FACULTY OF PUBLIC HEALTH

Prevention in the NHS

Rapid research review

Executive summary

Prevention in the NHS

Over the past decade the UK's National Health Service has taken a more proactive role in helping people stay physically and mentally well, aiming to prevent the onset or further deterioration of conditions. This rapid review examined published research about the range and impact of prevention programmes being implemented in the NHS. Eighteen electronic databases were searched for research published between January 2000 and August 2018. Themes were extracted from 412 studies. The aim was not to be exhaustive, but to signpost to a range of research.

The review found that most research about NHS prevention programmes focused on initiatives in general practices or in the community. Research about prevention in hospital was less common, though some hospital trusts were involved in implementing initiatives in the community. Partnerships with schools, local authorities, the voluntary sector and commercial organisations were also studied.

The prevention programmes implemented in the NHS varied widely in scope and scale, from a single general practice sending targeted letters to encourage people to attend screening through to large multifaceted initiatives implemented across regions as part of randomised controlled trials or nation-wide programmes. Much of the research concentrated on programmes targeting individuals rather than populations and most studies focused on physical rather than mental health.

Impactful approaches

Table 1 illustrates the main types of prevention programmes researched across different sectors of the NHS. There was varying quality evidence that the initiatives labelled in green text were beneficial in some contexts, mainly in terms of supporting behaviour change. The longer-term impact of NHS prevention programmes on health outcomes, use of health and care services and costs remains uncertain. Limited research tracked changes over an extended period and it is difficult to prove that a condition or complication has been prevented.

Table 1: Main prevention initiatives researched in the NHS (not exhaustive)

Programme type	Primary care	Outside hospital	Care in hospital	Cross sector partnership
Approaches targeting individuals	• Education sessions • Physical activity sessions • Videos in waiting rooms • Smoking cessation in pharmacies • Providing pedometers • Posted materials • Prophylactic medications	• Falls prevention • Self-monitoring devices & apps • Text messages • Smoking cessation alongside other services • Incentives • Videos • Education sessions • Motivational interviewing • Websites • Leaflets and posters • One-to-one sessions • Smartphone apps • Telehealth • Work-based initiatives	• Falls prevention • One-to-one education • Diet and exercise advice in mental health services • Booklets and leaflets provided during routine hospital care	• Referrals to commercial weight loss providers • Free gym memberships • Media and online campaigns • Leaflets and websites in libraries • Sessions in schools
Approaches targeting populations / groups	• Universal screening • Screening in various locations • Screening reminders • GP endorsement • Letters with psychological components • Health checks • Disease registers	• Screening promotional campaigns • Self-referral for screening • Screening and health checks in various settings • Peer educators for population groups • Opt out screening in prison	• Cardiovascular risk screening for deaf people • Smoking bans	• Vaccination in various settings • Alcohol licensing rules
Approaches targeting organisations or professionals	• Roles such as pharmacy champions • Electronic decision support tools	• Health trainer roles • Training staff in behaviour change • Work-based programmes and policies	• Training junior doctors in prevention • Healthy food in hospitals	• Community link worker roles

Note: Initiatives are marked in green to indicate that a number of studies suggested some benefits

Enablers and barriers

Research was also available about factors that help and hinder prevention programmes in the NHS. Common enablers were found to be:

Identification and targeting

- having a systematic and individually tailored process for identifying people at risk, encouraging them to seek support or self-care and tracking progress
- targeting messages or screening to population subgroups
- initial approach made by a familiar person such as a GP or link worker

Content and access

- multi-component programmes including support for behavioural change, group sessions and active components such as physical activity or skills building
- using positive messages and simple, non-technical language and visual aids
- widening access by offering prevention via telephone, text, online or outside usual health venues, such as in community venues, sports clubs or pharmacies

Integration and promotion

- partnership working between commissioners and providers across sectors
- national-level rollout or promotion
- training health and care staff and volunteers to support prevention

Commonly recurring barriers to prevention in the NHS included:

Individual-level barriers

- lack of awareness about initiatives or perceived relevance to patients
- cultural and attitudinal issues amongst individuals
- lower uptake from 'harder to reach' groups, reinforcing health inequalities

Programme-level barriers

- programmes not implemented as planned due to practical or training issues
- insufficient staff knowledge, confidence or training, or poor staff attitudes
- lack of follow up of service users to provide ongoing advice and support

System-level issues

- lack of integration into core services or isolation of staff undertaking prevention
- lack of infrastructure and resources to support prevention
- communication issues across services and sectors

Prevention is a priority for the NHS, both to support people's wellbeing and to reduce the burden on health services. A wide range of approaches have been tested in the NHS but there is limited evidence to suggest that one approach is more beneficial than others. Taking steps to address barriers at the level of individuals, programmes and organisations may help to further embed prevention approaches, but targeting fundamental system issues may most support widespread change.

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Acknowledgements

This rapid review was prepared by The Evidence Centre. The aim was to identify the types of prevention approaches most commonly researched in the United Kingdom's National Health Service (NHS). A systematic process was used to identify research, but the rapid review did not seek to be an exhaustive overview of all prevention programmes in the NHS.

Background

Purpose

The UK's National Health Service (NHS) provides care for more than 1.4 million people per day. An aging population, long-term conditions and issues with health and social care staffing mean that the demand for health and care services outweighs the resources available. Many of the people the NHS supports have preventable conditions or symptoms that could be reduced with good self-management and support. The NHS is increasingly seeking to help prevent conditions developing or detect conditions early.

> "It has never been more critical that the health family come together to ensure we are preventing the conditions that pose the greatest threat to our NHS, social care services and ultimately the success of our economy and wealth and health of our people."
>
> Public Health England CEO Duncan Selbie[1]

Prevention was one of the three core themes in the NHS Five Year Forward View[2] and is central to a new long-term plan for the NHS in development.[3] The Faculty of Public Health and the Health Foundation are exploring the role of the NHS in delivering prevention interventions. As part of this work, a rapid review of research was undertaken to explore:

- What are the main **types of prevention work** researched in various NHS settings?
- What are the **benefits** of prevention programmes in the NHS?
- What **helps and hinders** prevention in the NHS?

This document reports on each of the above topics in turn. The review is intended as a starting point for discussion. The aim was not to be exhaustive, but to provide headlines about the type of physical and mental health prevention programmes researched and to signpost to examples of impacts. The review does not seek to make comparisons across different types of programmes.

Scope

For the purposes of the review, the Faculty of Public Health defined prevention as activities where the primary purpose is to avoid disease and risk factors (primary prevention) or the early detection of disease (secondary prevention). Examples include screening, vaccination, diet and exercise programmes, smoking cessation and similar. Initiatives aiming to help manage symptoms or avoid complications in people with an existing condition were not included, nor were initiatives seeking to prevent hospital acquired infections and similar.

Individual staff within the NHS may undertake many informal or ad hoc promotion and prevention activities in their day-to-day work but this was not the focus of the review. The review was interested in NHS teams, organisations or regions implementing a planned prevention activity, such as a programme to encourage people to eat more healthily or exercise.

Identifying research

To identify relevant research, an independent team searched 18 bibliographic databases for empirical research published between January 2000 and August 2018. The databases comprised Ageline, Cumulative Index of Nursing and Allied Health Literature, the Cochrane Library and Controlled Trials Register, EMBASE, ERIC, Google Scholar, Health Systems Evidence, Health Management Information Consortium, PsycINFO, Pubmed / Medline, NHS Evidence, ScienceDirect, Scopus, Social Services Index, Social Sciences Citation Index, Social Work Abstracts, Sociological Abstracts and Web of Science.

Search terms included combinations of prevention, NHS, UK, health promotion, primary prevention, secondary prevention, population health, falls prevention, public health, screening, coaching, education, vaccination, counselling, dental, oral health, nutrition, supplementation, lifestyle, behaviour change, physical activity, health check, smoking cessation, public awareness campaign, risk stratification, media, at risk, barriers, enablers, incentives and synonyms.

Studies about infection prevention, wound prevention, pressure ulcer prevention, sepsis prevention and the prevention of other issues that may be acquired within healthcare facilities were included. Research examining ways to increase uptake of screening programmes or prophylactic medications were included but not studies assessing the effectiveness of different types of screening methods or medications.

Two reviewers independently screened titles and abstracts for relevance. 9,080 abstracts were screened, 3,221 full text papers were reviewed and data were extracted from 412 studies. These studies were used to create typologies of available research and as examples of the types of prevention programmes implemented. The examples were selected based on their ability to illustrate variations in prevention approach, geographic spread and the scale of initiatives. Research of any design and quality was included because the focus was on identifying what was available, not highlighting the best quality studies.

The review used robust searching and screening methods but did not aim to identify every study about prevention in the NHS.

Caveats

It is important to note that searching for published research about prevention in the NHS is not the same as horizon scanning for existing programmes.

Programmes that have been researched and published about may more likely to be well established and funded or on the more 'innovative' end of the spectrum, where publication may be deemed worthwhile. Publication bias may be present, whereby initiatives with positive results are more likely to be published.

Some of the research was undertaken as pilots or proof of concept rather than describing initiatives routinely embedded in the NHS.

These caveats are important because they highlight that the rapid review describes what research has been published about prevention programmes in the NHS, rather than compiling intelligence about what is happening routinely in day-to-day practice.

The review did not attempt to identify whether some prevention approaches were more beneficial than others given the wide variation in the scope of interventions and differences in the quality of research methodologies used.

Types of prevention

The review identified hundreds of studies about prevention programmes in the NHS, either implemented as part of day-to-day activities or in partnership with universities or other partners to test innovative approaches.

Table 2 illustrates trends in the range of preventive programmes researched, with citations signposting to illustrative examples. Citations in green indicate that a study found benefits from the prevention approach. Those in red found evidence that the approach had limited benefit. Citations in black had mixed evidence or insufficient evidence to make a judgement about the impact of the initiative.

Whilst examples of prevention programmes were available across all sectors of the NHS, the most commonly researched programmes were associated with primary care and care in the community. Programmes outside hospital may have been initiated by NHS hospital trusts in some instances, but located outside hospital premises.

Programmes targeting the prevention of physical health conditions were more likely to be researched than those focused on the prevention or early identification of mental health conditions.

Programmes targeting individuals and groups were the most commonly researched. A much smaller number of initiatives targeted organisations or NHS staff.

Approaches targeting individuals most commonly focused on increasing knowledge or awareness and supporting behaviour change. Such programmes were most often researched outside hospital, including in general practice. There were also examples of cross sector work, including partnerships with the voluntary sector and commercial organisations.

Approaches targeting populations tended to focus on identifying people at risk through screening. Such initiatives were most prevalent in primary care and community services.

Approaches targeting organisations and staff were most likely in community settings and tended to focus on staff training or policies.

The initiatives most frequently studied included screening and health checks, one-to-one advice, group education, telephone support, text messages, leaflets, posters, videos, staff training, physical activity sessions and smoking cessation.

Table 2: Types of prevention programmes researched in the NHS

Programme type	Primary care	Outside hospital	Care in hospital	Cross sector partnership
Approaches targeting individuals				
Increasing knowledge	• Education sessions[4,5] • Videos in GP waiting rooms[6] • Celebration card to promote vaccinations[7]	• Videos[8] • Monitoring technology[9] • Websites[10,11,12] • Media campaigns[13,14] • Education sessions[15,16,17] • Leaflets and posters[18,19,20]	• One-to-one education	• Public awareness campaigns[21] • Leaflets and websites in libraries[22] • Sessions in schools[23,24]
Supporting behaviour change	• Group physical activity and weight management programmes[25,26,27] • Smoking cessation in community pharmacies[28,29] • Providing pedometers[30]	• Physical activity during smoking cessation sessions[31,32,33,34] • Smoking cessation during screening or other services[35] • Telehealth[36,37,38,39] • Text messages[40,41] • Smartphone apps[42] • Incentives[43,44,45,46] • Group sessions[47,48,49] • Work-based initiatives[50,51,52] • Motivational interviewing[53,54,55] • One-to-one planning or support e.g. dietician[56,57,58,59] • Peer support and training[60,61] • Making every contact count[62] • Websites[63] • Smoking cessation targeting specific population groups[64,65] • Smartphone apps[66] • Self-help leaflets and booklets[67]	• Falls prevention[68] • Smoking cessation referrals in hospital[69] • Providing booklets at routine hospital appointments[70] • Diet and exercise advice in mental health services[71]	• Referrals to commercial weight loss providers[72] • Free gym memberships[73] • Online ads for smoking cessation support[74] • Referrals to local authority programmes[75]
Reducing risk factors	• Prophylactic medications	• Work-based sickness prevention[76] • Prophylactic and cessation medications[77,78,79]	• Immunotherapy for those at risk[80]	

Programme type	Primary care	Outside hospital	Care in hospital	Cross sector partnership
Approaches targeting populations				
Identifying risk	• Health checks[81] • Universal screening[82,83,84] • Postal or text message reminders[85,86,87] • GP endorsement of screening[88] • Letters with psychological components to promote screening[89,90] • Infection screening in pharmacies[91] • Screening in general practice appointments[92] • Reimbursing general practices for prevention[93] • Disease registers[94]	• Health checks in the community promoted by lay health trainers[95] • Promotional campaigns for screening[96] • Self-referral for screening[97] • Health checks in community settings[98] • Peer educators promoting screening at homeless hostels[99] • Opt out screening[100,101] • Universal screening for alcohol issues at sexual health clinics[102]	• Cardiovascular risk screening for deaf people[103]	
Reducing risk	• Vaccination in pharmacies[104]	• Falls prevention education and exercise[105,106,107,108,109] • Dental education and support[110]	• Fracture prevention[111] • Dental caries assessment in hospital[112]	• Vaccination in alcohol and drug centres[113] • Schools-based dental health promotion[114] and screening[115]
Targeting availability			• Smoking bans in mental health hospitals[116,117]	• Licensing premises serving alcohol[118]

Programme type	Primary care	Outside hospital	Care in hospital	Cross sector partnership
Approaches targeting organisations / professionals				
Staff types / roles	• Pharmacy champions[119]	• Community outreach workers / health trainers / lifestyle advisors[120,121,122]		• Community link worker[123] • Embedding health psychologists alongside public health[124]
Staff training		• Training staff to support behaviour change [125,126,127,128,129,130,131]	• Training junior doctors[132]	
Organisational policies		• Workplace based mental wellbeing policies and psychological therapies[133]		
Reviewing provision / contracts		• Pay for outcomes commissioning of smoking cessation services[134]	• Healthy food in hospitals[135]	
Tools	• Electronic decision support tools to encourage secondary screening[136]		• Text messages for staff health promotion[137]	

Note: Citations in green indicate that the study showed some evidence of benefit. Those coloured red found no benefit and those coloured black had mixed benefits or insufficient data to draw conclusions.

The following sections provide examples of prevention programmes in general practice, other primary care and community settings outside hospital, in hospital and involving partnerships across sectors. The aim is to signpost readers to examples of the range of prevention initiatives researched rather than to suggest that the examples presented here are more worthwhile or impactful than others.

Examples of prevention in general practice

Health checks

The review identified a number of examples of nationally endorsed NHS prevention programmes in general practice, including risk stratification and screening. One of the most commonly researched was the 'Health Check' programme introduced to England and Wales in 2009 and also running in Scotland. This programme invites people aged 40 plus to take part in screening to identify their risk of heart disease, diabetes and chronic kidney disease and then provides lifestyle advice based on their results.

Analysis of four years' worth of data from 655 general practices across England found that the coverage of Health Checks was lower than expected and that attendance at checks was highest amongst older people. Overall, 19% of people identified as being at high cardiovascular disease risk (20% or more 10-year risk) were newly prescribed statins and 9% were newly prescribed antihypertensive therapy after taking part in a Check.[138]

Another study reported that over a five-year period in one city, 30% of people attending Health Checks were diagnosed with Type 2 diabetes, hypertension, chronic kidney disease, high risk of Type 2 diabetes or high risk of cardiovascular disease. Half of the people diagnosed with diabetes were prescribed medication and six out of ten at high risk of cardiovascular disease were prescribed statins.[139]

However, whilst the Health Checks programme has been found to identify people at risk, less research has monitored the intermediate and long-term outcomes following intervention.[140] Many studies predict the number of cardiovascular events that Health Checks may prevent, but do not undertake follow-up comparisons between those that attended a Check and those that did not.[141]

A systematic review of 20 studies of NHS Health Checks in England found that service users consistently reported high levels of satisfaction, with more than 80% saying that they had benefited from an NHS Health Check. Some said that the check was a wake-up call and that they had gone on to make lifestyle changes. However, others said they had felt confused, received only simplistic lifestyle advice or felt that the feedback was not personalised. The researchers suggested a need for better clarity about the aims of the programme within promotional material, more proactive support for lifestyle change and improved communication about risk and behaviour change.[142]

An example of a study of this nature involved interviewing service users and health professionals from eight general practices in England. Some participants said that NHS Health Checks helped them feel reassured and reinforced healthy lifestyle choices. However others were confused or frustrated about how the results and advice were communicated and said they did not know the implications of their results. Health professionals had concerns about whether some staff had the appropriate skills to communicate risk and lifestyle information. The researchers concluded that it was important that all staff involved in prevention have sufficient training.[143]

One of the conclusions drawn by a number of studies is that more detailed lifestyle advice and support should be available as part of Health Checks. However one study found that this may have limited impact. A randomised trial with 38 general practices compared the NHS Health Check service alone versus additional lifestyle support. This included referral to a lifestyle coach and free sessions as needed to support weight management, physical activity, healthy eating and positive thinking. After one year, the average population cardiovascular risk had decreased in both groups (from about 33% to 29%), as had the prevalence of high blood pressure, smoking and high cholesterol. There was no difference between groups, meaning that additional healthy lifestyle support had few added benefits.[144]

A similar Health Check programme in Scotland was found to have very minor benefits for cardiovascular mortality, hospitalisations and prescribing of cardiovascular drugs.[145]

Screening

Another commonly researched prevention activity in general practice is disease screening programmes, particularly for cancer.

Research has described how general practices in England and Scotland tested various approaches for increasing the uptake of cervical screening. Initiatives included sending leaflets before an invitation to screening, access to online booking, self-sampling kits sent unrequested or offered on request, providing a timed appointment and access to a nurse navigator. Compared to control practices, a pre-invitation leaflet or nurse navigator did not increase screening uptake but providing a self-screening kit or a timed appointment did. Both timed appointments and unsolicited self-sampling kits were likely to be cost effective, with a cost per quality adjusted life year gained of £7,593 and £8,434 respectively.[146]

Two GP practices in England explored the feasibility of routinely screening foreign-born adults from a country with a high prevalence of tuberculosis who had lived in the UK for ten years or less. When people registered with the practice they were invited to have a blood test that screened for HIV, latent tuberculosis and hepatitis B and C. The approach was found to be feasible but fewer than expected recent immigrants sought to register with a practice. None of those identified with infections went on to complete treatment. The researchers suggested that until GP registration is more actively promoted for new migrants, the one-stop blood test approach might be better implemented in A&E departments where migrants may be more likely to attend.[147]

In another study, 15 general practices in England used a simple screening tool facilitated by nurses to identify women aged 65 to 80 years at high risk of osteoporotic vertebral fractures. All women identified as being at high risk were offered radiographs. Compared to a control group, those screened were twice as likely to be prescribed osteoporosis medications at six months.[148]

Individual support

Another common prevention approach in general practice involves providing individual support to raise awareness or support behaviours change.

An initiative delivered by non-NHS staff in general practices sought to reduce the risk of diabetes through weight loss counselling and physical activity. People with a high body mass index but without diabetes or heart disease received either information leaflets or individual behavioural counselling using motivational interviewing. The counselling was undertaken in practices by people recruited from the local community. Those who received support from trained lay people were more likely to achieve weight loss targets but not physical activity targets compared to those who received leaflets. The researchers concluded that short-term weight loss which is clinically meaningful for reducing diabetes risk is achievable in primary care, without excessive use of NHS resources.[149]

Group education

A number of studies have explored the benefits of group sessions in general practice to target people at risk of certain conditions or to support secondary prevention. For example, a programme of structured education to prevent Type 2 diabetes in people with impaired glucose regulation was found to work well in a multi-ethnic population. Group education in primary care was associated with healthier eating patterns, improved health beliefs and improved motivation and empowerment.[150]

Other general practices in England compared usual weight loss support from a practice nurse (four one-to-one sessions over a four week period) with more intensive support combining dietary advice, physical activity and self-monitoring delivered over eight weekly group sessions and followed by 10 monthly group maintenance sessions. More intensive group support was associated with increased numbers of people losing weight and increased amount of weight lost over a year-long period. The incremental cost-effectiveness ratio for group support over usual nurse care was £7,742 per quality adjusted life year gained.[151]

A similar initiative involved a structured education and self-management weight management programme for people who were severely obese or obese with comorbidities. More than 800 people were invited to take part in monthly sessions for six months. About half of those enrolled completed the programme (56%). On average, participants lost 4kg of weight during six months, with those who completed the programme losing more than those who did not.[152]

Another example comes from 44 general practices in England that tested prevention education sessions for people with pre-diabetes. Patients were invited to attend a six hour group education programme targeting lifestyle and behaviour change with an annual refresher course and regular telephone follow-up. Participants were followed up for three years. Compared to control practices, the initiative was associated with improvements in blood sugar levels, cholesterol and activity levels. There was no significant impact on progression to develop Type 2 diabetes within the timeframe. The researchers concluded that a relatively inexpensive and practical diabetes prevention programme may be worth exploring further.[153]

Online tools

There are also examples of prevention initiatives using the internet, text messages or other technologies.

In one study general practices sent parents either a leaflet, link to an online decision support tool or standard invitation to vaccinate their children against measles, mumps and rubella. Those offered the online decision aid had the highest rates of vaccination uptake. The online tool cost £9 less per person than usual practice and £7 less than a leaflet.[154]

Text messages

In England, general practices sent text messages to encourage healthy lifestyles in obese pregnant women. Women received two text messages per day, had four appointments with a midwife about diet and physical activity goal setting, and used self-monitoring diaries. It was feasible to send text messages but no robust data were available about outcomes.[155]

Multicomponent interventions

A small number of studies have reported on multifaceted interventions implemented in general practice.

For instance an economic evaluation examined the cost of a multicomponent physical activity programme. Components included motivational interviewing, goal setting, written resources and follow-up support. The programme cost £53 per completing participant in centres that used opportunistic referrals and £191 at sites using disease registers to decide who to target. The proportion of people completing was higher in sites that used disease registers to target recruitment. The incremental cost of encouraging one sedentary adult to do 150 minutes of moderate physical activity per week was £887 more in practices using disease registers compared to opportunistic screening.[156] The researchers concluded that disease register screening is more costly than opportunistic patient recruitment but was also associated with a higher completion rate and greater behavioural change.

Reimbursement

There is some evidence that reimbursing general practices for routinely implementing prevention advice increases the provision of such advice. For example, reimbursement through the Quality and Outcomes Framework was altered to pay GPs to offer all smokers referral for behavioural support and cessation medication at least once every two years. In the year after implementation, the proportion of patients offered advice increased by 20% compared to the past eight years. Referrals to stop smoking services increased by 39%. There was no significant change in the prescription of smoking cessation medication. It is uncertain whether this financial reimbursement for practices led to a greater number of people quitting.[157]

Examples of prevention outside hospital

Postal initiatives

Perhaps the largest proportion of research about prevention programmes in the NHS focuses on activities delivered in the community: outside general practice and outside hospital. These types of interventions may take place in (non-general practice) primary care settings, people's homes or community venues. They may be implemented in partnership with hospital trusts or general practices, but not take place within these buildings. This section thus provides examples based on the location of service provision rather than the sector involved in provision.

Various prevention programmes include posted invitations or information. In Wales, people from a defined geographic area aged between 45 and 64 years without coronary heart disease were posted a 'Many Happy Returns' birthday-style card inviting them to attend cardiovascular screening. The card included a number of self-screening questions such as 'If you put the enclosed string around your waist, is it too short?' The card included an 80cm piece of string for women or a 90cm piece of string for men. Those who attended the assessment were referred onward to a GP, dietician, physical activity scheme or smoking cessation services if appropriate. At one year follow-up there was a significant reduction in cardiovascular risk score. In total, 1,141 people would need to take part to prevent each year of coronary heart disease.[158]

In England, NHS stop smoking services collaborated with GPs to send a personalised tailored letter inviting smokers to attend a taster session for smoking cessation services. People who received personalised letters were more likely to attend NHS stop smoking services and more likely to have stopped smoking at six months compared to a control group (9% versus 6%).[159] Compared with a generic letter from a GP advising people to contact their local stop smoking service, the incremental cost per quality adjusted life year gained was £59,401 over a six month period, meaning tailored postal messages were unlikely to be cost-effective in the short-term. However, when costs were estimated over a life-time, tailored postal messages and taster sessions were likely to become more cost-effective.[160]

Elsewhere in England stop smoking services posted people who had quit educational self-help booklets to help them remain abstinent. Compared to a control group, the booklets did not prolong abstinence.[161]

Online support

Online information and support has been tested by various NHS services, including mental health services. For instance, an eight-session computer-administered cognitive-behavioural therapy programme was found to be more useful for adolescents with low mood or depression than self-help websites.[162]

However not all online prevention initiatives have been successful. An anonymous online community was set up to facilitate communication between young people who self-harm and professionals. The aim was to prevent escalation of self-harming behaviours. Young people appeared keen to share their experiences with health professionals and supported each other during emotional crises. However health professionals did not actively participate in the forums, citing barriers such as lack of confidence, workload, concerns about private-professional boundaries and accountability issues.[163]

Online initiatives have also been used to raise awareness regarding physical health. Three sexual health clinics in England offered men tablet computers to access a safer sex website whilst in the waiting room. In interviews men and clinic staff said that digital interventions were useful, especially if endorsed by the NHS. However they said that websites and similar should supplement rather than replace face-to-face care. Men did not look at the tablet computers themselves without being directed to do so. There were technical issues with IT access in the NHS waiting rooms.[164]

Text messages

There is varying evidence about the impacts of sending text messages to support prevention and health promotion. Antenatal services in England sent text messages about smoking cessation to pregnant women. The text messages were automated but individually tailored and interactive. Compared to a group receiving only a smoking cessation leaflet, those receiving text messages were more likely to have abstained from smoking for four weeks, though the proportions were small (5% text messages versus 2% others). The incremental cost per woman who stopped smoking was £134.[165]

Other research found that sending text messages to smokers doubled the rate of people quitting at six months. Text messages were found to be cost-effective. The cost of text-based support was £16,120 per 1,000 enrolled smokers. Text messages were associated with an estimated 58 extra quitters at six months, equating to a cost of £278 per person who stopped smoking. When including future NHS costs saved, it was estimated that text messages were cost-saving. This approach was thought to gain 0.5 quality adjusted life years per quitter or 29 quality adjusted life years per 1,000 smokers.[166]

In person one-to-ones

Much research describes one-to-one in-person prevention initiatives outside hospital. Such initiatives have widely varying scope and target audiences.

Some such work has focused on mental health. For instance, five mental health trusts tested a modular health promotion programme to reduce cardiovascular risk among people with psychosis. Community care coordinators were trained and supervised to deliver the programme one-to-one with their current patients. After 15 months, people receiving care from the trained coordinators had no better physical or mental health outcomes than those with coordinators that did not receive training. However people who received a large amount of health promotion support had a greater reduction in waist circumference than the control group.[167]

In England, volunteers aged 50 plus taught people aged over 65 how to use the internet via multiple one-to-one visits in older people's homes or six small group sessions. Using the internet increased the number of contacts older people had with friends and family, reduced loneliness and improved mental wellbeing.[168]

Other one-to-one prevention programmes have targeted physical health. For example, people aged 60 plus who called an ambulance after a fall but were not taken to hospital were referred to community fall prevention services. Compared to usual care, one-to-one community falls prevention was associated with a £1,551 per person reduction in NHS and social care costs per year. People receiving individual falls service support had an average of five fewer falls over a year.[169]

'Health trainers' or 'health champions' have been implemented in England to provide one-to-one peer-support to people wanting to adopt a healthier lifestyle. The trainers often work in community settings and aim to target 'hard to reach' groups. A study tracking the implementation of this model in six locations found that the approach moved away from its original focus as trainers were adopted into existing NHS structures.

> *"The health trainer services have become more 'medicalised' over time, and in doing so, the original theory underpinning the programme has been threatened. The paradox is that policymakers and practitioners recognise the need to have a different service model for traditional NHS services if they want hard-to-reach populations to engage in preventive actions as a first step to redress health inequalities. The long-term sustainability of any new service model, however, depends on its aligning with the established medical system's (i.e., the NHS's) characteristics."*[170]

Another study explored Bangladeshi and Pakistani male outreach workers helping men stop smoking. Outreach workers promoted NHS smoking cessation services in the community using word of mouth, in health service premises, in local businesses and at community events. They emphasised reasons for stopping smoking such as health effects, financial implications and the impact of smoking on men's families. Many smokers agreed to be referred to NHS smoking cessation services but few attended.[171] The initiative cost £8,500 per quality adjusted life year gained.[172]

In England, 12 community pharmacies worked with smoking cessation advisors to refer people to NHS stop smoking services. After training, these pharmacies were more likely than others to refer people to stop smoking services. Smokers referred from these pharmacies were more likely than those from other pharmacies to stop smoking, though only small numbers were involved.[173]

In England, older women undergoing breast cancer screening were provided with one-to-one education during their appointment to encourage them to attend screening regularly. Health professionals in four breast cancer screening services provided education routinely to women aged about 70. After one year, 25% of women that attended the pilot services were breast cancer aware compared with 4% in comparison services.[174] The researchers concluded that this may be a feasible way to increase the number of women looking out for symptoms. However it was reliant on women attending screening services in the first place. It may be even more effective if education was widely provided outside screening services.

Nine trusts in England and one in Northern Ireland took part in a programme to prevent falls in older people. Podiatrists provided one-to-one advice, foot and ankle strengthening exercises, foot orthoses and special footwear if needed. Compared to usual care of a leaflet, the initiative was associated with fewer falls. It cost an extra £252 per participant than usual care.[175]

In England, the value of including follow-up sessions in one-to-one prevention programmes was tested. People aged 40-64 years living in a deprived part of England who had increased their physical activity levels following a brief intervention were offered two sessions of motivational interviewing by telephone or face-to-face six months later. Face-to-face sessions were more popular than telephone follow-up, but there was limited impact on physical activity levels. Neither approach was cost-effective.[176]

Telephone support

Researchers from England examined the cost-effectiveness of providing telephone support to primary care patients identified as at high risk of cardiovascular disease. Compared to those receiving usual care, telehealth was associated with an average cost of £138 per person. The incremental cost effectiveness ratio was £10,859. The researchers concluded that telephone support was likely to be cost-effective.[177]

Another study found the telephone lifestyle support was just as effective as face-to-face support for people at risk of developing Type 2 diabetes.[178]

In Scotland, telephone reminders doubled attendance at breast screening amongst women from lower socio-demographic areas who had not attended their appointment compared with a reminder letter alone.[179]

Group sessions

Research has also explored the value of group education, support or activity sessions, both for physical and mental health.[180]

For instance, 'men's shed' initiatives have been found to improve social support and reduce isolation, which may have protective effects on mental health. These initiatives typically involve men meeting in an outbuilding or community venue, often to take part in practical activities as well as social and educational events. Physical and mental health are often discussed. Sometimes the target group is older men but programmes where older and younger men meet together have also been tested. Men have reported social, physical and mental health benefits from taking part in men's shed initiatives.[181,182] However a review of 24 reports and articles (not all from the UK) found that whilst these initiatives are often described positively, success is not usually measured robustly and factors that contribute to success have not been well studied.[183]

Another study found that creative arts projects can reduce social isolation and improve self-esteem in older people living in rural areas. Older people said they made friends while trying out a new activity.[184] Such initiatives have been tested as a way to prevent isolation and suicide.

Another example is a manual-based eight session initiative to support the unpaid carers of people with dementia. The initiative was developed by mental health and neurological outpatient dementia services in two parts of England and delivered by psychology graduates. Small improvements were noted in carer mental wellbeing and quality of life years gained.[185] There was no difference in costs compared to those not taking part.

In two UK areas people aged 65 or older took part in 'Lifestyle Matters', a preventive intervention designed to improve the mental wellbeing of people at risk of decline. The programme involved weekly group sessions plus ad hoc one-to-one sessions over four months. At six months there was little difference in mental health scores compared to a control group. The researchers suggested that the programme was not cost-effective. The participants were generally mentally well at baseline so the researchers suggested there was a need for more effective targeting to identify those at risk of decline.[186]

The NHS provides stop smoking services that offer free behavioural support and medication. Analysis of one-year outcomes in nine parts of England found the carbon monoxide validated quit rate was 8%.[187] People supported by advisors whose main role was providing stop smoking support were more likely to quit long-term than those whose advisors had a generalist role in general practices or pharmacies. Those who took part in group support were three times more likely to achieve abstinence than those receiving one-to-one support.[188]

Another study found that group education to support secondary prevention in 11 to 16 year olds with Type 1 diabetes was associated with an incremental cost-effectiveness ratio of £23,688, suggesting that it may not be cost-effective.[189]

Physical activity programmes have also been researched. For instance, people aged 65 years or older were randomised to take part in weekly exercise classes in community venues plus encouraged walking; home exercises supported by peer mentors plus encouraged walking, or usual care for 24 weeks. Both initiatives appeared to be safe. Providing exercise classes in community venues increased self-reported physical activity levels one year after the intervention but was more expensive than home-based exercise delivered with peer mentors (£269 versus £88 per person in London). The cost per extra person exercising at or above the target level was £1,740.[190]

These examples show that there are many different types of group sessions to support prevention in the community and that their impacts are equally mixed.

Falls prevention

Many NHS services offer falls prevention initiatives, including those based in people's homes. For example, two areas of England offered a home-based intervention to support older people with mild frailty. The aim was to prevent the worsening of symptoms or to reverse the level of frailty. The programme comprised three to six sessions with a support worker trained in behaviour change techniques, communication skills, exercise, nutrition and mood. Participants worked towards goals they set themselves. In a randomised trial, the programme was found to be feasible and acceptable to participants and cost the NHS about £307 per person. Compared to a control group, after six months those who took part had better functioning, reduced psychological distress and increased functional life-years. The researchers suggested that frailty prevention services should be personalised and include multiple domains, particularly socialising and mobility. They suggested that such programmes can be delivered by trained non-specialists.[191]

Another home-based falls prevention programme was led by occupational therapists. Sight impaired people aged 65 or older received social visits, home safety visits alone or home safety plus home exercise visits. Over a six-month period home safety visits alone cost £249 per person and home safety visits plus exercise visits cost £674 per person. There were no sustained improvements in walking activity or falls, though the study may have been too small to detect a difference. The researchers concluded that it is feasible and acceptable for an occupational therapist to deliver support in people's homes but the outcomes are uncertain.[192]

Another falls prevention programme was offered at a day hospital. GPs identified people aged 70 or older living in the community and at risk of falling. The programme included physiotherapy, occupational therapy, nurse support, medical review and referral to other specialists. Compared with those who received a falls prevention leaflet alone, the average falls rate was slightly lower. The cost was £578 per person. The estimated incremental cost-effectiveness ration was £3,320 per fall averted.[193]

Self-monitoring

Elsewhere, a home blood pressure monitor was tested for detecting irregular pulse which may suggest atrial fibrillation in people with high blood pressure. The device was found to detect atrial fibrillation more accurately than pulse palpation. It was estimated that using the device would reduce electrocardiogram referrals and prevent strokes, but incur anticoagulation therapy costs. The per use saving was calculated as £2.98 for asymptomatic patients aged 65-74 years and £4.26 for those aged 75-84 years. However the research is from clinical trials and models rather than real world application.[194]

Dental care

In Northern Ireland, NHS dental practices tested an intervention to prevent dental caries in children aged two to three years. Parents were given a toothbrush, toothpaste containing fluoride, varnish containing fluoride and standardised evidence-based prevention advice at six monthly intervals for three years. A control group received dental advice alone. On average, over a three-year period children in the intervention group had seven teeth surfaces with caries compared to 10 in the control group. The average direct dental care cost was £156 for the intervention group and £48 for the control group over 3 years. The average cost per tooth surface with avoided caries was estimated at £251. The researchers suggested that the overall size of the effect was small and may not be cost-effective.[195]

Financial incentives

A small number of studies have examined whether offering people financial incentives increases interest in and uptake of various prevention approaches.

In Scotland, women were offered financial incentives to stop smoking during pregnancy. In a randomised trial, one group received usual care which comprised offering a face-to-face appointment to discuss smoking cessation followed by free nicotine replacement therapy for 10 weeks and four weekly telephone calls for those who set a quit date. Another group received usual care plus up to £400 worth of shopping vouchers: £50 for attending a face-to-face appointment and setting a quit date, £50 if exhaled carbon monoxide confirmed quitting four weeks after the quit date, £100 for continued absence of exhaled carbon monoxide after 12 weeks and £200 for validated absence of exhaled carbon monoxide at 34-38 weeks' gestation. Those receiving the vouchers were more likely to stop smoking (23% versus 9%). Seven women needed to be offered incentives to achieve one extra quitter. There were no harms documented from offering incentives. The overall cost was not reported.[196] Those from more affluent areas were more likely to stop smoking. The researchers concluded that financial incentives encouraged attendance at advice sessions but worked less well for people on the lowest incomes who were reliant on the financial reward rather than seeing it as part of a broader programme.[197]

Varying locations

Some NHS services have tested offering prevention programmes in venues that may not traditionally be associated with these services.

For instance, in England people attending smoking cessation services were screened for mental health issues. The prevalence of reported mental health issues rose from less than 1% prior to the initiative to nearly 12% afterwards. The researchers suggested that using standard procedures to record mental health issues helped to detect comorbidity and tailor support appropriately.[198]

About half of people undergoing opioid substitution treatment have a diagnosed chronic condition, such as liver or respiratory disease, which puts them at higher risk of infection. However this group may be hard to reach with tradition influenza vaccination programmes. Drug and Alcohol Services in one part of England provided seasonal influenza vaccination to heroin-dependent service users. This was successful, with 60% of people offered the vaccination services accepting it. Service user feedback supported the provision of seasonal influenza vaccination through Drug and Alcohol Services.[199]

Workplace-based initiatives have also been tried in the NHS to support prevention and health promotion amongst NHS staff. An NHS organisation in England implemented lunchtime walks, motivational interviewing, support sessions from dieticians, smoking cessation advisors, physical activity, occupational therapy sessions and discount vouchers for sports clubs and gyms for its staff. About one third of participants pledged to eat more healthily and two fifths to undertake more physical activity. The extent to which any changes were implemented or maintained was not reported.[200]

A high level of sedentary behaviour (sitting) is a risk factor for poor health. NHS office-based workers in another part of England tested a workplace programme based on the Behaviour Change Wheel. The intervention included environmental, organisational and individual level barriers. A Darma cushion was found to be useful for self-monitoring sitting. Developing the initiative in collaboration with workers helped to ensure relevance for them and their work situation.[201] The impacts of this initiative are currently being tested.

Promotional campaigns

Promotional campaigns have been run in association with the NHS and partners. In Scotland for instance, NHS smoking cessation television campaigns run between 2003 and 2012 were associated with an increase in calls to a stop smoking telephone helpline but not the volume of nicotine replacement therapy prescribed. The impact on calls to the helpline occurred within one month of broadcast and was sustained for at least six months.[202]

In England, Public Health England's 'blood in pee' mass media campaign was associated with increased referrals by a health professional for screening but no significant change in cancer diagnoses across a large catchment area. The researchers suggested that mass media campaigns are expensive and require significant planning and implementation, perhaps for relatively little gain.[203]

There is mixed evidence about the benefits of online advertising. One study described how online advertisements for cervical screening were timed to fit in with a storyline in a soap opera. The cost of setting up a website and running Google AdWords to encourage women to visit the site was £1,320. This equated to £1.88 per person viewing the page. There was minimal impact on screening rates.[204]

However online advertisements on Facebook and Google for smoking cessation services for pregnant women were found to be feasible. The average cost per woman who enrolled in smoking cessation services was £25, with an average cost of £736 per woman who stopped smoking.[205]

Examples of prevention in hospital

Whilst feedback from hospital patients supports the potential for risk factor screening and health promotion in hospital,[206,207] relatively little research has explored prevention or health promotion initiatives in NHS hospitals.

There are many examples of initiatives to prevent hospital acquired infections or harms,[208] but fewer studies of broader health promotion. Audits suggest that hospital records about the health promotion advice provided during hospitalisation does not match with patients' perceptions of what happened during their hospital stay and that there may be a need for more focus on prevention in a hospital context.[209]

Staff training

Some research is available about training hospital staff to support prevention and health promotion.

About one in four adults are at risk of malnutrition when screened upon admission to a UK hospital. Three hospitals in England trained junior doctors to help increase nutrition awareness among other hospital professionals. Each junior doctor recruited three additional team members to attend an intensive training weekend about nutrition, change management and leadership. The newly trained teams then ran nutrition awareness weeks in their hospitals. There was a significant increase in knowledge, attitudes and health promotion practices amongst hospital staff four months after the intervention.[210]

Screening

Hospitals have used various screening approaches to support prevention. For instance, one mental health trust in England assessed people's smoking status when they were admitted to an inpatient ward. A new electronic health form was introduced to help identify smokers and refer them for support. This doubled the documentation of smoking status, cessation advice provided and the offer of nicotine replacement therapy or referral.[211]

Health promotion advice

A hospital in England tested the provision of smoking cessation advice for people suspected of head or neck cancer. Consultants provided scripted advice to people referred to a rapid access clinic for cancer diagnosis. It was hypothesised that referral for suspected cancers may be a 'teachable moment' where people may be open to considering change. Eight out of ten smokers attending the clinic accepted a referral to stop smoking services and one third reported stopping smoking, at least temporarily.[212]

Another hospital in England implemented a behaviour change initiative to promote healthy lifestyles. The initiative was delivered by a health psychologist and involved personalised goal setting, psychological skills development, motivational support and referral to community services. After four weeks, the initiative was associated with improvements in self-efficacy, health and wellbeing scores and achievement of lifestyle goals. Six out of ten participants accepted referrals to other services.[213]

Elsewhere, 11 hospitals introduced orthogeriatrician-led or nurse-led fracture liaison services to support secondary prevention of fractures in hospital and in partnership with general practices. Analysis found that both nurse-led and consultant-led initiatives were associated with reductions in mortality rates and were cost-effective. Orthogeriatrician-led services were most cost-effective.[214]

Food in hospitals

Three hospitals in England took part in a 'Food for Life' programme aiming to introduce more healthy and sustainable food into hospitals. The programme was run in association with a third sector organisation. Thinking about sustainable and healthy food was well received. Participants suggested that adopting this approach had the scope to improve the quality of food in hospital settings and provided drivers and benchmarks for use in contracting to help drive up food standards. Impacts on patient wellbeing were not measured. Whilst this is not a 'traditional' prevention programme it sought to role model healthy eating for people while they were in hospital and targeted organisations to improve their processes to support health and secondary prevention.[215]

Falls prevention

Some hospitals have described prevention initiatives aiming to reduce falls in hospital and when people return home after hospital.

For example, one hospital in England assigned a dedicated healthcare assistant, trained by the falls team, to undertake a monthly spot check audit looking at preventative measures for all inpatients at every ward. Results were fed back monthly to ward managers, ward falls liaison nurses, doctors, therapists and pharmacy staff on each ward to discuss at ward governance meetings. Falls nurse practitioners provided ward teams with prevention training. There was an improvement in adherence to falls prevention guidelines, but the number of falls did not decrease.[216]

Other studies have found similar benefits in processes from implementing evidence-based falls prevention bundles, but not necessarily improvements in injuries incurred through falls.[217]

Another hospital in England tested bed and bedside chair sensors to prevent falls while people were in hospital. The falls rate was about 9 per 1,000 bed days in those using sensors compared to about 10 per 1,000 bed days in others. The average cost per patient was £7,199 for the sensor group versus £6,400 for others, with no difference in quality of life years gained per person. The researchers suggested that, used alone, bed and bedside chair sensors do not prevent falls in hospital or reduce the time to first bedside fall. Nor are they cost effective.[218]

Examples of partnerships for prevention

Commercial programmes

Examples are also available of the NHS working with commercial, statutory or other partners on prevention initiatives.

Studies of the NHS working with commercial weight loss programmes tend to have positive outcomes. One NHS referral scheme gave people vouchers to attend 12 Weight Watchers meetings. An audit of more than 29,000 records found the median weight loss was 2.8kg. One third of people referred lost 5% or more of their initial weight.[219]

In another study, people who met the criteria for primary care obesity management treatment chose either Weight Watchers, Rosemary Conley Diet and Fitness Clubs, Slimming World or a NHS group programme lasting three months. The commercial weight management programmes all achieved about the same level of weight loss, which was more than in the NHS programme at three and 12-month follow up.[220]

Statutory organisations

Research has also explored NHS partnerships with other statutory services.

In Scotland the NHS and Fire and Rescue Service worked together to develop a link worker programme. The link worker provided risk assessments to adults that NHS community health teams identified as being at high risk of fires. The aim was to reduce the risk of fires and the health costs associated with this. Changes in the risk assessment score after the link worker visit were used to estimate the potential fires avoided. The programme cost £55 per person and was estimated to save the equivalent of £286 per participant, providing net savings of £231 per person.[221]

In a partnership programme between the NHS and a local authority, one borough in England offered a free four-month leisure centre membership to people receiving state benefits who were physically inactive. At four month follow-up physical activity had increased compared to a control group. The cost was £67 per person, with an increase in one day in full health per person. The incremental cost per quality adjusted life years gained was £20,347, assuming the benefit lasted for at least one year. If mental health gain was omitted from the analysis the incremental cost per quality adjusted life year gained was almost £1.5 million, meaning it would not be cost-effective.[222]

Some research suggests that prevention programmes that target system-wide factors can be effective. Eight NHS hospital trusts and 12 local authority areas in England collaborated to improve referrals of pregnant women to stop smoking services. The initiative included training healthcare staff and smoking cessation staff in behaviour change and referral principles, providing carbon monoxide monitors and supporting materials, universal carbon monoxide monitoring with routine opt out referral to smoking cessation services and an explicit referral pathway and follow up protocol. The rate of referrals to smoking cessation services doubled after the programme was introduced, with high numbers of women going on to stop smoking. The additional cost per person was £31 and the incremental cost per additional quitter was £952. Thirty-one pregnant women needed to take part for each additional quitter. [223]

In Scotland NHS and public health practitioners were involved in the licensing of premises serving alcohol, with a view to reducing population-level alcohol consumption. Interviews with public health teams suggested that others involved in licensing did not always accept public health as a relevant goal of licensing. The evidence they presented to licensing boards was not always understood or valued. The researchers concluded that there are significant political challenges to orientating licensing boards towards decisions to reduce the availability of alcohol.[224]

Schools

NHS teams in Scotland worked with a primary school to promote walking to school. Active travel was incorporated into the curriculum and interactive travel planning resources were provided for use at home. Compared to a school that was not taking part, those in the intervention school were more likely to walk or cycle to school and less likely to use inactive modes of transport.[225]

In another programme, schools partnered with dentists to facilitate peer support and three sessions of peer-led training about oral health. At six-monthly follow-up, adolescents in the intervention group had lower dental plaque levels than a control group. The effect did not last to 12 months.[226]

In a deprived area of England, mobile dental units visit schools to provide screening, apply fluoride varnish twice during the school year and encourage families to visit dental services. There was good uptake and most of the children had not visited a dentist before.[227,228]

Voluntary groups

Whilst partnerships with the voluntary sector may be increasingly common in practice, research about such prevention programmes is relatively sparse.

In one example, the NHS worked with a Bangladeshi third sector women's group to test the value of a video to increase knowledge about cardiovascular risk prevention. About 25% of people born in Bangladesh who die in England and Wales die of coronary artery disease. A video with information about risk factors and lifestyle advice was screened at a regularly occurring women's group session. The video was in Bengali. It was well received and women said they intended to make some behaviour changes. No follow-up was reported.[229] The researchers suggested that videos are a way to provide culturally appropriate health education to minority ethnic groups and can be screened in clinics, local venues and via local media.

Sports clubs

In Scotland, Premier League football clubs supported a weight management programme for overweight and obese male football fans. Community coaching staff delivered weekly sessions at clubs. After 12 months, participants had lost an average of 5kg more than a group that received only a weight loss booklet. The researchers concluded that the programme helped a large proportion of men lose a clinically important amount of weight.[230]

Prevention impacts

The previous section provided examples of the range of prevention programmes researched in the NHS and some of their impacts. This highlights that the impact of prevention approaches is as varied as the approaches themselves. Even when looking at a specific intervention, such as group education sessions, the reported benefits vary widely.

This review did not aim to compare the impacts of every type of prevention activity in the NHS. However Table 3 summarises some of the initiatives where benefits have been demonstrated empirically. The citations in the table signpost to studies that document specific benefits. It should be noted that other studies may have found no impacts from similar interventions so the purpose of this section is to highlight things that may be worthy of more detailed consideration, rather than to provide a definitive overview of all evidence of impacts.

Initiatives in primary care were more likely than those in other sectors to have research supporting their efficacy. This may be because some of these initiatives are associated with large national or regional programmes, with a corresponding evaluation budget.

Most of the impacts accruing from preventive approaches were at the level of individuals, commonly in terms of changes to knowledge or behaviour or earlier referral for screening or treatment. Few studies have found that NHS prevention approaches are associated with reduced costs.

A number of cost-effectiveness analyses have been undertaken about screening, vaccination or health education programmes however these tend to use models and estimations to calculate potential cost savings. Fewer studies report the cost of delivering individual prevention initiatives and weigh these against the benefits gained. This may partly be because it is sometimes difficult to quantify the benefit of a preventive effort in terms of lives saved, service use avoided or costs saved.

Overall, the review found that there are no clear trends about the most beneficial prevention approaches in the NHS, but that some prevention approaches are associated with behaviour change and reduced risk of disease.

Table 3: Examples of impacts from NHS prevention programmes

Positive impact	Primary care	Outside hospital	Care in hospital	Cross sector partnership
Individual impacts				
Increased knowledge or awareness	• Education during screening[231] • Videos in GP waiting rooms[232]	• Media campaigns[233]	• Training junior doctors[234]	• Commercial weight loss programmes[235]
Mood and confidence		• Falls exercise and coaching[236] • Group sessions[237]		
Behaviour change or reinforcement of healthy lifestyles	• Smoking cessation in community pharmacies[238] • Group education[239] • Health checks[240] • Providing pedometers[241]	• Smoking cessation apps and texts[242,243] • Smoking cessation during screening or other services[244] • Smoking cessation group support[245] • Health trainers[246] • Financial incentives[247] • Proactive invitations and taster sessions[248] • Work-based initiatives[249] • Smartphone apps[250]	• Smoking cessation referrals[251] • Lifestyle support[252]	• Commercial weight loss programmes[253] • Online advertisements[254]
Reduction in risk factors or disease	• Health checks[255,256] • Immunisation[257] • Group education[258,259]	• Falls exercise and coaching[260] • Telehealth[261] • Health trainers[262]		
System impacts				
Earlier referral or diagnosis	• Health checks[263] • Screening in pharmacies[264] • Screening[265,266] • Promoting screening face-to-face or by telephone[267] • Postal reminders[268]	• Media campaigns[269,270] • Community volunteers[271]		
Medications prescribed	• Health checks[272,273,274]			
Reduced cost / increased savings	• Wearable technologies[275] • Screening[276,277]			• Community link worker[278]

Enablers and barriers

Enablers

Some common components were found to facilitate prevention in the NHS, regardless of the sector in which prevention programmes were implemented or the exact type of prevention programme. These included:

Uptake enablers

- national-level rollout or promotion[279,280,281]
- having a systematic process for identifying people and tracking progress over time[282,283,284]
- targeting messages, screening or services to well selected population subgroups[285,286,287,288]
- having a referral or initial approach made by a familiar person such as the person's GP or community link worker[289,290,291]
- issuing reminders to take part[292]
- using telephone / in-person invitations rather than postal invitations to take part[293,294]
- providing childcare[295]

There is mixed evidence about whether it works best to provide prevention initiatives in clinic settings[296] or non-health settings, such as sports clubs, pharmacies and community venues[297,298]

Implementation enablers

- sufficient staff training[299,300,301]
- positive and proactive attitude and characteristics of staff providing support[302,303,304,305]
- short programmes or materials using simple, non-technical language, visual aids and positive messages[306,307,308,309,310]
- providing tailored, individualised advice[311]
- multi-component programmes that include education, behavioural change support and active components such as physical activity and group support[312,313]
- adequate follow-up and signposting to other support[314]
- including family or carers[315,316]

System enablers

- using evidence and expert consensus to prioritise focus areas for prevention[317]
- partnership working between commissioners and providers across sectors[318]
- having nationally endorsed guidance or expectations[319]

Barriers

There were also commonly identified barriers to implementing impactful prevention programmes in the NHS, regardless of the sector or exact type of initiative. These challenges included:

Uptake issues

- lower uptake from people in less advantaged areas and 'harder to reach' groups, meaning there is potential to widen health inequalities[320,321,322,323,324,325,326,327]
- lack of interest in prevention or people not thinking that they are at risk[328,329,330,331,332,333,334,335,336337]
- lack of awareness amongst individuals of the preventive initiatives available or their value[338,339,340,341,342,343]
- cultural and attitudinal issues amongst individuals, including wanting to avoid contact with health services or not wanting to be a burden[344,345,346]
- perceptions that prevention programmes or NHS services were culturally insensitive[347,348]
- fear among individuals about attending services or receiving a diagnosis[349]
- having partners, family or others who may not support behaviour change[350,351,352,353]
- difficulty targeting preventive interventions appropriately[354,355,356,357]
- lack of opportunistic screening or referrals[358]
- difficulty inviting people to take part[359]
- concerns about costs of healthy food, travel and so on[360,361]

Implementation issues

- insufficient staff knowledge, confidence or training[362,363,364,365,366,367,368,369,370,371]
- negative staff attitudes towards prevention,[372] including feeling that initiatives are not worthwhile or that prevention may increase workload unnecessarily[373,374]
- concern amongst staff about generating anxiety in service users or broaching sensitive issues[375,376,377,378]
- desire amongst staff to remain in control, rather than supporting prevention and self-management[379]
- programmes not implemented as planned, potentially with low uptake or poor fidelity of interventions[380,381,382,383]
- programmes not drawing on evidence or guidelines about what works[384,385]
- lack of NHS staff time during routine care to focus on prevention[386,387,388]
- insufficient explanation for service users about the reasons for preventive interventions or medications[389]
- perceived lack of privacy for discussions in some contexts (e.g. pharmacy)[390]
- patients feeling unsupported during initiatives[391]
- lack of follow-up of service users to provide ongoing advice and support[392,393]
- significant comorbidity amongst target groups, making prevention complex[394,395]

System issues

- variations and communication challenges between services and sectors[396,397,398,399]
- lack of consistent availability of prevention services[400,401,402]
- lack of national policy or guidelines to support prevention on some topics[403,404,405,406]
- remuneration models and lack of financial resources allocated to prevention[407,408,409,410,411,412,413,414]
- lack of integration into core services or isolation of staff undertaking preventive roles[415,416,417]
- poor evidence of impact of preventive initiatives[418,419]
- lack of clarity about whose role it is to provide preventive care[420,421]
- lack of infrastructure, such as wifi at NHS venues[422]

The factors hindering prevention in the NHS occur at the level of the individual (beliefs, access to facilities), programme (implementation type) and the level of system (resources available). There is a tendency for research to focus on individual or programme-level barriers, but Table 4 illustrates that wider organisational and system-level factors may also create significant barriers to prevention in the NHS.

The importance of addressing deeper-level challenges is supported by a number of studies.[423]

> *"Solutions to the global challenge of physical inactivity have tended to focus on interventions at an individual level, when evidence shows that wider factors, including the social and physical environment, play a major part in influencing health-related behaviour… Health systems can work in collaboration with other partners to develop environments and systems that promote active lives for patients and staff."*[424]

For example researchers in England examined the factors that might help or hinder screening people with diabetes for eye problems in primary care. Modifiable barriers included the potential to improve communication between primary care and screening services; improvements in the manner and regularity of how patients were contacted, and the need for better integration of screening with other care.[425]

Other researchers explored the barriers to providing prevention and health promotion advice in a children's hospital in England. Staff saw providing lifestyle behaviour change advice as an educational activity, rather than a behaviour change activity. They reported barriers including a lack of personal experience of effectiveness, constraints associated with the hospital environment, concerns about the appropriateness of providing advice given the patient's condition and care pathway, job role priorities and a lack of perceived impact from giving advice.[426]

A systematic review of 13 studies explored the barriers and facilitators to implementing community-based lifestyle behaviour interventions to reduce the risk of diabetes in black and minority ethnic groups in the UK. Barriers included a lack of resources, lack of communication between sites, lack of understanding amongst professionals of cultural and religious requirements and issues with access. The reviewers suggested that behaviour change was impeded by social and cultural norms and differences across generations and that there were inconsistencies in how services dealt with this.[427]

In Scotland it was difficult to implement brief interventions to reduce alcohol consumption in new settings, even with significant national funding and a specific delivery target. Enablers included having a high-profile target for the number of initiatives to be delivered in a specific time period and clarity about whose responsibility it was to implement the target; support from senior staff from the outset; establishing practical monitoring and reporting systems; and developing close working relationships with frontline staff to provide flexible approaches to training, support and delivery.[428]

Another study in Scotland explored issues supporting weight loss in the NHS. Barriers included difficulties in communication between primary care and weight loss services, differences in opinion about whether messages should be about wellness or weight loss, issues with access to weight loss services and tensions about the role of primary care in weight loss management. Rather than being about the characteristics of individual programmes, staff or services themselves, this study emphasised that contextual, systems and funding issues have a key role to play in prevention initiatives in the NHS.[429]

Table 4: Barriers affecting NHS prevention programmes identified in research

	Individual factors	Programme factors	System factors
Uptake	• Lack of awareness about initiatives available • People not believing they are at risk or services are not relevant to them • People being fearful • Thinking that preventive services are not culturally appropriate • Having family or partners who may not support change	• Difficulty targeting interventions appropriately • Difficulty recruiting people to take part • Not communicating the benefits and reasons for prevention approaches	• Low uptake from 'hard to reach' groups, linked to health inequalities • Lack of opportunistic referral or screening
Implementation	• Significant comorbidity making prevention difficult	• Interventions implemented in different ways across services • Lack of follow-up to provide people with ongoing support •	• Lack of integration into core services • Lack of infrastructure and resources, such as wifi access • Disincentives in NHS reimbursement models • Communication challenges between sectors and services
Staffing	• Poor staff attitudes towards prevention • Lack of staff knowledge and confidence • Concern amongst staff about generating anxiety in patients	• Lack of staff time during routine care to prioritise prevention • Lack of staff training	• Isolation of staff supporting prevention • Lack of clarity about whose role prevention is
Evidence and policy		• Lack of routine follow-up of outcomes • Lack of use of evidence to inform implementation	• Lack of evidence base about impacts of prevention and best models • Lack of national prevention policy or guidelines

Summary

This rapid review identified more than 400 studies about prevention programmes in the NHS over the past two decades. The review found that the prevention programmes researched vary considerably in size and scope. Some studies are available about national media campaigns, screening programmes or health promotion initiatives. Others focus on small initiatives tested in a single service.

Examples are available about prevention programmes implemented in general practice and primary care more widely, in the community and to a much lesser extent in hospital.

The majority of NHS prevention programmes focus on raising awareness of various risk factors, supporting behavioural change or encouraging people to take part in screening programmes to identify disease early. There is no clear evidence that one type of prevention programme is more effective than others or that programmes in one sector are more effective.

Some prevention programmes are associated with increased knowledge and confidence, more healthy lifestyles or reductions in risk factors.

Most research tends not to follow-up participants for long enough to assess whether prevention programmes improve health outcomes or use of health services. A relatively small number of studies report the cost of prevention initiatives or the estimated cost-effectiveness of approaches. Modelling studies are available but these tend to be based on assumptions about potential impacts rather than 'hard data'.

Research in the NHS suggests that having a robust approach to identifying people to take part in prevention initiatives, motivating them to take part and following up to provide ongoing support are all important enablers. So too is ensuring good staff training, systematic implementation and simple, tailored messages.

However a key finding of the review is that there appear to be significant system-level barriers to be overcome in order to further prioritise prevention in the NHS. Ensuring that prevention is seen as part of everyone's usual role and that time and resources are allocated to it may be key to changing the culture of the NHS to focus more on wellbeing than illness.

References

The hyperlinks in the reference list below direct readers to the abstract or full text of each document.

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