

## ANALYSIS

## How evidence based is English public health policy?

**Srinivasa Vittal Katikireddi and colleagues'** analysis of the government's white paper *Healthy Lives, Healthy People* finds many of the interventions proposed lack evidence of effectiveness and some have even been shown not to work

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Use of robust evidence to inform public health policy is likely to ensure the greatest and most equitable population health gains.<sup>1</sup> In the United Kingdom and elsewhere there has been prominent support for an “evidence based” policy approach from senior policy makers over the past two decades,<sup>2</sup> and the current coalition government has maintained this stance. In his speech to the Faculty of Public Health conference in July 2010, Andrew Lansley, the secretary of state for health, stated: “Our new approach across public health services must meet tougher tests of evidence and evaluation . . . We must only support effective interventions that deliver proven benefits.”<sup>3</sup>

But how well is the government following its own advice? We examine the quality of evidence that underpins proposed actions in the white paper *Healthy Lives, Healthy People*.<sup>4</sup> This white paper includes organisational reforms that aim to change the structure of the public health workforce, several measures relating to delivery of English NHS services (that are interlinked to the white paper on the NHS<sup>5</sup>), and an outline of proposals for actions to improve population health.

### Identifying the evidence

We identified 51 statements describing specific interventions aiming to improve population health in the white paper. Two reviewers used a systematic approach to search for evidence relating to actions in the white paper and appraise its quality. In addition, we asked topic experts (expert advisers) to review the completeness and accuracy of our evidence assessments. These methods and a discussion of the limitations are available on [bmj.com](http://bmj.com). The nature of interventions suggested and the underpinning evidence varied widely. Full details of the assessments for each intervention are available in the appendix on [bmj.com](http://bmj.com) with important findings highlighted here.

Table 1⇓ summarises the categories of interventions identified in the white paper, the most common being physical activity. The white paper did not directly cite academic articles relating to any of the proposed interventions. Websites were referenced for six interventions, but for all other interventions no supporting sources were provided.

Table 2⇓ summarises our assessment of the quality of evidence supporting the effectiveness of the interventions described, which we discuss in more detail below

### Early years

Evaluations conducted on early years' interventions tend to be high quality, although much evidence is US based and may not be applicable to England. Interventions mentioned include the Family Nurse Partnership, a programme of home visits by nurses for young first time mothers to improve future life chances of both mother and baby. Three randomised controlled trials in the US suggest this intervention is effective, and a detailed UK evaluation (including randomised components) is ongoing.<sup>w1-w4</sup> Family intervention projects, taking a whole family approach to tackling antisocial behaviour, have been evaluated but methodological limitations make it difficult to assess their effectiveness.<sup>w5</sup> Group parenting programmes seem to reduce the time that children spend in institutions, but a Cochrane systematic review published in 2001 found no substantial health improvements.<sup>w6</sup>

The white paper states that the government plans to target Sure Start centres at those “who need them most.” We are uncertain if the statement reflects plans to limit attendance to families in greater need (assessing individual need) or closing Sure Start centres in more affluent areas. The former would directly

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Appendix 1: Methods

Appendix 2: Assessment of evidence

References w1-w87

conflict with Sure Start's underlying theory of change.<sup>w8</sup> The National Evaluation of Sure Start, a well conducted quasi-experimental study, suggests that the intervention has largely beneficial health effects, particularly for parents, but the effectiveness of a more or less targeted approach is unclear.<sup>w7</sup>

## Physical activity

Eleven statements related to increasing physical activity among children or adults. We found supportive evidence for school based interventions to promote walking (such as the Walk Once A Week initiative<sup>w9-w11</sup>), volunteer led walks (Walking for Health),<sup>w12-w13</sup> and primary care based motivational interviewing (Let's Get Moving).<sup>w14-w15</sup> A recent systematic review concluded that exercise referral schemes, which form a component of Let's Get Moving, did not seem to improve population health.<sup>w16-w17</sup>

The evidence suggests some novel interventions, such as incentives to promote children walking to school (Step2Get) or community running groups (Run Dem Crew), are likely to be ineffective or have only a limited effect on population health because most people who take them up will already be physically active.<sup>w18-w20</sup> There is conflicting, poor quality evidence to support Olympics based activities to increase physical activity, but systematic reviews indicate that large positive benefits are unlikely.<sup>w21-w22</sup> Evidence supports the use of interventions that include structural changes such as Healthy Towns (combining infrastructure and social marketing)<sup>w23</sup> and Cycle Demonstration Towns (a comprehensive town-wide approach to promoting cycling).<sup>w24-w25</sup>

## Food

Promotion of fruit and vegetables in convenience stores (under the Change4Life campaign) had little effect on food purchasing.<sup>w26-w27</sup> A systematic review has noted that environmental interventions in grocery stores were less effective than other environmental interventions.<sup>w28</sup> Discount coupons to promote healthy eating seem to result in only short term improvements,<sup>w29</sup> but good evidence supports workplace based interventions to increase consumption of healthy food.<sup>w30-w31</sup> The effect of expanding the range of foods counted towards the "5 a day" fruit and vegetables has not been evaluated.

## Alcohol

Some evidence supports the possibility that stricter alcohol licensing reduces alcohol related harms.<sup>w32-w33</sup> However, our expert adviser noted this would be effective only if accompanied by adequate enforcement, which seems unlikely as local authorities are already spending less money in this area.<sup>w34</sup> Modelling studies suggest a ban on selling alcohol below cost is ineffective at reducing consumption and harm.<sup>w35-w36</sup>

## Tobacco

No jurisdiction has yet introduced plain packaging of cigarettes, but evidence of likely mechanisms (such as reductions in brand appeal and increases in effectiveness of health warnings) for the intervention and expert opinion provide some supportive evidence for this intervention.<sup>w37-w38</sup> Evaluations and empirical evidence suggest banning display of tobacco in shops<sup>w39-w41</sup> and banning the sale of tobacco from vending machines<sup>w38-w42-w43</sup> will be effective in reducing tobacco consumption and underage use.

## Primary care

Evidence supports the provision of health promotion advice and services from pharmacies (Healthy Living Pharmacies).<sup>w44-w46</sup>

However, universal cardiovascular risk screening for people aged 40-74 years is not supported, targeted screening being a more cost effective option.<sup>w45-w47</sup>

## Employment

NICE guidelines provide support in general for employee wellness programmes. But an accompanying systematic review noted problems related to the quality of evaluations.<sup>w48-w49</sup> The guidance includes a tool to stimulate employers to promote health, but the associated systematic review again notes that there is no evidence that it is effective.<sup>w50-w51</sup> Phasing out the default retirement age is supported by limited evidence.<sup>w52-w54</sup> Increased control over retirement decisions, in particular, may confer health benefits, but the evidence base is weak and differential effects have not been assessed.

## Welfare

The white paper argues that various welfare reforms will result in health benefits. Early work based interventions for people developing health problems seem to be effective in maintaining employment, and there is supportive evidence for some specific health outcomes, notably musculoskeletal problems.<sup>w55</sup> An Institute for Fiscal Studies modelling analysis suggests incentivising welfare payments towards work (through the introduction of the "universal credit") will tend to encourage unemployed people to get jobs and will benefit poorer families overall.<sup>w56</sup>

A systematic review of changes to eligibility for disability benefits found equivocal evidence that tightening assessment resulted in increased labour market participation.<sup>w57</sup> There is some evidence that increasing benefits may result in a small reduction in the numbers working. However, the health effects are uncertain, and although paid work has been associated with health benefits, it is unclear if this relationship is causal.<sup>w54</sup>

Welfare to work programmes (aiming to help people on benefits move back into paid employment) are generally associated with improved employment outcomes in US studies.<sup>w58</sup> UK evidence suggests the population effect may be limited, with those most in need not being reached.<sup>w59</sup> Some evidence suggests that the new "fit note" (which replaces sick notes) may make people more likely to remain in work, but health effects have not been assessed.<sup>w60</sup>

## Green space

We found no evaluations of the four interventions on green spaces. However, observational epidemiological studies and studies assessing biochemical measures support an association between green spaces and health.<sup>w61-w63</sup> In addition, there is some observational evidence that differential access to green space may contribute to health inequalities.<sup>w64-w65</sup>

## Housing and neighbourhoods

Evidence on the effectiveness of housing and neighbourhood interventions is lacking. An evaluation of Lifetime Homes, voluntary building standards that aim to facilitate access for people with disabilities (especially wheelchair users),<sup>w66</sup> noted high levels of resident satisfaction but did not assess health outcomes.<sup>w67</sup> In addition, concern has been expressed that the Lifetime Homes standards are not compulsory and that they fail to tackle negative social attitudes among those in the housing industry.<sup>w69-w70</sup>

Interventions to cut fuel poverty, such as winter fuel payments<sup>w71</sup> and improving energy efficiency of homes<sup>w72</sup> (the Warm Front

Scheme<sup>w73</sup>), had largely positive evidence. There seems to be a lack of evidence of effectiveness for health outcomes for home adaptations to maintain health and mobility among older people in general.<sup>w74-w76</sup> Free bus travel for older people seems to have a limited effect on health or social inclusion but does reduce car use.<sup>w77</sup>

## Community interventions

In general, evidence was lacking on community interventions. Some poor quality evidence supports the use of community agents to promote the uptake of services<sup>w78 w80</sup> and the success of community health champions in encouraging some behaviour changes but not others.<sup>w79 w81 w82</sup> A systematic review concluded that use of community volunteers to reduce social isolation of older people was ineffective, but the included studies may not be directly applicable to modern England.<sup>w83 w84</sup> We found no evaluations of community learning champions<sup>w85</sup> or “Older People’s day.” The range of actions suggested by the white paper is narrower than those described by the NICE guidance on community engagement to improve health.<sup>w86</sup>

## Quality of evidence

Many of the evaluations of named interventions highlighted in the white paper (such as the Cycle Challenge<sup>w87</sup> and Change4Life promotion of fruit and vegetables in convenience stores<sup>w26 w27</sup>) did not assess effectiveness in a robust way. Common methodological problems include inadequate characterisation of participants receiving the intervention, lack of a control group, and ignoring the effect of attrition and response bias. Explicit attempts to reduce the potential for confounding at design (such as randomisation) or analysis (such as adjustment) were also uncommon. Evaluations rarely reported on health outcomes, often only reporting satisfaction and uptake of interventions even when the interventions explicitly aimed to improve health. For example, the Altogether Better Thematic Evaluation of Community Health Champions did not attempt to measure outcomes but instead aimed to capture learning about the community health champion role.<sup>w83</sup>

## Evidence on inequalities

Few studies had looked at the effect of interventions on population subgroups. Evaluations of many interventions targeted at specific communities (such as deprived populations) tended to describe those affected or participating, but the extent to which the intervention had been successful in reaching those in most need was often not reported. Evaluations of interventions not targeted at specific communities usually did not report how well those most in need had been reached.

## Evidence based policy or policy based evidence?

Our systematic assessment shows that although some interventions in the public health white paper are in keeping with the existing evidence base, many are likely to be ineffective or lack evidence to establish effectiveness. We suggest that ineffective interventions such as universal (rather than targeted) cardiovascular risk screening for those aged 40-74 years should not be implemented, and novel interventions such as sports competitions for children should be rigorously evaluated. Large gaps in the research evidence remain, with a continuing lack of high quality studies, particularly on the broader determinants of health, such as welfare, green space, and community

interventions. A failure to report differential effects on population subgroups also limits inferences about the likely effects on health inequalities.

The idea that public health policy should be evidence based remains contested.<sup>6-8</sup> Although we acknowledge the importance of ethical considerations, acceptability of interventions, and the role of politics,<sup>9</sup> we selected the white paper as a case study because it advocates that interventions should be evidence based. We have therefore not considered many other actions being implemented by the coalition government that are likely to affect population health and inequalities, such as the increase in value added tax and cuts in public spending. Some of the policies in *Healthy Lives, Healthy People* are continued from the previous Labour government, so the variable quality of evidence is not unique to the present administration.

We do not believe that a lack of robust evaluations should prevent an intervention from being implemented. However, when action is taken its effects should be rigorously evaluated. Given that the white paper could result in the implementation of large numbers of interventions that lack evidence of effectiveness, their evaluation is important.<sup>10 11</sup> It should be remembered that, as with medical interventions, many public health interventions have the potential to cause harm.<sup>12</sup> In the words of the House of Commons Health Select Committee, “Such wanton large-scale experimentation is unethical, and needs to be superseded by a more rigorous culture of piloting, evaluating and using the results to inform policy.”<sup>13</sup>

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- 1 Macintyre S. Evidence based policy making. *BMJ* 2003;326:5-6.
- 2 Parsons W. From muddling through to muddling up—evidence based policy making and the modernisation of British government. *Public Policy Admin* 2002;17:43-60.
- 3 Lansley A. Secretary of State for Health’s speech to the UK Faculty of Public Health Conference: a new approach to public health. 2010. [www.dh.gov.uk/en/MediaCentre/Speeches/DH\\_117280](http://www.dh.gov.uk/en/MediaCentre/Speeches/DH_117280).
- 4 Department of Health. Healthy lives, healthy people: our strategy for public health in England. DH, 2010.

- 5 Department of Health. Equity and excellence: liberating the NHS. DH, 2010.
- 6 Davis P, Howden-Chapman P. Translating research findings into health policy. *Soc Sci Med* 1996;43:865-72.
- 7 Radaelli CM. The role of knowledge in the policy process. *J Eu Public Policy* 1995;2:159-83.
- 8 Smith GD, Ebrahim S, Frankel S. How policy informs the evidence. *BMJ* 2001;322:184-5.
- 9 Tannahill A. Beyond evidence to ethics: a decision-making framework for health promotion, public health and health improvement. *Health Prom Int* 2008;23:380-90.
- 10 Craig P, Cooper C, Gunnell D, Haw S, Lawson K, Macintyre S, et al. Using natural experiments to evaluate population health interventions: guidance for producers and users of evidence: MRC Population Health Sciences Research Network. [www.mrc.ac.uk/Utilities/Documentrecord/index.htm?d=MRC008043](http://www.mrc.ac.uk/Utilities/Documentrecord/index.htm?d=MRC008043).
- 11 Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;337:a1655.
- 12 Macintyre S. Good intentions and received wisdom are not good enough: the need for controlled trials in public health. *J Epidemiol Community Health* 2010;65:564-7.
- 13 House of Commons Health Committee. Health inequalities: report of session 2008-09: Vol 1. House of Commons, 2009.

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## Tables

Table 1 | Summary of types of interventions listed in white paper

Topic	No of interventions
Physical activity	11
Welfare	7
Housing and neighbourhood	6
Community	5
Early years	4
Food	4
Green space	4
Smoking	3
Employment	3
Alcohol	2
Primary care	2

Table 2 | Quality of evidence underpinning interventions described in English public health white paper

Topic	Intervention	Evidence
Early years	Targeting Sure Start services at families most in need	+
	Family Nurse Partnership	+
	Family intervention projects	0
	Group parenting programmes	+
Physical activity	Sports competitions for children	0
	School based interventions to promote walking (Walk Once A Week)	++
	Cycle training	+
	Incentives to promote walking (Step2Get)	-
	Community running for young people (Run Dem Crew)	0
	Healthy towns	+
	Cycle demonstration towns	++
	Olympics legacy programme	+/-
	Volunteer led walks (Walking for Health)	++
	Primary care screening and motivational interviewing (Let's Get Moving)	+
	Cycle Challenge	0
Food	Voucher incentives to encourage fruit and vegetable consumption	+/-
	Fresh fruit and vegetable promotion in convenience stores	-
	Expanding foods counted towards "5 a day" guidelines	0
	Workplace healthy food choices	+
Alcohol	Increase stringency of licensing requirements	+
	Ban on below cost alcohol sales	-
Smoking	Tobacco plain packaging	+
	Stop tobacco displays in shops	+
	Ban on tobacco vending machines	+
Primary care	Provision of health promotion advice and services in pharmacies (Healthy Living Pharmacies)	+
	Universal cardiovascular health checks for 40-74 year olds	+/-
Employment	Employee wellness programmes (Change4Life)	+
	Tool to stimulate employers to take action to promote health	0
	Removal of default retirement age	+/-
Welfare	Incentivising welfare payments towards work	0
	Welfare to work programmes	+/-
	Support programmes for severely disabled people	+
	Vocational advice and support services for the general population	0
	Early work based interventions for individuals developing health problems	+
	Fit note	0
Green space	Maintain the value of the state pension	+
	Community ownership of green space	0
	Grow your own food	0
	National tree planting campaign	0
Housing and neighbourhoods	Tree planting on NHS land	0
	Lifetime Homes	+
	Winter fuel payments	+/-
	Free bus travel for older people	+/-
	Improved energy efficiency and warmth of homes (Warm Front Scheme)	++
	Home adaptations for elderly people	+/-
Community interventions	Improving condition of private sector homes for social housing tenants (Decent Homes)	0
	Community health champions to facilitate behaviour change	+/-
	Community learning champions	0

Table 2 (continued)

Topic	Intervention	Evidence
	Community agents to promote uptake of services (Gloucestershire Village Agents)	+
	Celebratory event day (Older People's day)	0
	Community volunteers to work with older people	-

--=strong evidence that the intervention as described is ineffective in improving population health (eg, well conducted systematic reviews, randomised controlled trials, and robust evaluations).

-=weak evidence that the intervention as described is ineffective (eg, before and after studies, modelling studies, NICE guideline statements not based on the above).

0=absence of evidence to allow assessment of effectiveness for health outcomes (including interventions where only studies highly susceptible to bias exist).

+ =weak evidence that the intervention as described is effective.

++=strong evidence that the intervention as described is effective.

+/-=mixed evidence on effectiveness.