sup>.

### Dramatherapy with children and young adults with Autistic Spectrum Disorder

Qualitative and quantitative analysis of client outcomes and evaluative responses from parents/carers and teachers has been published to demonstrate the importance of role of Dramatherapists developing life skills; communication and empathy, so contributing to emotional and social wellbeing<sup>57</sup>.

### Dietitians using preventative interventions for people at risk of malnutrition

There are existing examples of services being developed<sup>58</sup> and references to the malnutrition task force<sup>59</sup> and British Dietetics Association campaign of 2013 that identified the role of Dietitians in the support of vulnerable communities and the prevention of under-nutrition. A Cochrane Review<sup>60</sup> identifies the importance of managing severe malnutrition associated with disease processes, which is associated with increased morbidity, mortality and increased length of stay in hospital.

### Emerging Practice

The AHPs have made significant progress to increase their focus on public health over the past year, therefore we are conscious that this is a rapidly developing field and new evidence is

emerging. There are several areas where AHPs are developing their roles in line with national and local priorities which were not specifically included within this mapping. Further work to identify or build the evidence in these areas would be helpful (not an exhaustive list):

- Impact of AHP use of healthy conversations to advise about lifestyle behaviour change based on the making every contact count approach.
- AHP impact on helping people remain in work
- AHP impact on workplace wellbeing

## Limitations

This study represents an initial scoping of the wider contribution that AHPs make to health improvements. This work was undertaken in 2014 at the beginning of an increased focus on the role of the wider workforce in public health. We are aware of developing evidence in this field since our initial mapping exercise.

Our literature review extraction tool was designed to identify relevant studies where the process of development and evaluation of interventions could be in several distinct phases (94). We are aware that a full critical appraisal of the selected articles was not undertaken and further implementation or adoption should include a further rigorous appraisal of current and more historic research data. An increased focus on yielding practice examples is an important requirement as illustrated by examples of older literature and professional knowledge shared through the Expert Advisory Group.

The strength of evidence is not uniform and further research is needed to verify the cost and effectiveness of these and further AHP interventions. Further research into the cost and benefit and the economic evaluation of the interventions is required to enable policy makers and commissioners to decide about investment and to prioritise AHP contributions but, the identification of key evidence-based practices goes some way to advance understanding about the important health improvement gains that can be achieved through a wider public health workforce.

This review did not focus on health inequalities however several of the identified interventions have a direct impact on health inequalities through improving access to education or employment.

## Conclusion

This report has provided some clear examples of where there is evidence of AHP impact on public health. These examples of interventions are intended to stimulate discussion between AHPs and public health specialists about increased contribution by AHPs to public health. Traditionally AHPs have focused on therapeutic interventions for individuals and therefore the bulk of the outcomes measured and research undertaken reflects this. Clearly interventions carried out by AHPs have the potential to impact the health of the wider population; however for this to become a reality, an increased focus on population level outcomes as well as outcomes on overall health and wellbeing for individuals is required.

There is a desire in England to widen the public health workforce contributing to health improvement, but this requires a commitment from AHPs at local level to collect and aggregate data and to make the impact of their interventions more explicit. A move to demonstrate impact across populations would allow AHPs to systematically improve population health and wellbeing and address health inequalities.

AHPs alongside other health care professionals are responding to the call to action on prevention. Where services are designed by AHPs to deliver population level health outcomes, AHPs are able to plan evaluation into the intervention in order to demonstrate the impact. The challenge arises for interventions where the primary outcome is not public health focused. There is an urgent need to develop tools to support the demonstration of population impact of health care professional interventions.

## Appendices

### Appendix 1 – Literature review inclusion criteria

The literature was screened ; title and abstract on the basis of the following criteria;

- Published in the UK or referring to UK AHP practices
- Where AHPs have been involved in conducting the research (researchers)
- AHPs have been recruited into the study (participants)
- Where the intervention or observation includes AHP input
- Where the results and conclusions refer to AHP practice
- Where qualitative or quantitative data was collected and analysed
- Where data demonstrated population effect

## Appendix 2 – Headings for data extraction

Profession/s  
Key area of public health intervention  
English region  
Summary of public health intervention  
Population  
Sample size  
Study design  
Study type  
Impact on individual or population  
Evidence of effectiveness in population

## Appendix 3 – CHAIN survey questions

### **ALLIED HEALTH PROFESSIONALS - what is our impact on improving public health, protection and prevention?**

- Q1: What is the key area of your public health intervention-(drop-down menu for the four areas)?
- Q2: Which Allied Health Profession are you?
- Q3: Please provide your name and contact details if you would like to be recognised for your intervention and work in this area (Please provide your name and email contact only. This will only be used for the purpose of this research project.)
- Q4: What English region are you?
- Q5: Please provide a summary of your specific public health or health improvement Intervention. (For example; we provide an exercise class for people with cancer or, we advise on footwear for people. Please give your example below.)
- Q6: Please say why you think this makes a public health contribution AND what are the intended benefits for your patient population? (For example; promoting physical activity and wellbeing, or to prevent falling for older adults in their own home)
- Q7: What evidence do you have that helped you to develop your intervention? (For example; I have some research evidence by way of a literature review and synthesis, or I had an understanding of patient need that was not being met)
- Q8: What health benefits are you interested in for your individual patient or population group? (Health Benefits might include; improved emotional resilience, increased pain management, reduced fear of falling or actual falling, weight loss or smoking cessation, improved nutrition, better communication skills in children, school attendance...)
- Q9: What impact measures do you use to measure patient benefits? (For example; you have data that shows better patient outcomes or improved patient safety, or you use an outcome measure like EQ-5D)
- Q10: Public Health is concerned with population health - please tell us your outcomes with the particular population who receive this intervention. (For example; do your records show that patients are using the intervention well or that they are using advice and guidance you offered?)

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