Commissioning better oral health for vulnerable older people

An evidence-informed toolkit for local authorities

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

Prepared by: Semina Makhani
For queries relating to this document, please contact: PHE.enquiries@PHE.gov.uk

Published September 2018
PHE publications   PHE supports the UN
gateway number: 2018362   Sustainable Development Goals

Corporate member of
Plain English Campaign
Committed to clearer
communication
339

SUSTAINABLE DEVELOPMENT GOALS

Contents

Foreword

We are living for longer, but living well for longer can present a real challenge.

Maintaining good oral health throughout life and into older age not only improves our general health and wellbeing, but plays a part in helping us stay independent for as long as possible.

Although it is encouraging that the oral health of older people has improved in England since the late 1960s, with more adults keeping their teeth into old age, many of these teeth will have fillings and other restorations requiring long term review and complex care from dental teams.

Vulnerable older people may require special care due to age, disability or risk of abuse or neglect. They may require support from carers to maintain good oral hygiene and to help them access appropriate dental care. Understanding these needs and providing the right support is essential to ensure that as well as living longer they do so with a healthy mouth that enables them to eat, sleep and communicate without pain or embarrassment.

The challenge for commissioners, service providers and care givers is to ensure those who are most vulnerable are supported

This toolkit is part of a suite of resources supporting local authorities to review, develop or commissioin services to improve the oral health of vulnerable older adults so that they can lead a healthy, long and meaningful life. .

Dr Sandra White
National lead for dental public health
Public Health England

Executive summary

The Government has committed to improve the oral health of the population, introduce a new NHS primary dental care contract and increase access to NHS primary care dental services.[1, 2] Local authorities have the responsibility for health and care through The Health and Social Care Act 2012 and the Care Act 2014.[3, 4] This toolkit is part of a suite of resources designed to support the actions of commissioners to improve oral health of vulnerable older people in all settings. It is supported by a rapid review of the evidence and a resource compendium.

As life expectancy has increased in recent decades and there has been a clear trend of people keeping their natural teeth (own teeth) for longer it is essential we support commissioners to care for this group of people effectively. This toolkit focusses on groups for which the Adult Social Care departments, in local authorities, commission services:

- residential and nursing home residents
- older people living with dementia
- older people living with learning disabilities
- frail older people

Current evidence suggests that prioritising action to assess oral status, maintain oral hygiene and arrange appropriate dental treatment is essential because as people age they are likely to live with a range of complex co-existing medical conditions, dependent on multiple factors, which may predispose them to loss of independence, disability and frailty. The reciprocal relationship between oral health and independence shows that people are able to stay independent for longer, or recover from episodes of crisis or frailty, if they are able to eat and drink properly and take part fully in life.

The Toolkit summarises the recommendations from the 'Evidence Review of Effectiveness of Oral Health Improvement Programmes for Vulnerable Older People' and from relevant NICE guidance.

The role of various organisations and the opportunities for commissioning programmes to improve the oral health of vulnerable older people is described along with financial approaches that could maximise the value for the investment. A number of facilitators that can help support action to improve the oral health of vulnerable older people are described.

Section 1: Introduction

Background – why improving oral health is important

The government has made a commitment to improve the oral health of the population, introduce a new NHS primary dental care contract and increase access to NHS primary care dental services.[1, 2] while the Health and Social Care Act 2012 and the Care Act 2014,[3, 4] confers responsibilities on local authorities for health and care.

Local authorities have responsibilities that can impact on oral health including:

- to commission surveys to assess and monitor the oral health needs of their population[5]
- to provide or commission oral health promotion programmes to improve the health of the local population, to the extent that they consider appropriate in their areas[5]
- to commission services to meet the social care needs of a range of vulnerable older people client groups, including overseeing personal budgets[4]
- to carry out a scrutiny function to ensure that local health care services are meeting the needs of their population[6]
- to work in partnership across the health and social care system to commission services that meet the needs of their population[4]
- the power to make proposals regarding water fluoridation schemes, a duty to conduct public consultations in relation to such proposals and powers to make decisions about such proposals[7]

NHS England's Five Year Forward View (2014)[8] argues for a "radical upgrade in prevention and public health" and proposed the development of new models of delivery of health and care services to fit the needs of local populations and promote healthier living in individuals.

The FDI (Fédération Dentaire Internationale) World Dental Federation's definition of oral health is that 'Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex.'[9] The World Health Organization recognises the importance of good oral health as an essential part of active ageing which is often overlooked.[10]

Evidence shows that poor oral health in older people can lead to:
- pain and discomfort,[11, 12] which can lead to mood and behaviour changes, particularly in people who cannot communicate their experience,[13, 14] speech problems and reduced ability to smile and communicate freely[15, 16]

- problems chewing and swallowing which limit food choices and can lead to impaired nutritional status[17, 18]
- poor quality of life[12, 15, 16, 19, 20]
- reduced self-confidence[11, 18, 19] and increased social isolation[17, 21]
- impaired well-being and mood[18, 19]
- poor general health and premature mortality[22-25]

There is a growing body of evidence to support a reciprocal relationship between poor general health and poor oral health. For example:

- patients with diabetes and gum disease (periodontitis) would benefit from regular oral care[26]
- there is a positive association between pneumonias and poor oral health[27]
- there is a greater risk of developing tooth decay one year after being diagnosed with cognitive impairment[28]
- there are associations between coronary heart disease, stroke, peripheral vascular disease and oral health[29]

More research is needed to develop a better understanding of the associations between oral diseases and general diseases, however current evidence suggests prioritising action to assess oral status, maintain oral hygiene and arrange appropriate dental treatment.

The cost of NHS dentistry across all ages is £3.4 billion a year. An estimated further £2.3billion is spent on private dentistry.[1]

In 2014/15 there were over 16,000 finished consultant episodes of care for people aged 65 or over to have teeth removed in hospital. The cost to the NHS of providing this care is likely to be in excess of £27 million pounds, and could be as high as £57 million.[30] These figures are likely to be an underestimate of the cost of poor oral health to the NHS, because the primary reason for their admission may not be due to dental problems, but these may have been a contributory factor to admissions for other causes such as malnutrition or dehydration. In addition, there are also the social costs including the stress of visits to hospital for treatment.

All individuals have the right to an oral health status which enables them to function without pain and embarrassment, framed by their individual needs and aspirations. Our ambition is for vulnerable older people to be supported to maintain oral health throughout life (Figure 1).

Figure 1: Ambition for oral health in vulnerable older people

To be able to eat, sleep, socialise and maintain this throughout life

Live well

As people age they are able to eat, drink speak smile and socialise without pain discomfort or embarrassment.

Prevent well

People are supported by evidence based advice and interventions to enable them to maintain a healthy life throughout their lives.

Support well

Throughout any phases of dependency or frailty, carers are trained and equipped to support daily mouth care and facilitate access to dental services

Die well

People have the support they need to ensure their mouths remain free from pain and discomfort and to help them maintain dignity until the end of their lives.

Purpose of the toolkit

This toolkit is designed to support commissioners improve the oral health of vulnerable older people in all settings. It gives an overview of the impact of oral diseases in vulnerable older people, the evidence on what works to improve oral health in this group, and advice to commission services to improve oral health.

The toolkit is supported by a rapid review of the evidence and a resource compendium, which has links to resources to support oral health improvement for older people that the reader may find useful.

Section 2: Oral health of vulnerable older people

With improved living conditions and healthcare, life expectancy of the population has been increasing in recent decades. There are currently 11 million people aged over 65 in the UK,[31] who make up 18% of the population. It has been estimated that by 2032, the population of 65-84 year olds will increase by 39% and the population of over 85s by 106%.[32] By 2032, there are projected to be 13.5 million people aged 65 and over.[32]

In this document vulnerable is defined as a person in need of special care, support, or protection because of age, disability, or risk of abuse or neglect. These needs may arise from a physical, mental impairment or illness that means the person's ability to function in everyday life is compromised. Older people in this document are those aged 65 and over. This toolkit has focused on those groups for whom Adult Social Care departments, in local authorities, commission services which includes:

- residential and nursing home residents
- older people living with dementia
- older people living with learning disabilities
- frail older people

The following tables provide data on numbers of people aged 65 and over in England living alone and numbers living in living in a care home with or without nursing by local authority / non-local authority.

Table 1: People aged 65 and over predicted to live alone projected to 2035[33]

	2017	2020	2025	2030	2035
Males aged 65-74	529,540	540,700	550,980	622,360	669,620
Males aged 75 and over	659,430	736,712	910,418	1,025,678	1,153,892
Females aged 65-74	854,220	872,370	884,220	999,240	1,080,210
Females aged 75 and over	1,603,507	1,726,666	2,041,853	2,261,575	2,511,187
Total population aged 65-74	1,383,760	1,413,070	1,435,200	1,621,600	1,749,830
Total population aged 75 and over	2,262,937	2,463,378	2,952,271	3,287,253	3,665,079

Figures may not sum due to rounding. Crown copyright 2016

Rates for people living alone:

Age range	% males	% females
65-74	20	30
75+	34	61

Figures are taken from the General Household Survey 2007, table 3.4 Percentage of men and women living alone by age, ONS. The General Household Survey is a continuous survey which has been running since 1971, and is based each year on a sample of the general population resident in private households in Great Britain. Numbers have been calculated by applying percentages of men and women living alone to projected population figures.

Table 2: People aged 65 and over living in a care home with or without nursing by local authority / non-local authority projected to 2035[34]

	2017	2020	2025	2030	2035
People aged 65-74 living in a LA care home	1,370	1,399	1,422	1,606	1,733
People aged 75-84 living in a LA care home	3,926	4,319	5,238	5,617	5,818
People aged 85 and over living in a LA care home	7,938	8,572	10,187	12,453	16,058
People aged 65-74 living in a non-LA care home	33,768	34,482	35,041	39,590	42,700
People aged 75-84 living in a non-LA care home	87,064	95,775	116,156	124,551	129,023
People aged 85 and over living in a non-LA care home	179,552	193,880	230,414	281,657	363,207
Total population aged 65 and over living in a care home	313,619	338,427	398,458	465,474	558,540

Figures may not sum due to rounding. Crown copyright 2016
Figures are taken from Office for National Statistics (ONS) 2011 Census, Communal establishment management and type by sex by age, reference DC4210EWL.
Numbers have been calculated by applying percentages of people living in care homes/nursing homes in 2011 to projected population figures.
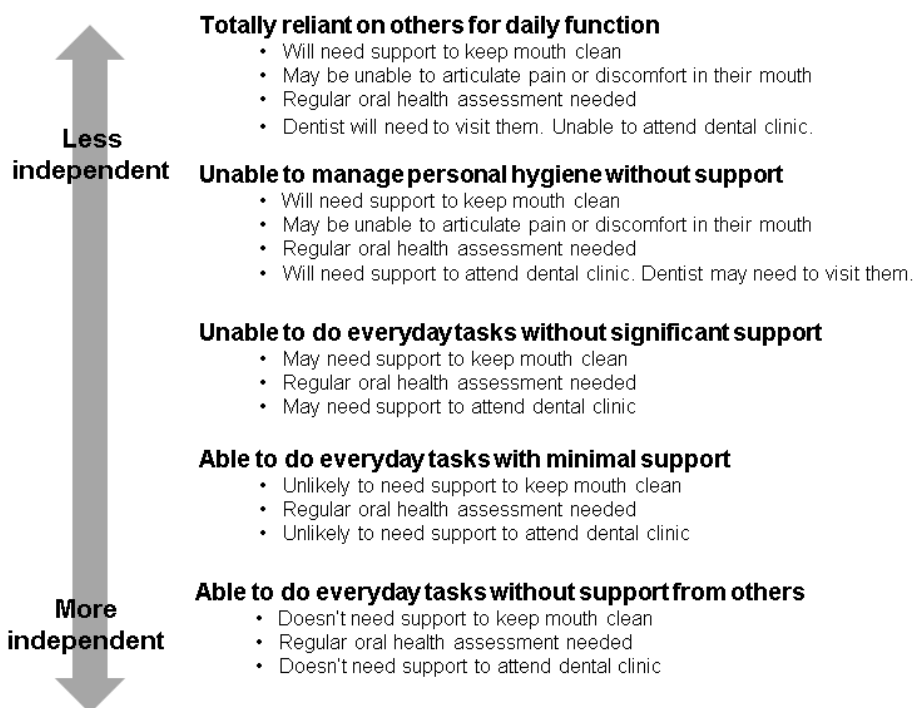
In 2016, the briefing paper 'Dementia: policy, services and statistics' estimated that 676,000 people in England had dementia and that without public health intervention this has been forecast to double by 2040.[35]

10

There are several different types of dementia, the most common being Alzheimer's disease. Dementia does not have to be an inevitable part of ageing. People are more likely to live well in their older years if they live more healthily in earlier life, particularly during mid-life (40-65 years). There is some evidence to suggest that around a third of Alzheimer's disease cases worldwide might be attributable to potentially modifiable risk factors.[36]

In 2017 there were 209,448 people aged 65 and over who were estimated to have learning disabilities, and this is predicted to increase to 221,463 in 2020.[37]

There is a reciprocal relationship between oral health and independence (Figure 2). Good oral health can support people to stay independent for longer, or to recover from episodes of crisis or frailty. Being unable to eat and drink properly can lead to malnutrition or dehydration.

Figure 2: Oral health support needed at each level of independence

Less independent

Totally reliant on others for daily function
- Will need support to keep mouth clean
- May be unable to articulate pain or discomfort in their mouth
- Regular oral health assessment needed
- Dentist will need to visit them. Unable to attend dental clinic.

Unable to manage personal hygiene without support
- Will need support to keep mouth clean
- May be unable to articulate pain or discomfort in their mouth
- Regular oral health assessment needed
- Will need support to attend dental clinic. Dentist may need to visit them.

Unable to do everyday tasks without significant support
- May need support to keep mouth clean
- Regular oral health assessment needed
- May need support to attend dental clinic

Able to do everyday tasks with minimal support
- Unlikely to need support to keep mouth clean
- Regular oral health assessment needed
- Unlikely to need support to attend dental clinic

More independent

Able to do everyday tasks without support from others
- Doesn't need support to keep mouth clean
- Regular oral health assessment needed
- Doesn't need support to attend dental clinic

As people age they are likely to live with a range of complex co-existing medical conditions, dependent on multiple factors, which may predispose them to loss of independence, disability and frailty.[38]

People move in and out of phases of dependency or frailty. The risk of deterioration of oral health can increase as the level of dependency increases. Self-care becomes more challenging during these periods, with carers having to make choices about what older people eat, their daily mouth care routine and how often they see a dentist. It is important to provide people with the appropriate level of mouth care in response to their changing needs to maximise independence for those who have complex needs or showing signs of frailty. Figure 2 shows the level of support an individual may need at each stage of independence.

To improve the oral health of vulnerable older people an inter-professional approach is needed. For example, doctors can play a role in treating patients with xerostomia[i] (dry mouth).

Adult oral health in England

Successive surveys of adult dental health in England since the late 1960s have identified a clear trend of people keeping their natural teeth for longer as age cohorts with improved oral health progressively make up more of the population. In 1978 around 80% of adults aged 65 and over in England were edentulous[ii] (had no natural teeth); by 2009 this had fallen to less than a third. The 2009 ADHS found that 26% of those aged 85 and over had 21 or more natural teeth.[39] This is the number of teeth that will allow most individual to eat in comfort without the need for a partial denture.[39]

Figure 3: Dentate and edentate[ii] adults by age (Figure 1.1.1 from Adult Dental Health Survey 2009)
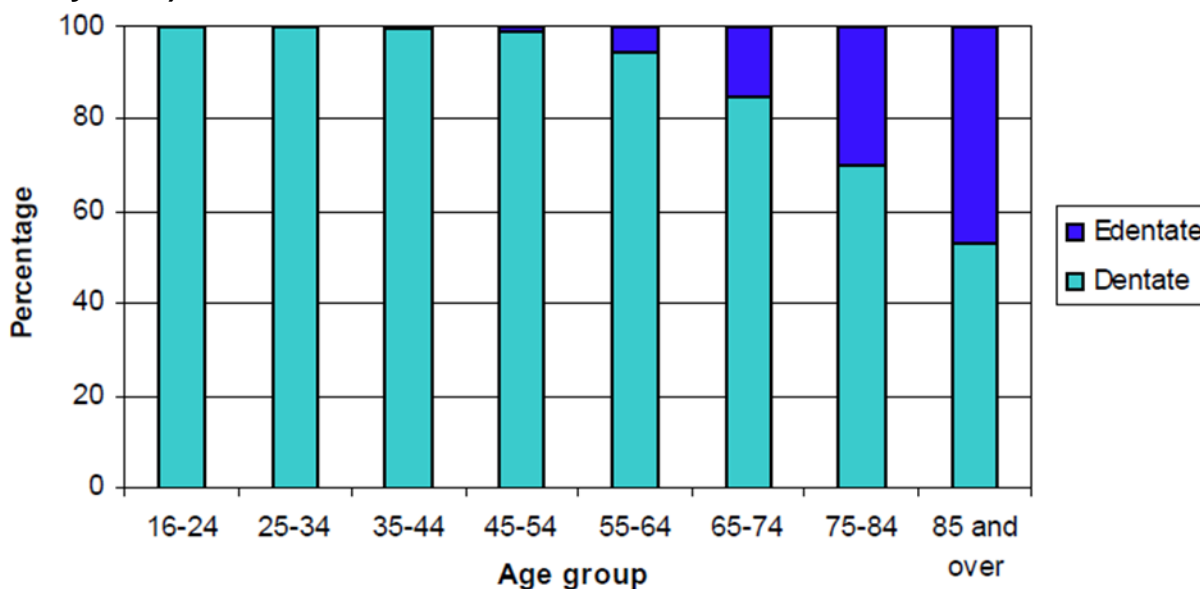
[i] Xerostomia is the medical term for a dry mouth. Many older people can suffer from this and it can be caused by a number of factors such as diabetes, radiotherapy and medications such as anti-depressants and some cardiac and analgesic drugs. A dry mouth can increase the individuals risk of tooth decay and can have a negative impact on their quality of life as it can effect eating, speaking and wearing dentures.
[ii] Edentulous (edentate) – person that has lost all their own teeth

It is expected that the proportion of older adults retaining natural teeth is likely to increase. By extrapolating survey data it has been proposed that over 90% of adults aged 35 to 44 in the 2009 Adult Dental Health Survey (ADHS)[39] will have a realistic prospect of functioning teeth by the age of 80.[40, 41]

While retaining natural teeth into old age is a success, many older people who have their own teeth will have an abundance of fillings, crowns and bridges, the so-called "heavy metal generation".[40] A significant proportion of older adults are likely therefore to have complex dental treatment needs[42] and this will increase over time, having implications for commissioning.

Older adults living in residential and nursing care homes are more likely to have some of their own teeth. Those that have some of their own teeth are less likely to have a functional dentition, and more likely to have a higher prevalence of tooth decay than the general adult population. Those living in a care home are also more likely to have a positive score on the PUFA index.[iii] [43, 44] which shows the consequences of severe dental decay including infection. The most vulnerable may experience the greatest challenges in accessing services and may receive inadequate care when they do.[44]

Some of the challenges, consequences and impact on oral health are listed in Table 3. These challenges can have a substantial impact on a person's quality of life.

[iii] PUFA is an index designed to record the consequences of severe untreated dental caries. A positive PUFA score is recorded in the presence of any one of the following observable signs: Visible pulpal involvement (P), ulceration caused by dislocated tooth fragments (U), fistula (F), and abscess (A)

Table 3: Some of the oral health challenges facing vulnerable older people

Challenges	Multiple medications	Reduced manual dexterity	Living with dementia	Heavily restored teeth	Missing some or all teeth
Consequences	Dry mouth	Less able to clean teeth or gums	Less likely to clean teeth	More fillings and crowns	Not enough teeth for functioning dentition
	Uncomfortable mouth		Less likely to visit dentist	skilled cleaning required	
Impacts	Difficulty with speech	More likely to get tooth decay and gum disease	Diet likely to change	Need regular dental care	Less able to smile, speak, socialise Affects self-confidence
	Difficulty retaining a denture	May suffer from toothache	More likely to get tooth decay and gum disease	Prone to tooth decay, gum disease and/or loss of restoration	Dentures often poor fit
	Difficulty eating	May lose teeth	May suffer from toothache		May get frequent painful ulcers
	More likely to get tooth decay		May suffer from care related distress	May suffer from toothache or infection	May not be able to eat a wide range of food
					Worsening general health

Older people's view about oral health

Like all adults, older people value the ability to live at home, to remain socially engaged and to continue with activities that give their lives meaning.[45] Having a healthy mouth enables people to engage socially.

Qualitative research on older people and their preferences around oral health suggests that maintaining oral health is an important component of older people's sense of autonomy, self-control and self-worth.[39, 46, 47]. Patient-centred research found the following factors to be important to them, being able to function, being pain
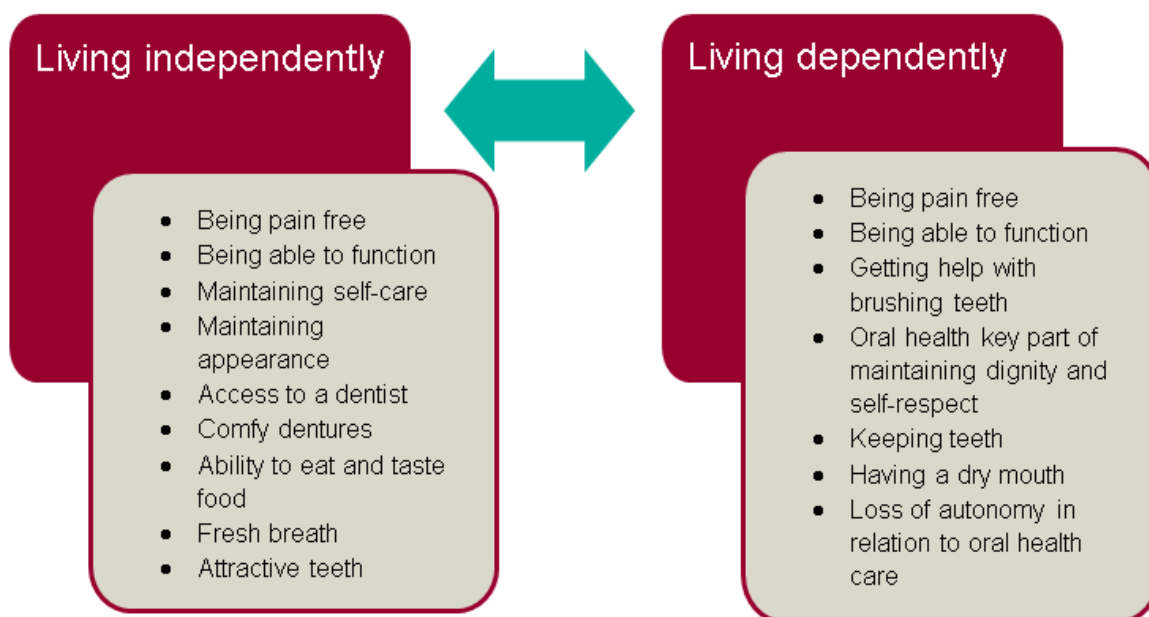
free, self-respect and dignity. Below are illustrative quotes from the older people participating in this study taken from Brocklehurst et al[46]

".[…]we want to be pain free. Because there's nothing as bad as toothache." [User]

"I think teeth are quite important, because first of all for your dignity, you want to look after yourself and look nice, and second of all to be able to eat the correct foods, and that keeps you health[y]."[User]

People's views on the most important elements of oral health when living independently, and when living dependently vary, and have been summarised in Figure 4. The similarities between the two groups were around being pain free and being able to function. What also mattered to those living independently was: appearance, access to a dentist, comfort and ability to eat and taste food, whereas in the dependent group what also mattered was getting the support they needed.

Figure 4: Elements of oral health that older people report matter most when they are independent or dependent[16, 48]

Living independently

- Being pain free
- Being able to function
- Maintaining self-care
- Maintaining appearance
- Access to a dentist
- Comfy dentures
- Ability to eat and taste food
- Fresh breath
- Attractive teeth

Living dependently

- Being pain free
- Being able to function
- Getting help with brushing teeth
- Oral health key part of maintaining dignity and self-respect
- Keeping teeth
- Having a dry mouth
- Loss of autonomy in relation to oral health care

It is beneficial for commissioners to involve vulnerable older people and their families in the design and evaluation of services.

Section 3: Summary of recommendations

Part a) Evidence Review of Effectiveness of Oral Health Improvement Programmes for Vulnerable Older People

Commissioners of oral health improvement programmes will want to know the evidence for the effectiveness of health improvement programmes. This section aims to address these questions.

The findings of an 'Evidence Review of Effectiveness of Oral Health Improvement Programmes for Vulnerable Older People' is published separately and includes not just clinical outcomes but also the impact on activities of daily living, self-assessed oral health and organisational outcomes.

The findings are summarised in Appendix 2.

Summary of evidence informed commissioning options

In addition to integrating oral health improvement and mouth care, local authorities could also commission specific evidence informed targeted oral health improvement programmes as detailed in the tables in Appendix 2.

Recommended programmes include:

- daily use of high fluoride toothpastes (2,800 or 5,000 parts per million fluoride) as part of daily effective tooth brushing
- quarterly application of fluoride varnish as well as effective daily tooth brushing
- supporting vulnerable older people and their carers to maintain a daily oral hygiene routine
- training in oral health for care staff and carers
- protocols for oral care in care settings
- routine denture identification marking
- community water fluoridation

In addition, local authorities may wish to consider commissioning programmes where there is emerging evidence of effectiveness where the intervention looks promising in terms of impacts on inequalities, deliverability and cost. These include:

- interventions promoting dietary change in community settings
- outreach programmes and interventions to independently living older people

16

- comprehensive geriatric assessment and multidisciplinary integrated preventive approach in primary care for independently living older people

Part b) National Institute for Health and Care Excellence (NICE) Guidance

Two important reviews of evidence related to the oral health of vulnerable adults have been published by NICE. These include:

- NICE guideline PH55. Oral health improvement for local authorities[49](NICE PH55) and
- NICE guideline NG48. Oral health for adults in care homes[50] (NICE NG48)

NICE PH55,[49] recommends ways to improve the oral health of communities. While many of the recommendations are related specifically to children and young people there are some for adults that are applicable to vulnerable older people. The recommendations that are relevant to vulnerable older people are listed below (Table 4).

Table 4: NICE recommendations for local authorities on improving oral health, relevant to vulnerable older people[49]

Recommendations from NICE PH55 that are relevant to relevant to vulnerable older people
1. ensure oral health is a key health and wellbeing priority
2. carry out an oral health needs assessment
3. use a range of data sources to inform the oral health needs assessment
4. develop an oral health strategy
5. ensure public service environments promote oral health
6. include information and advice on oral health in all local health and wellbeing policies
7. ensure frontline health and social staff can give advice on the importance of oral health
8. incorporate oral health promotion in existing services for … adults at high risk of poor oral health
9. commission training for health and social care staff working with adults at high risk of poor oral health
10. promote oral health in the workplace
11. commission tailored oral health promotion services for adults at high risk of poor oral health

In 2016 NICE published guidance relating to the oral health of adults living in care homes.[50] The recommendations are for care home managers, staff carrying out admissions or assessments, managers of care staff who support daily personal care,

health and wellbeing boards, oral health promotion teams and dental practitioners. A summary of the recommendations are listed below (Table 5).

Table 5: Summary of the NICE recommendations for oral health for adults in care homes NICE NG48 [50]

1.1 Care home policies on oral health and providing residents with support to access dental services
1.1.1   ensure care home policies set out plans and actions to promote and protect residents oral health
1.1.2   ensure you set out your duty of care in relation to residents oral health needs and access to dental treatment
1.1.3   ensure oral health policy aligns with advice in Delivering better oral health toolkit (DBOH)
1.1.4   ensure the oral health policy makes it clear that only practitioners registered with the GDC and acting within its scope of practice may diagnose and treat dental disease or refer someone for specialist treatment
1.1.5   ensure mouth care is included in existing care home policies covering residents' health and wellbeing and reviewed in line with local practice
1.1.6   ensure all care home staff, new and existing residents, and their families or friends are aware of care home policies to promote health and wellbeing including mouth care
1.2 Oral health assessment and mouth care plans
1.2.1   assess the mouth care needs of all residents as soon as they start living in a care home regardless of the length or purpose of their stay
1.2.2   make an appointment for the resident to see a dental practitioner if necessary.
1.2.3   record the results of the assessment and the appointment in residents personal care plan
1.2.4   review and update residents mouth care needs in their personal care plan
1.3 Daily mouth care
1.3.1   ensure staff provide residents with daily support to meet their mouth care needs and preferences as set out in their personal care plan aligned with advice in DBOH
1.3.2   ensure care staff know which member of staff to ask for advice about getting prescribed mouth care products or helping someone to use them
1.3.3   ensure care staff know how to recognise and respond to changes in a residents mouth care needs
1.3.4   ensure care staff know how to respond if a resident does not want daily mouth care or to have their dentures removed

1.4 Care staff knowledge and skills
1.4.1   ensure care staff who provide daily personal care to residents – understand the importance of oral health and effect on general health, wellbeing and dignity, the potential impact of untreated dental pain and the importance of denture marking. Know how and when to reassess a residents oral health, how to deliver daily mouth care, how and when to report concerns about a resident's oral health
1.5 Availability of local oral health services
1.5.1   ensure local oral health services address the identified needs of people in care homes including their need for treatment   1.5.2   tell local healthwatch and public health teams about any concerns about the availability of local dental and oral health promotion services
1.6 Oral health promotion services
1.6.1   develop and provide care homes with oral health educational materials support and training to meet the oral health needs of all residents especially those with complex needs. Explain the role of diet, alcohol and tobacco in promoting oral health in line with DBOH and NICE guideline ng30: Oral health promotion: general dental practice   1.6.2   help care home managers find out about local oral health services and create local partnerships or links with general dental practice and community dental services including special care dentistry   1.6.3   tell local authority public health teams and dental public health leads about gaps in services, so they can advocate for accessible oral and dental health services on behalf of residents of care homes
1.7 General dental practices an community dental services
1.7.1   provide residents in care homes with routine or specialist preventive care and treatment as necessary in line with local arrangements   1.7.2   ensure dentures made for individual residents are appropriately marked by the laboratory during manufacture

In June 2017, NICE published a quality standard for oral health in care homes.[51] The quality standard is endorsed by the Department of Health and Social Care and supported by a number of organisations including the British Dental Association, the Royal College of General Practitioners, the Royal College of Nursing and PHE. The quality standards makes three quality statements (Table 6).

Table 6: NICE Oral health in care homes. Quality Standard[51]

NICE quality standard for oral health in care homes	
Statement 1	Adults who move into a care home have their mouth care needs assessed on admission.
Statement 2	Adults living in care homes have their mouth care needs recorded in their personal care plan.
Statement 3	Adults living in care homes are supported to clean their teeth twice a day and to carry out daily care for their dentures.

Other documents that support action to improve oral health in vulnerable older people include:

- home care: delivering personal care and practical support to older people living in their own homes (NICE guideline NG21 September 2015)[52]
- dementia: support in health and social care (NICE Quality standard QS1 June 2010)[53]
- dementia: independence and wellbeing (NICE Quality standard QS 30 April 2013)[54]
- older people in care homes (NICE Local government briefing LGB 25 February 2015)[55]
- older people with social care needs and multiple long-term conditions (NICE guideline NG22 November 2015)[56]

Section 4: Commissioning services

The purpose of this chapter is to support local authorities to develop and review local oral health improvement commissioning to meet the needs of vulnerable older people. By identifying local oral health needs, currently commissioned services and their costs, and the summary of recommendations from evidence review and from relevant NICE guidelines, local authorities will be able to maximise oral health outcomes. Place based commissioning through Sustainability and Transformation Partnerships (STPs) and integrated care systems (ICSs) enable different local authorities to work together strategically.

Who are the commissioners of oral health improvement for vulnerable older people?

Local authorities have the lead role in commissioning programmes to improve the oral health of vulnerable older people as well as health improvement of the general population. They also commission adult social care, housing, and community day services, all of which present opportunities to integrate oral health improvement.

A range of other organisations/providers are involved in the delivery of oral health improvement services to vulnerable older people:

- health and social care professionals and carers working with vulnerable older people
- NHS England is responsible for commissioning all dental services in primary and secondary care, including dental services for vulnerable adults
- Health Education England (HEE) is responsible for commissioning and supporting the education and training of staff to deliver improvements in health across England
- Clinical Commissioning Groups (CCGs) are clinically-led statutory NHS bodies that are responsible for the planning and commissioning of healthcare services for their local area

Examples of how these organisations can integrate oral health into their commissioning for vulnerable older people are shown in Table 7.

Table 7: Opportunities for key organisations to improve oral health for vulnerable older people

Local authorities		
Service	Setting	Examples
- social care - housing - population health improvement - community and day services - oral health improvement	- day care – healthy living centres - community hubs, dementia cafes - wider initiatives, eg fire and rescue - home care district nurses, meals on wheels	- training the wider workforce on oral health - consider supervised/supported tooth brushing schemes - advice and signposting information for public, patients and families-including touch points and voluntary sector - formal training for staff in supporting oral hygiene measures - the use of lay health workers to provide oral health advice - actions taken to limit sugar intake frequency where possible (and mitigate its impact where not) - oral health in daily personal care plan - including oral health in joint strategic needs assessments (JSNA), and joint health and wellbeing strategies - including oral health standards, targets and guidance in public health policies and planning - creation of healthy environments conducive to good oral health through social and fiscal policies and community development

NHS England/ Clinical Commissioning Groups		
Service	Setting	Examples
NHS • all dental services • support and oversee professional clinical networks • acute and specialist medical care • patient transport services • other primary care services, pharmacy and optometry • primary medical care for CCGs without full delegation CCGs • primary medical care for CCGs with full delegation • community health services • mental health and learning disability services • rehabilitation care • urgent and emergency care • elective hospital services	• all NHS primary and secondary care settings including NHS clinics, pharmacies, ICUs • palliative care and end of life care settings	• incorporation of oral health into annual health checks for people with learning disabilities and into care pathways for people with diabetes, Parkinson's, stroke and dementia • oral health assessment on entry into care and repeated as appropriate • oral health care to be included in care plans in care homes, hospitals and other appropriate settings • provide appropriate support as needed with oral hygiene on a daily basis • arrange dental professional assessment and treatment as required • formal training for staff in supporting oral hygiene

Co-commissioning		
Service	Setting	Examples
• training all health and social care staff • prescribing policy • nutrition and hydration policy • specific training of carers in care homes	• care homes	• appropriate staff training in oral health • advocacy and raising awareness • ensure appropriate specialist advice has been sought
Health Education England		
Service	Setting	Examples
• training for care home staff and managers, doctors, dentists, pharmacists, nurses.	• care homes and hospitals	Appropriate staff training in oral health, examples include: • mouth Care Matters (Kent Surrey Sussex) • dementia friendly dental practices • Teath Time – (tea and teeth) event to residents and family members of care homes (North East)

Shared local leadership between local authorities and the NHS will bring commissioners together strategically in order to improve oral health at a population level.

Whilst acknowledging that local authorities may be starting from different positions, and engagement work may already be in progress within existing frameworks, identifying local needs and population characteristics is an essential first step in the commissioning process.

The resource compendium for this toolkit has sources of information that can support commissioners with assessing need to commissioning a service.
Dental public health consultants who are based at Public Health England Centres can help commissioners through:

- input on the oral health of vulnerable older people into Joint Strategic Needs Assessments and joint health and wellbeing strategies
- development of oral health needs assessments and oral health policy and strategy for the whole population including vulnerable older people
- review of oral health improvement programmes for vulnerable older people
- the commissioning and integration of oral health improvement programmes within commissioning arrangements for other programmes for vulnerable older people
- evaluation and monitoring of commissioned programmes

Having identified local needs the next step is to identify local oral health improvement services for vulnerable older people, which may be standalone programmes or integrated within generic services. Once identified these may be reviewed and any gaps identified.

There are real opportunities for commissioners to add value to their existing programmes, with little additional cost. by integrating mouth care and oral health improvement into existing commissioned services and making this explicit in service specifications and policies for vulnerable older people. This would include services that provide any level of personal care, such as meals, as well as services in the community, and day or residential care settings. As well as including these requirements within the relevant service specifications, there is a need to ensure services have availability of appropriate materials for mouth care, for example gloves for carers, fluoridated toothpaste and toothbrushes.

Interventions such as 'making every contact count' (MECC) can be used to integrate oral health promotion into existing services and interventions within multiple health and social care settings. MECC is an approach that utilises everyday interactions between the workforce and the individuals they interact with to provide

consistent brief advice, to support the individuals to improve their own health and wellbeing.

In all care pathways in care homes, particularly end of life pathways, consideration of good oral health can contribute to an individual's dignity as part of personal hygiene, comfort and wellbeing and should not be overlooked or underestimated.

Financial considerations

Local Authorities are already using a number of financial approaches and techniques to achieve the best value for the investment across the health and social care system. But these may not have been used in relation to oral health.

- Pooled budgets

Section 75 of the NHS Act 2006 allows for the establishment of pooled budgets between NHS bodies and local authorities at a local level.[57] There are a number of ways this can be done, for example by combining finances or by delegating commissioning to one of the partner organisations. Pooling budgets can lead to better value for money as you avoid duplication by commissioning once for a number of organisations.

- Collaborative commissioning

With the Better Care Fund, and the move to place based commissioning there is an increasing drive towards working across systems and organisations to improve lives and tackle the growing challenges that face commissioners. STPs or ICSs may provide a forum for these discussions, particularly as STPs have a focus on undertaking prevention at scale, as highlighted in the Five Year Forward View (2014)[8] which also explores new models of healthcare delivery.

The Next Steps on the NHS Five Year Forward View published in March 2017,[58] sets out the priorities for NHS England over the next two years with an aim to produce greater collaboration between health and care providers in the delivery of strategic outcomes for a population.

The integration of health and social care and, in some areas, devolution and place-based commissioning can all facilitate collaborative commissioning at different geographical levels. This involves aligning commissioning intentions across local authorities and the NHS, and agreeing single processes for commissioning and procurement. In relation to oral health this could mean inclusion of oral health elements as standard in contracts for integrated health and social care services, such as nursing homes.

There are numerous examples of local authorities commissioning in this way, often using framework agreements to do so. A framework agreement is an agreement with suppliers that sets out the terms and conditions under which specific purchases can be made throughout the life of that agreement. A framework agreement particularly lends itself to the purchase of equipment, for example, toothbrushes or fluoride toothpaste that could be supplied to care homes.
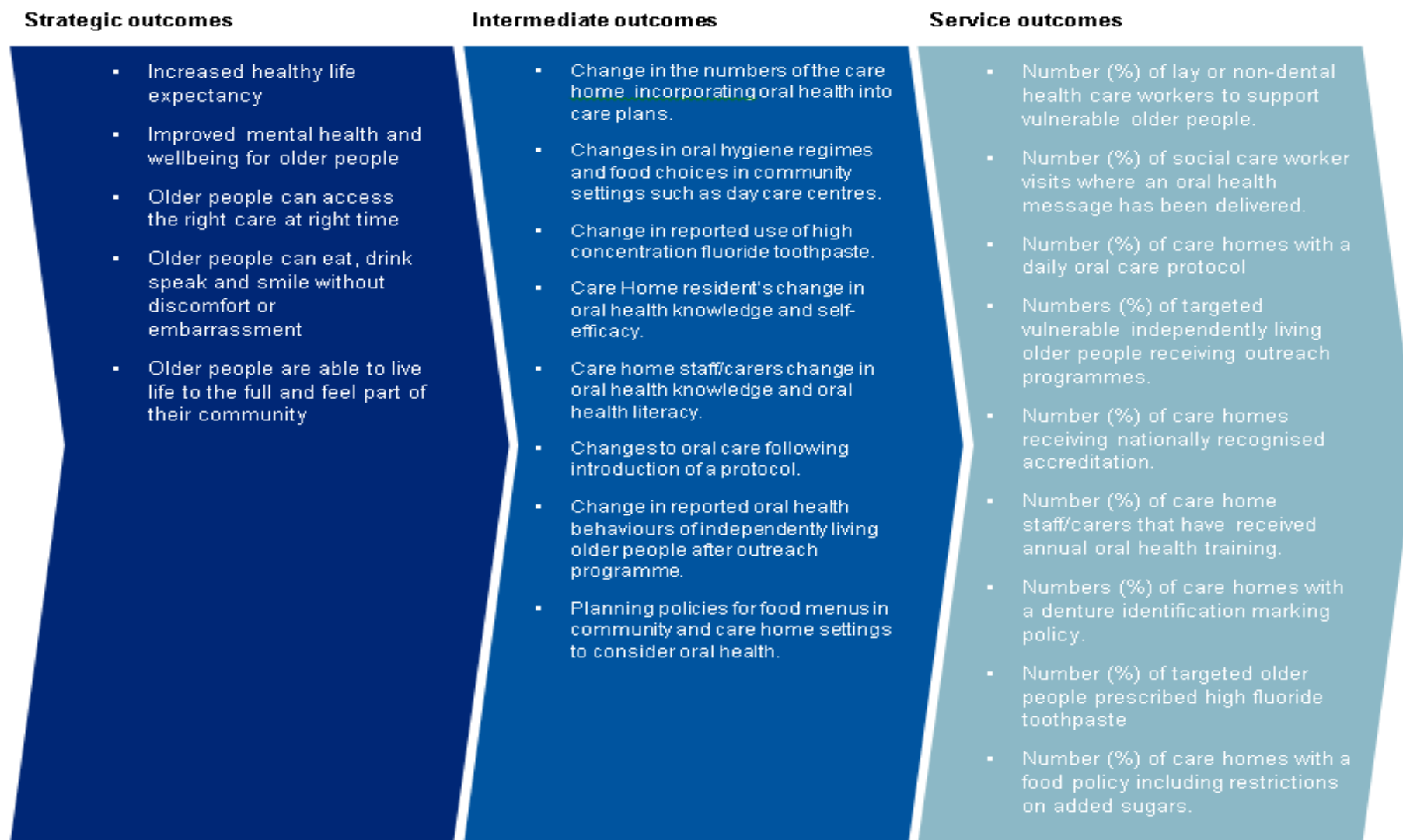
Facilitators to improve oral health

The health and social care system provides support that can help to facilitate action to improve the oral health of vulnerable older people. Some of these frameworks are currently available; others are in development or are highlighted as they would be helpful to facilitate action to improve oral health of vulnerable older people. These include:

- the development and monitoring of strategic actions by networks and scrutiny committees (see key questions for scrutiny in Appendix 1) and implementation of the of relevant guidelines
- incorporating oral health messaging into STP/ICS initiatives which can allow preventative messaging on oral health to be provided across a range of organisations and over a wider geography
- service specifications with specific oral health local quality standards common across a range of care pathways/settings to meet the needs of population groups
- robust commissioning including quality and innovation (CQUINs) and key performance indicators (KPIs) routinely in specifications and monitored through contracts. Examples of CQUINs and KPIs are given in the resource compendium
- regular meetings to develop and integrate oral health commissioning for vulnerable older people, for example developing an oral health improvement network that brings together commissioners from NHSE and local authorities plus other key stakeholders such as managed clinical networks which could be facilitated through the local dental networks (LDNs)
- requesting learning disability partnerships to report people's experiences after prompting to seek dental services as part of their annual GP health check
- push for development of UK wide national occupational standards (in England through the 'Skills for Care') and a certificate for carers that includes oral health and is a recommended minimum requirement for healthcare support workers
- develop a theme on oral health as part of a line of enquiry by the Care Quality Commission as part of their role as regulator of care homes. Whilst oral health is relevant in reference to all of the five key questions that are asked of all care services, the consideration of oral health is key to the provision of effective care in care where people are supported to live their lives in the way that they choose and experience the best possible health and quality of life outcomes
- providers to carry out annual 'settings-based' audits with a focus on oral health

- encourage feedback from Healthwatch and third sector organisations on access and quality of oral health services for older people who are vulnerable
- support the development of 'oral health champions' with defined roles within a range of organisations and settings
- support the development of dental clinical leadership through NHS managed dental clinical networks and local dental networks
- develop a systematic checklist for commissioners of services for vulnerable older people to include and integrate oral health eg:
    - o oral health embedded into all relevant service specifications;
    - o commissioning for quality and innovation (CQUINS) and key performance indicators (KPIs) (See resource compendium for further information and examples CQUIN and KPI), include some relating to oral health improvement
- having a funded commitment to training in oral health for care providers stated within service specifications
- providing written 'brief advice' sheets for the public and for specific population sub groups giving, for example 'ten top tips' for managing mouth care. There are examples of this in the resource compendium
- ensuring widely known and recognised signposting and provision of access to relevant, good quality published material that includes emerging evidence and best practice in oral health

Figure 5 provides some examples of possible outcome measures that commissioners could use to evaluate and monitor oral health improvement programmes for vulnerable older people.

Figure 5: Examples of outcome measures

Strategic outcomes

- Increased healthy life expectancy
- Improved mental health and wellbeing for older people
- Older people can access the right care at right time
- Older people can eat, drink speak and smile without discomfort or embarrassment
- Older people are able to live life to the full and feel part of their community

Intermediate outcomes

- Change in the numbers of the care home incorporating oral health into care plans.
- Changes in oral hygiene regimes and food choices in community settings such as day care centres.
- Change in reported use of high concentration fluoride toothpaste.
- Care Home resident's change in oral health knowledge and self-efficacy.
- Care home staff/carers change in oral health knowledge and oral health literacy.
- Changes to oral care following introduction of a protocol.
- Change in reported oral health behaviours of independently living older people after outreach programme.
- Planning policies for food menus in community and care home settings to consider oral health.

Service outcomes

- Number (%) of lay or non-dental health care workers to support vulnerable older people.
- Number (%) of social care worker visits where an oral health message has been delivered.
- Number (%) of care homes with a daily oral care protocol
- Numbers (%) of targeted vulnerable independently living older people receiving outreach programmes.
- Number (%) of care homes receiving nationally recognised accreditation.
- Number (%) of care home staff/carers that have received annual oral health training.
- Numbers (%) of care homes with a denture identification marking policy.
- Number (%) of targeted older people prescribed high fluoride toothpaste
- Number (%) of care homes with a food policy including restrictions on added sugars.

Appendix 1 - Key questions to ask when assessing local oral health improvement delivery

Local authorities have a key role in the scrutiny of oral health improvement and dental service provision. Bringing together public agencies and organisations to establish the extent to which poor oral health is prevalent in local areas and to ask questions about planning for better outcomes from services. These are some questions they can ask of themselves

Key questions to ask when assessing local oral health improvement delivery*
What is the local picture?

1. Do you have information and intelligence regarding the oral health of vulnerable older people? Oral health needs can differ from ward to ward and between ethnic and vulnerable groups. What is the local picture?
2. Are the oral health needs of vulnerable older people included in the joint strategic needs assessment (JSNA) and the health and wellbeing strategy and is this underpinned by more detailed oral health needs assessments and strategic documents that consider the oral health needs of vulnerable older people?
3. Do you have a local oral health strategy in place to address oral health issues and does this include vulnerable older people and address oral health issues of vulnerable older people?
4. Is there an integrated approach to oral health improvement across services for vulnerable older people and the older people's workforce?
5. Has oral health improvement been integrated across the council departments considering the wider determinants of health?
6. Are commissioned oral health improvement programmes for vulnerable older people appropriate to local needs, informed by local information and intelligence and supported by the best available evidence? Are oral health requirements included in specifications for services for older people including care home and care at home services?
7. How is success being measured? Schemes to improve oral health can take a long time to result in measureable progress as demonstrated by health outcome measures. Have appropriate intermediate process outcomes been considered that will provide assurance that progress is being made?
8. Is the older adults' workforce supported through training and development (as part of their induction and regular updates) to deliver for oral health improvement locally?
9. What engagement processes do you have to collect the views of older adults, including vulnerable older adults and their carers and are there examples of how their views influenced decision-making?
10. Is there reasonable and equitable access to local dental services for the needs of vulnerable older people and their carers, and are these focused on prevention?

*Adapted from LGA guidance on commissioning better oral health for children and young people 2014

Appendix 2 - Summary of interventions reviewed

Intervention 1	Use of dentifrices containing 2,800 or 5,000 ppm F
Further information	Daily use of higher fluoride containing toothpaste will prevent or arrest caries in dentate vulnerable older people Ekstrand 200864, Innes 200965, Srinivasan 2014, Wierichs 201566, Willumsen 200767
Target population	Universal
Strength of evidence	Strong evidence of effectiveness
Likely impact on inequalities	Likely/uncertain depending on compliance
Implementation issues	Deliverable. Needs prescription or Patient Group Directions (PGDs)
Overall recommendation	Recommended. There must also be effective toothbrushing in addition.

Intervention 2	Programmes involving dental professionals applying varnish to the teeth to prevent decay
Further information	There is good evidence for the effectiveness of quarterly application of fluoride varnish. There needs to be daily oral cleaning too – application of varnish is not a substitute for brushing. Ghezzi 201468, Powell 199969, Raghoonandan 201170, Weintraub 200371, Wierichs 201566
Target population	Care homes/community settings
Strength of evidence	Strong evidence of effectiveness
Likely impact on inequalities	Likely/uncertain depending on compliance
Implementation issues	Deliverable. Additional benefit is given by application of fluoride varnish by dental professionals. Costs can be contained by use of a suitably trained dental care professional (need not be a dentist).
Overall recommendation	Recommended. There must also be effective toothbrushing in addition.

Intervention 3	Oral hygiene regime to improve oral health and possibly reduce the risk of aspiration pneumonia
Further information	Maintaining oral hygiene is crucial to maintaining patient's dignity and their oral health. In addition there is evidence that oral hygiene interventions reduce the risk of pneumonia in community-living and hospital-based patients. But caution is needed about the interpretation of this result. Most of the evidence is for patients who are critically ill in an intensive care unit. Most of the interventions include weekly professional care (ie professional cleaning by a dentist or hygienist) or the use of chlorhexidine rinse or gel or povidone iodine or combinations of these interventions. Reducing dental plaque levels by assisted toothbrushing alone, has not been shown, in a well-designed trial, to impact the incidence of pneumonia. van der Maarel-Wierink's team summarise their conclusions as "oral health care consisting of tooth brushing after each meal, cleaning dentures once a day, and professional oral health care once a week, seems the best intervention to reduce the incidence of aspiration pneumonia". Chlorhexidine rinse or gel may give additional benefit. Clearly further research is needed to establish an oral hygiene protocol that is effective in reducing the risk of pneumonia. Iinuma 2014, Juthani-Mehta 2015, Manger 2017, van der Maarel-Wierink 201320
Target population	Universal
Strength of evidence	Sufficient evidence of effectiveness
Likely impact on inequalities	Likely/uncertain depending on compliance
Implementation issues	Deliverable
Overall recommendation	Recommended

Intervention 4	Programmes of training in oral health care for care staff/carers
Further information	There is no one training programme has been shown to be effective in all aspects but features probably contributing to effectiveness • hands-on practical component to the training • protocol for oral care was used but it was adapted to the individual • repeated training • including group discussion, Q&A • monitoring of implementation eg By care home manager

	- daily oral care combined with regular professional cleaning - use of electric toothbrush a possibility - offering incentives to care-givers to attend training - having a source of continuing advice – phone or visit - feedback on clinical improvements - including oral health assessment training - support at organisational level All frontline health and social care staff should have training in how to protect and improve the oral health of those for whom they care. Features probably contributing to lack of effectiveness: - higher dependency levels - Inadequate staffing intensity - high staff turnover Day 1998, de Baat 1993, De Visschere 2011, Fjeld 2014, MacEntee 2007, NICE 2014, NICE 2016, Nicol 2005, Peltola 2007, Sjogren 2010, Sloane 2013, Van der Putten 2013, Weening-Verbree 2013, Zenthőfer 2016
Target population	All care staff/carers
Strength of evidence	Sufficient evidence of effectiveness
Likely impact on inequalities	Likely
Implementation issues	Deliverable but requires ongoing support & regular updating with care staff because of turnover
Overall recommendation	Recommended

Intervention 5	Protocols for oral care in care settings
Further information	Oral health needs to be seen as a priority & responsibility at a senior level in the organisation. Having a designated staff member as a champion may be of benefit. Care homes should incorporate oral care into the home using guidance based on best available evidence eg BSDH Guidance for oral health care for long stay patients and residents. This guidance is also applicable to other care settings - oral health assessment on entry into care, repeated as appropriate - oral health care planning integrated into care plan - daily support, as needed, with oral hygiene - dental professional assessment & treatment is arranged as appropriate

	- formal training for staff in supporting oral hygiene - environment enables effective oral hygiene with dignity and privacy - actions taken to limit sugar intake frequency where possible (and mitigate its impact where not) eg: - limiting intake of free sugars to mealtimes whenever possible - offer alternatives for sugar containing snacks, eg fresh fruit, tooth friendly confectionary - offer alternatives for sugar added to drinks, eg artificial sweeteners, plain water Amerine 201372, Chalmers 2005a51, Fiske 200073, Lewis 201550, NICE 2014, RCS 2017, NICE 2016
Target population	All care staff/carers
Strength of evidence	Some evidence of effectiveness
Likely impact on inequalities	Likely
Implementation issues	Deliverable but re-quires ongoing support & regular updating with care staff because of turnover
Overall recommendation	Recommended

Intervention 6	Interventions promoting dietary change in community settings
Further information	Malnourished vulnerable older people may be encouraged to increase the energy density of their diet by adding extra snacks or drinks between meals. It is uncertain whether this strategy is effective in improving health outcomes and yet it will increase the risk of dental decay if sugary snacks and drinks are used. Dietary change interventions to groups or individuals have shown limited success in behaviour change. Features probably contributing to effectiveness: - limit educational messages to one or two - reinforce & individualise messages - provide hands-on activities, incentives and cues to action - give access to health professionals for further nutritional advice if needed - base programmes on appropriate theories of behaviour change - aim for a relationship, one of equality and trust - focus on positive outcomes – self-sufficiency and autonomy

	In 1 to 1 advice, features probably contributing to effectiveness:
	- prompting intention formation or goal setting - self-monitoring of behaviour - well as specifying goals in relation to particular contextualised actions - providing feedback on performance - reviewing previously-set goals Baldwin 2016, Bull 2014, Bully 2015, Jones 2009, Marcus-Varwijk 2016, Maderuelo-Fernandez 2015, Michie 2009, NICE 2014, Sahyoun 2004
Target population	Independently living older people
Strength of evidence	Inconclusive evidence of effectiveness
Likely impact on inequalities	Uncertain
Implementation issues	Deliverable/uncertain
Overall recommendation	Emerging evidence

Intervention 7	Outreach programmes & interventions to independently living older people
Further information	Features probably contributing to lack of effectiveness - mailing literature & invitations to visit a dental practice - toothbrushing instruction programme given to (even mildly) confused elderly Features probably contributing to effectiveness - post instruction assessment and feedback - self-recording own behaviour change Features probably contributing to cost-effectiveness - use of lay health workers to give oral hygiene advice - outreach to social groups eg lunch clubs deBaat 199374, Hakuta 2009, Hjertstedt 201375, Hoogendijk, 2016, Kim 2016, Komulainen 201576, Marshall 200977, Marino 2013, Mariño 201478, NICE 2014
Target population	Independently living older people
Strength of evidence	Inconclusive evidence of effectiveness
Likely impact on inequalities	Uncertain

Implementation issues	Deliverable/uncertain
Overall recommendation	Emerging evidence

Intervention 8	Comprehensive geriatric assessment & multidisciplinary integrated preventive approach in primary care for independently living older people including integration of oral health into primary care & opportunistic assessment of need
Further information	Limited evidence and small but important effects. Examples are: • a checklist for older adults can act as a trigger for primary care practitioners to check on aspects of older people's health including oral health • offering a dental appointment can increase care uptake among those with no regular source of care Lowe 2007[79], Sin 2015[80], Looman 2016[81], Oliver 2014[82], Smith 2016
Target population	Independently living older people
Strength of evidence	Inconclusive evidence of effectiveness
Likely impact on inequalities	Uncertain
Implementation issues	Deliverable/uncertain
Overall recommendation	Emerging evidence

Intervention 9	Routine denture identification marking to ensure that lost dentures can be returned to the right patient.
Further information	• lost dentures can be distressing and mean loss of dignity and difficulty eating. Replacing lost dentures is costly and it may be impossible for the patient to adapt to any new denture made • routine inclusion of patient identification during initial processing of all new dentures is the ideal, is popular with patients and can avoid costly remakes of lost dentures. It is supported by BDA & UK Alzheimer's Society • marking of existing dentures can be done by a variety of methods and is recommended, especially for persons entering a care home or hospital Cunningham 1993[83], Fiske 2000[73], Kalyan 2014[84], NICE 2016, Richmond 2007
Target population	Dental laboratories/ dental professional bodies/care home staff

Strength of evidence	Some evidence of effectiveness
Likely impact on inequalities	Likely
Implementation issues	Deliverable/uncertain
Overall recommendation	Recommended

Intervention 10	Water fluoridation impact on vulnerable older adults
Further information	- adults exposed to water fluoridation have shown a 27% reduction in caries experience - cost benefit ratio is good and increases with the size of population served by a water fluoridation scheme - there is some evidence to suggest a reduction in inequality between deprived and affluent communities but the studies are of low quality and in children - where water fluoridation schemes are under consideration the potential impact on the oral health of vulnerable older adults should be considered Do 2017, Griffin 2007, PHE 2016, Ran 2016, Spencer 2017
Target population	Universal
Strength of evidence	Strong evidence of effectiveness
Likely impact on inequalities	Likely
Implementation issues	Deliverable but only through statutory process including public consultation
Overall recommendation	Recommended

Acknowledgements

Development and working group members:

Semina Makhani (Chair) national consultant in dental public health, PHE

Sandra White, national lead for dental public health, PHE

Jenny Godson, national consultant in dental public health, PHE

Kate Jones, national consultant in dental public health, PHE

Julia Csikar, national senior dental public health manager, PHE

Lesley Gough, consultant in dental public health, PHE North West

Melanie Catleugh, consultant in dental public Health, PHE North West

David Landes, consultant in dental public health, PHE North East

Linda Hillman, consultant in dental public health, PHE East of England

Amanda Crosse, consultant in dental public health, PHE East of England

Claire Robertson, consultant in dental public health, PHE London

Jenny Oliver, consultant in dental public health, PHE South East

Martin Ramsdale, academic clinical fellow/specialist registrar in dental public health, University of Leeds

Rebecca Craven, senior lecturer, academic consultant in dental public health, University of Manchester

Rizwana Lala, clinical lecturer and honorary specialist registrar in dental public health, University of Sheffield

External academic reviewers

Georgios Tsakos, reader and honorary consultant dental public health, University College London

John Morris, senior lecturer in dental public health, University of Birmingham

Wider stakeholders

We would also like to acknowledge our wider stakeholders who took part in a stakeholder day and in the consultation process.

Technical support for resource compendium

David Wilcox, senior dental intelligence analyst, PHE

Andrew Woods, fluoridation operations manager, PHE

Janet Neville, dental public health analyst, PHE

References

1. NHS England, *Improving Dental Care and Oral Health–A Call to Action*, in *Primary Care Strategies. NHS England*. 2014.

2. Department of Health, *Equity and Excellence: Liberating the NHS*, HMSO, Editor. 2010: London.

3. Health and Social Care Act of 2012. c.7 [cited 25/10/17]. Available from: http://www.legislation.gov.uk/ukpga/2012/7/contents/enacted

4. *Care Act 2014*. c.23 2014 09/08/18]; Available from: http://www.legislation.gov.uk/ukpga/2014/23/pdfs/ukpga_20140023_en.pdf

5. NHS Bodies and Local Authorities (Partnership Arrangements, CT, Public Health and Local Healthwatch), *Regulations Statutory Instrument SI3094*. 2012: United Kingdom.

6. *The Local Authority (Public Health, Health and Wellbeing Boards and Health Scrutiny) Regulations 2013*. Accessed: 28th April 2016]; Available from: http://www.legislation.gov.uk/uksi/2013/218/pdfs/uksi_20130218_en.pdf.

7. *The Water Fluoridation (Proposals and Consultation)* in *Regulations - Statutory Instrument: S301*. 2013: England.

8. NHS. *NHS England's Five Year Forward View*. 2014 Accessed: 02/04/18]; Available from: https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf.

9. Glick, M, DM Williams, DV Kleinman, M Vujicic, RG Watt, and RJ Weyant, *A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health.* British dental journal, 2016. **221**(12): p. 792.

10. World Health Organization. *World report on Ageing and Health*. 2015 Accessed: 16/05/18]; Available from: http://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811_eng.pdf;jsessionid=ACD122E8DAFBF427C80F9B58EB206CDB?sequence=1

11. Rebelo, M, E Cardoso, P Robinson, and M Vettore, *Demographics, social position, dental status and oral health-related quality of life in community-dwelling older adults.* Quality of Life Research, 2016. **25**(7): p. 1735-1742.

12. Zenthöfer, A, P Rammelsberg, T Cabrera, J Schröder, and AJ Hassel, *Determinants of oral health-related quality of life of the institutionalized elderly.* Psychogeriatrics, 2014. **14**(4): p. 247-254.

13. Morgan, R, K Sail, A Snow, J Davila, N Fouladi, and M Kunik, *Modeling causes of aggressive behavior in patients with dementia.* The Gerontologist, 2012. **53**(5): p. 738-747.

14. Ahn, H, C Garvan, and D Lyon, *Pain and aggression in nursing home residents with dementia: minimum data set 3.0 analysis.* Nursing research, 2015. **64**(4): p. 256-263.

15. Sheiham, A, J Steele, W Marcenes, G Tsakos, S Finch, and A Walls, *Prevalence of impacts of dental and oral disorders and their effects on eating among older people; a national survey in Great Britain.* Community dentistry and oral epidemiology, 2001. **29**(3): p. 195-203.

16. Ramsay, S, P Whincup, R Watt, G Tsakos, A Papacosta, L Lennon, and S Wannamethee, *Burden of poor oral health in older age: findings from a population-based study of older British men.* BMJ open, 2015. **5**(12): p. e009476.

17. Sheiham, A and J Steele, *Does the condition of the mouth and teeth affect the ability to eat certain foods, nutrient and dietary intake and nutritional status amongst older people?* Public health nutrition, 2001. **4**(3): p. 797-803.

18. Emami, E, R de Souza, M Kabawat, and J Feine, *The impact of edentulism on oral and general health.* International journal of dentistry, 2013. **2013**.

19. Bidinotto, A, C Santos, L Tôrres, M Sousa, F Hugo, and J Hilgert, *Change in Quality of Life and Its Association with Oral Health and Other Factors in Community-Dwelling Elderly Adults—A Prospective Cohort Study.* Journal of the American Geriatrics Society, 2016. **64**(12): p. 2533-2538.

20. Porter, J, A Ntouva, A Read, M Murdoch, D Ola, and G Tsakos, *The impact of oral health on the quality of life of nursing home residents.* Health and quality of life outcomes, 2015. **13**(1): p. 102.

21. Rodrigues, S, A Oliveira, A Vargas, and A Moreira, *Implications of edentulism on quality of life among elderly.* International journal of environmental research and public health, 2012. **9**(1): p. 100-109.

22. Aida, J, K Kondo, T Yamamoto, H Hirai, M Nakade, K Osaka, A Sheiham, G Tsakos, and R Watt, *Oral health and cancer, cardiovascular, and respiratory mortality of Japanese.* J Dent Res, 2011. **90**(9): p. 1129-35.

23. Padilha, DM, JB Hilgert, FN Hugo, AJ Bos, and L Ferrucci, *Number of teeth and mortality risk in the Baltimore Longitudinal Study of Aging.* J Gerontol A Biol Sci Med Sci, 2008. **63**(7): p. 739-44.

24. Watt, RG, G Tsakos, C de Oliveira, and M Hamer, *Tooth loss and cardiovascular disease mortality risk--results from the Scottish Health Survey.* PLoS One, 2012. **7**(2): p. e30797.

25. Schwahn, C, I Polzer, R Haring, M Dorr, H Wallaschofski, T Kocher, T Mundt, B Holtfreter, S Samietz, H Volzke, and R Biffar, *Missing, unreplaced teeth and risk of all-cause and cardiovascular mortality.* Int J Cardiol, 2013. **167**(4): p. 1430-7.

26. D'Aiuto, F, D Gable, Z Syed, Y Allen, KL Wanyonyi, S White, and JE Gallagher, *Evidence summary: The relationship between oral diseases and diabetes.* Bdj, 2017. **222**: p. 944.

27. Manger, D, M Walshaw, R Fitzgerald, J Doughty, K Wanyonyi, S White, and J Gallagher, *Evidence summary: the relationship between oral health and pulmonary disease.* British dental journal, 2017. **222**(7): p. 527.

28. Daly, B, A Thompsell, J Sharpling, Y Rooney, L Hillman, K Wanyonyi, S White, and J Gallagher, *Evidence summary: the relationship between oral health and dementia.* British dental journal, 2017. **223**(11): p. 846.

29. Dietrich, T, I Webb, L Stenhouse, A Pattni, D Ready, K Wanyonyi, S White, and J Gallagher, *Evidence summary: the relationship between oral and cardiovascular disease.* British dental journal, 2017. **222**(5): p. 381.

30. NHS Digital. *Hospital Episode Statistics, Admitted Patient Care - England, 2014-15.* 2015 Accessed: 16/05/18]; Available from: https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/hospital-episode-statistics-admitted-patient-care-england-2014-15.

31. Office for National Statistics. *Statistical bulletin: Mid-2013 Population Estimates.* 2014 Accessed: 24/05/18]; Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/2015-06-25.

32. The King's Fund. *Demography: future trends* 2015 Accessed: 28/12/2016]; Available from: www.kingsfund.org.uk/time-to-think-differently/trends/demography/ageing-population.

33. Projecting Older People Population Information System (POPPI). *People aged 65 and over living alone, by age and gender, projected to 2035.* 2016 Accessed: 24/05/18];

Available from:
http://www.poppi.org.uk/index.php?pageNo=324&PHPSESSID=kciu6roks66jmkhqq8b69ph9k0&sc=1&loc=8640&np=1.

34.   Projecting Older People Population Information System (POPPI). *Living in a care home.* 2016 Accessed: 24/05/18]; Available from:
http://www.poppi.org.uk/index.php?pageNo=326&PHPSESSID=kciu6roks66jmkhqq8b69ph9k0&sc=1&loc=8640&np=1.

35.   Parkin, E and C Baker. *Dementia: policy, services and statistics.* 17 October 2016, Number 7007 Accessed: 16/05/18]; Available from:
http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN07007#fullreport.

36.   Norton, S, F Matthews, D Barnes, K Yaffe, and C Brayne, *Potential for primary prevention of Alzheimer's disease: an analysis of population-based data.* The Lancet Neurology, 2014. **13**(8): p. 788-794.

37.   Projecting Older People Population Information System (POPPI). *People aged 65 and over predicted to have a learning disability, by age.* 2016 Accessed: 24/05/18]; Available from:
http://www.poppi.org.uk/index.php?pageNo=374&PHPSESSID=kciu6roks66jmkhqq8b69ph9k0&sc=1&loc=8640&np=1.

38.   Rodriguez-Mañas, L and LP Fried, *Frailty in the clinical scenario.* The Lancet, 2015. **385**(9968): p. e7-e9.

39.   NHS Digital. *Adult Dental Health Survey.* 2009 Accessed: 09/02/18].

40.   Steele, J, E Rooney, J Clarke, and T Wilson, *NHS dental services in England.* 2009, Department of Health: London. p. 1-86.

41.   Steele, J, E Treasure, I O'sullivan, J Morris, and J Murray, *Adult dental health survey 2009: transformations in British oral health 1968–2009.* British dental journal, 2012. **213**(10): p. 523.

42.   Watt, R, J Steele, E Treasure, D White, N Pitts, and J Murray, *Adult Dental Health Survey 2009: implications of findings for clinical practice and oral health policy.* British dental journal, 2013. **214**(2): p. 71.

43.   Public Health England. *What is Known About the Oral Health of Older People in England and Wales: A review of oral health surveys of older people.* 2015 Accessed: 17/05/18]; Available from:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/489756/What_is_known_about_the_oral_health_of_older_people.pdf.

44.   Tomson, M, F Watson, K Taylor-Weetman, A Morris, and K Wilson, *West Midlands Care Home Dental Survey 2011: Part 2. Results of clinical survey of care home residents.* British dental journal, 2015. **219**(7): p. 349.

45.   Oliver, D, C Foot, and R Humphries. *Making our health and care systems fit for an ageing population.* 2014 Accessed: 17/05/18]; Available from:
https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/making-health-care-systems-fit-ageing-population-oliver-foot-humphries-mar14.pdf.

46.   Brocklehurst, PR, L Mackay, J Goldthorpe, and IA Pretty, *Older people and oral health: setting a patient-centred research agenda.* Gerodontology, 2015. **32**(3): p. 222-228.

47.   Citizen Scientist. *Patient and Public Involvement – Dentistry for older people.* Accessed: 17/05/18]; Available from: http://www.citizenscientist.org.uk/research-opportunities/dental-research/patient-and-public-involvement-dentistry/#Aspects-of-oral-health-care

48. Müller, F, Y Shimazaki, F Kahabuka, and M Schimmel, *Oral health for an ageing population: the importance of a natural dentition in older adults.* International dental journal, 2017. **67**(S2): p. 7-13.
49. The National Institute for Health and Care Excellence. *Oral Health Improvement for Local Authorities and their Partners: PH55.* 2014 Accessed: 03/03/18]; Available from: https://www.nice.org.uk/guidance/ph55.
50. The National Institute for Health and Care Excellence. *Oral health for adults in care homes: NG48.* 2016 Accessed: 17/08/18]; Available from: https://www.nice.org.uk/guidance/ng48.
51. The National Institute for Health and Care Excellence. *Oral health in care homes: QS151.* 2017 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/guidance/qs151.
52. The National Institute for Health and Care Excellence. *Home care: delivering personal care and practical support to older people living in their own homes: NG21.* 2015 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/guidance/ng21.
53. The National Institute for Health and Care Excellence. *Dementia: support in health and social care: QS1.* 2010 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/guidance/qs1.
54. The National Institute for Health and Care Excellence. *Dementia: independence and wellbeing: QS30.* 2013 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/guidance/qs30.
55. The National Institute for Health and Care Excellence. *Older people in care homes: LGB25.* 2015 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/advice/lgb25.
56. The National Institute for Health and Care Excellence. *Older people with social care needs and multiple long-term conditions: NG22.* 2015 Accessed: 17/05/18]; Available from: https://www.nice.org.uk/guidance/ng22.
57. National Health Service Act of 2006. c.41 [cited 10/08/18]. Available from: https://www.legislation.gov.uk/ukpga/2006/41/section/75.
58. NHS. *Next Steps on the NHS Five Year Forward View.* 2017 Accessed: 02/04/18]; Available from: https://www.england.nhs.uk/wp-content/uploads/2017/03/NEXT-STEPS-ON-THE-NHS-FIVE-YEAR-FORWARD-VIEW.pdf.