Appendix A: Summary of new evidence

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
PH6 – 01. Recommendation 1 - Principle 1: planning interventions and programmes **evidence statements: please note that explicit links between evidence statements and recommendations were not provided when this guideline was developed**		
No evidence identified	Initial intelligence gathering identified the following: Behaviour change: individual approaches (2014) NICE guideline PH49, provides recommendations on planning behaviour change interventions.	**New evidence was identified that may change the recommendation: refresh.** Principle 1 provides guidance on partnership working between individuals, communities, organisations and populations in order to plan and prioritise interventions and programmes to change health-related behaviour and when to consider disinvestment. The importance of evidence-based interventions is highlighted here and throughout the guideline. Recommendations within Behaviour change: individual approaches (2014) NICE guideline PH49 cover and extend the current recommendation on planning interventions and programmes. While PH49 is for individual level interventions, recommendations 1 to 6 are applicable to planning community and population level interventions, as such it is recommended that the content of principle 1 is removed and replaced with a cross reference to recommendations 1 to 6 in PH49.
PH6 – 02. Recommendation 2 - Principle 2: assessing social context		
See principle 6 for evidence on choice architecture interventions.	Initial intelligence gathering identified the following: Cardiovascular disease: identifying and supporting people most at risk of dying early (2008) NICE guideline PH15 provides recommendations on	**New evidence was identified that does not have an impact on the recommendation.** Principle 2 provides guidance on identifying and addressing social, financial and environmental

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	improving access to services and considering barriers to access. It is also principle based. Moving More, Living More: Olympic and Paralympic Games legacy Feb 2014. Cabinet Office, DH, DCMS, DfE & DfT supports structural improvements to help people who find it difficult to change, or who are not motivated.[54] Changing Behaviour, Improving Outcomes: A new social marketing strategy for public health April 2011 DH provides some evidence in favour of social marketing.[55] A Cochrane review on Mass media interventions for smoking cessation in adults identified 11 campaigns; there was evidence that 'comprehensive tobacco control programmes that include mass media campaigns can be effective in changing smoking behaviour in adults, but the evidence comes from a heterogeneous group of studies of variable methodological quality'.[56] A Cochrane review on Targeted mass media interventions promoting healthy behaviours to reduce risk of non-communicable diseases in adult, ethnic minorities identified 6 studies, all within the US, and the authors concluded that 'available evidence is inadequate for understanding whether mass media interventions targeted toward ethnic minority populations are more effective in changing health behaviours than mass media interventions intended for the population at large.'[57] A topic expert noted that there is new theory concerning the impact of interventions on widening and narrowing inequalities: A study on What types of interventions generate inequalities? Evidence from systematic reviews found that media campaigns and workplace smoking bans	barriers that prevent people from making positive changes in their lives. NICE guidelines and government publications identified via the intelligence gathering are in line with the recommendations within principle 2. The evidence-base on mass-media campaigns currently appears limited. There remains a lack of evidence concerning the effect of interventions on inequalities but there is some indication that certain 'upstream' interventions may decrease inequalities, while 'downstream' ones may increase inequalities.

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	showed some evidence of increasing inequalities between socioeconomic status groups, while provision of resources and fiscal interventions, such as tobacco pricing may reduce health inequalities. The authors noted that for many intervention types, data on inequalities are lacking.[58] A later study Are interventions to promote healthy eating equally effective for all? Systematic review of socio-economic inequalities in impact reported that 'Upstream' Price interventions (e.g. taxes and subsidies) appeared to decrease inequalities, and 'downstream' Person interventions, in particular dietary counselling seemed to increase inequalities. However the authors noted that the 'vast majority of studies identified did not explore differential effects by socioeconomic position'.[59]	
PH6 – 03. Recommendation 3 - Principle 3: education and training		
No evidence identified	No evidence identified	**No new evidence was identified, no changes** Principle 3 provides guidance on training and support for those involved in changing people's health-related behaviour in order to develop required competencies and advises that national organisations should consider developing standards for these competencies and skills.
PH6 – 04. Recommendation 4 - Principle 4: individual-level interventions and programmes		
Eight studies (7 SRs and 1 RCT) were identified that reported on BCTs/intervention elements in behaviour change interventions for **children/adolescents:** A systematic review and meta-analysis of 15 studies of interventions involving motivational interviewing to target sex, physical activity or diet behaviour in adolescents found that these interventions produced a small but significant effect compared to a control	Initial intelligence gathering identified the following: Behaviour change: individual approaches (2014) NICE guideline PH49, provides guidance on individual level behaviour change interventions for people aged 16 years old and over.	**New evidence was identified that may change the recommendation: refresh.** Principle 4 provides guidance on individual level interventions and identifies some behaviour change techniques to use within such interventions (including understanding consequences of behaviours for oneself and others, recognising how social contexts

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condition, which was sustained at a follow-up period averaging 34 weeks. [1] A systematic review of 37 SRs of school-based sexual-health interventions found weak and inconsistent evidence of behaviour change in many of the SRs but did report that comprehensive interventions, those targeting HIV prevention, and school-based clinics were effective in improving knowledge and changing attitudes, behaviours and health-relevant outcomes; while abstinence-only interventions were not effective. A list of 32 design, content and implementation characteristics that may enhance effectiveness of school-based sexual-health interventions was generated.[2] A systematic review including 5 meta-analyses and 6 qualitative reviews of successful HIV prevention interventions for adolescents found that the following factors were linked to evidence of success: BCTs such as cognitive-behaviour and motivation enhancement skills training, recipient characteristics (e.g. age, vulnerability to contracting STIs/HIV), prominent design features (e.g. use of theory, formative research), and socio-ecological features (e.g. supportive school environment).[3] A systematic review of interventions to prevent obesity or improve obesity related behaviours in children aged 0-5 years from socioeconomically disadvantaged (30 studies) or Indigenous families (2 studies) was identified. Interventions for under two year olds had a positive impact on obesity related behaviours but few measured the longer-term impact on healthy weight gain (significance not reported); for interventions with 3 to 5 year olds effectiveness was mixed, but the 'more successful interventions' were reported to have high levels of parental engagement, use of BCTs (not specified), a focus on skill building and links to community resources. [4] A systematic review of 17 RCTs for the prevention (n=8) or management (n=9) of childhood obesity reported that the following BCTs may be effective in management interventions: provide information on the consequences of behaviour to the individual, environmental restructuring, prompt practice, prompt identification as role model/position advocate, stress management/emotional control training and general communication skills training. For prevention,	Recommendation 7 specifically addresses behaviour change techniques. A topic expert noted that existing diet, physical activity and smoking interventions can lead to small changes in these areas for people with a low income: Are interventions for low-income groups effective in changing healthy eating, physical activity and smoking behaviours? A systematic review and meta-analysis included 35 studies containing 45 interventions (n=17 000). Post-intervention effects were positive but small for diet, physical activity and smoking and in studies reporting follow-up results effects appeared to be maintained for diet, but not physical activity or smoking.[60]	and relationships may affect behaviour, goals and planning). This recommendation should include a reference to recommendation 7 in PH49. There were 7 SRs and 1 RCT reporting on BCTs/intervention elements in behaviour change interventions for children/adolescents. One SR reported that motivational interviewing techniques across sex, physical activity or diet produce small significant changes in behaviour [1]. There is mixed evidence of effectiveness of safe sex interventions and reports that the evidence base is weak; SRs have reported that the following BCTs/intervention elements are related to success: comprehensive interventions, those targeting HIV prevention, school-based clinics, socio-ecological features such as a supportive school environment, BCTs such as cognitive-behaviour and motivation enhancement skills training and prominent design features (e.g. use of theory, formative research) [2, 3]. Two SRs reporting on the effectiveness of interventions to prevent or manage obesity identified the following BCTs/elements as associated with effectiveness: provide information on the consequences of behaviour to the individual, focus on building skills, prompt practice, prompt identification as role model/position advocate, stress management/emotional control training and general communication skills training, prompting generalisation of a target behaviour, environmental restructuring, high levels of parental engagement and links to community resources [4, 5]; and the following BCTs were identified as non-effective for obesity management and prevention: providing information on the consequences of behaviour in general; and

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only prompting generalisation of a target behaviour was identified as an effective BCT. Non-effective BCTs for management included providing information on the consequences of behaviour in general. Non-effective BCTs for prevention included information on the consequences of behaviour in general, facilitating social comparison, rewards contingent on successful behaviour.[5] A systematic review of RCTs investigating the effectiveness of using smartphones in the treatment of child and adolescent overweight or obesity found only 2 RCTs, both of which were not effective in achieving weight loss. The trials did report that smartphone usage was linked to improved engagement and reduced dropout rates during sustainability phases of these long-term interventions.[6] A systematic review of 10 RCTs and cluster RCTs in 15-19 year olds investigating the effectiveness of school-based interventions to increase physical activity and decrease sedentary behaviour found that interventions which increased physical activity included a higher number of BCTs and highlighted specific BCTs such as goal setting, action planning and self-monitoring.[7] An RCT with adolescents (n=67) randomised to an intervention involving forming a self-affirming implementation intention (motivation techniques to form plans) or to complete a distractor task while exposed to a threatening message concerning the health risks of alcohol consumption, found that subsequent alcohol intake was significantly decreased in the intervention group.[8]		non-effective for prevention only: facilitating social comparison, rewards contingent on successful behaviour. One SR reported that smartphone-based interventions were not effective in addressing childhood obesity [6]. A SR of school-based physical activity interventions found that having a higher number of BCTs and using specific BCTs such as goal setting, action planning and self-monitoring were associated with increased physical activity in adolescents [7]. No studies were identified on smoking and only 1 RCT was identified that addressed alcohol use, which reported that the use of motivation techniques to form plans can reduce alcohol intake in adolescents [8].
PH6 – 05. Recommendation 5 - Principle 5: community-level interventions and programmes		
Four SRs were identified that reported on BCTs/intervention elements in school-based behaviour change interventions for **children/adolescents:** A systematic review of 37 SRs of school-based sexual-health interventions found weak and inconsistent evidence of behaviour change in many of the SRs but did report that comprehensive interventions, those targeting HIV prevention, and school-based clinics were effective in improving knowledge and changing attitudes, behaviours and health-relevant outcomes; while abstinence-only	Initial intelligence gathering identified several NICE guidelines related to community-level behaviour change, including: Alcohol interventions in schools. Publication expected Jan 2019 [GID-NG10030]) Physical activity and the environment (update). Publication expected: Mar 2018 [GID-PHG97]	**New evidence was identified that does not have an impact on the recommendation.** Principle 5 provides guidance on investing in interventions and programmes that identify and build on the strengths of individuals and communities and the relationships within communities, including those that support parenting skills, relationship building, and self-efficacy.

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PH6 – 06. Recommendation 6 - Principle 6: population-level interventions and programmes		
Forty-four studies (12 SRs, 1 meta-analysis, 4 RCTs, 5 non-RCTs, 13 BA and 9 with other study designs) were identified that assessed the effectiveness of choice architecture interventions. The majority of these were in the area of diet (37/44), with only 3 on physical activity, 3 on smoking and 2 on alcohol.	Initial intelligence gathering identified the following: A Cochrane review on 'Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco' which was also identified in the search [40].	**New evidence was identified that does not have an impact the recommendation.** Principle 6 provides guidance on delivering population-level policies, interventions and programmes tailored to change specific, health-related behaviours that are based on information

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Diet Within diet, studies (9-45) looked at the effectiveness of information on the 'healthiness' of foods via labels with calorie/macronutrient information presented in various formats (e.g. traffic light labels), point of purchase information, mostly in cafeteria or restaurant/fast-food outlets. Other diet studies focussed on the placing of foods and the impact of size of portion, packages and tableware on energy consumption: **Diet –multiple/generic interventions** A systematic review with a narrative synthesis of findings from 12 studies on choice architecture interventions that aim to change eating behaviour in self-service eating settings reported that: health labelling at point of purchase is associated with healthier food choice; manipulating plate and cutlery size has an inconclusive effect on consumption volume; assortment manipulation and payment option manipulation (latter out of scope) was associated with healthier food choices. The authors reported that most studies were of very weak quality.[9] A systematic review of 15 studies evaluating food environment interventions targeting dietary behaviour in young adults in college and university settings reported that nutrition messages/nutrient labelling, providing healthy options, and portion size control of unhealthy foods may be useful interventions. The authors reported that 'increased availability of healthy options combined with nutrition information resulted in improvements in dietary habits' (no data reported).[10] A systematic review of 22 studies on the effectiveness of environmental interventions targeting eating behaviour in the workplace found that just over half the studies (13/22) reported significant changes in measures of eating behaviour, but only one study produced a small significant improvement in weight/body mass index. The authors reported that studies had high or unknown risk of bias, intervention reporting was poor and that the 1 study reporting on compensatory behaviours reported that intervention participants	Preventing excess weight gain (2015) NICE guideline NG7 has information on reducing portion sizes. A recent surveillance review indicated that this guideline should be updated, noting the above Cochrane review as a source of evidence for the update. Topic experts identified the following study as relevant to principle 6: Adams J, et al. Why are some population interventions for diet and obesity more equitable and effective than others? The role of individual agency (2016) which discusses the personal resources/agency individuals have and states that more effort is required to develop, evaluate, and implement population interventions that require low levels of agency for individuals to benefit.[61]	gathered about the context, needs and behaviours of the target population(s). This includes **choice architecture interventions**: Interventions which change the context in which someone will make a decision in order to influence how they act. For example, placing healthier snacks closer to a shop checkout and putting sugary and high-fat options out of reach may influence people to make a healthier choice because it is more accessible. Behaviour change approaches based on choice architecture are also referred to as 'nudge' or 'nudging' interventions. While there is a sufficient body of evidence to develop recommendations on the use of choice architecture interventions for diet, there are some important gaps in knowledge, in particular around compensatory behaviour. It should be noted that there is insufficient evidence on the effectiveness of these interventions for physical activity, smoking or alcohol intake and as such it is recommend that these behavioural areas are **not** currently considered in an update. Instead it is recommended that this research informs the update of Preventing excess weight gain (2015) NICE guideline NG7 (see surveillance review, 2017). **Diet:** There is mixed evidence concerning the effectiveness of **labels with calorie information** to reduce energy intake from food; but systematic reviews indicate that overall, on their own, calorie labels are not effective at significantly reducing energy intake [13-16,26]. One SR reported that when calorie labels add contextual or interpretive nutrition information this leads to a significant reduction in calories purchased/consumed [15] and 1 RCT indicated that labels with exercise information rather than calorie information may be effective [18]. There

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who ate less during the intervention ate more out with the workplace later in the day.[11] A systematic review of 26 studies (13 articles) using 'nudge' or choice architecture interventions that influenced adult food and beverage choices reported that 'combined 'salience' and 'priming' nudges showed consistent positive influence on healthier food and beverage choices' but that only two interventions were of a high level of evidence, and the majority of articles received average or poor quality rating. The authors concluded that there was 'limited ability to determine effectiveness of nudging due to various populations and settings tested and the use and reporting of incomparable outcome measures'[12] **Labels providing calorie information** A systematic review of 7 studies on the effect of calorie-labelling on calories purchased in young adults, with a meta-analysis based on 6 of the studies, found no overall effect on calories purchased but some indication that it may be more effective among those who report noticing the labels (result still NS).[13] A systematic review and meta-analysis of 25 studies evaluating the relationship between menu calorie labelling and calories ordered or purchased found no significant reduction in calories ordered with menu calorie labelling.[14] A systematic review and meta-analysis of experimental or quasi-experimental studies (n=NR) that tested the effect of providing nutrition information in a restaurant or other foodservice setting on calories selected or consumed found no effect of menu labelling with calories only on decreasing calories selected or consumed, but a significant effect was found with the addition of contextual or interpretive nutrition information. Women were more likely than men to use the information to select and consume fewer calories.[15] A systematic review of 18 papers on the effectiveness of menu energy labelling at point of purchase by socioeconomic status (SES) found evidence of effectiveness was limited in quantity and quality: only 1 of 6 studies reporting on purchase outcome in low SES populations reported a positive effect; 2 of 5 studies comparing		were a few studies that reported that calorie labels reduce calories consumed/purchased [20,21,25,28]; and 2 studies indicated that there can be unintended consequences of labelling products as low fat/energy – with such labels leading to an increase in calorie consumption [22,34]. There is some indication that **traffic light labels** may lead to an increase in selection of green ('healthy') items and reduction in red ('unhealthy') items [29,31,32], but this is based on BA or cohort studies. Some studies report that 'noticing' labels (calorie/nutritional/traffic-light presentation) may increase effectiveness [13,30], while others indicate that it is reporting 'using' a label which leads to a significant reduction in energy purchased [19,24,30,38]. There is mixed evidence concerning the **impact of health information at the point of purchase**, with 1 systematic review indicating that it does not affect food sales [33] and another reporting that it is associated with healthier food choices in self-service settings [46]; the latter conclusion is also supported by several studies which indicate that the provision of health information, in particular in dining/cafeteria facilities, does lead to a significant increase in the purchase of healthy food and/or significant reduction in purchasing unhealthy foods [35-39,46]. **Socio-economic status** was reported in 3 studies, with a SR [16] concluding that the positive effect on SES seemed to be limited to high SES populations/neighbourhoods, which was also reported in a cross-sectional study [19], while a RCT indicated a complex relationship between SES and weight concern and consumption of food labelled as green/low fat or red/high fat [34].

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menu labelling across SES groups reported that the policy was effective overall, but the SR authors note that the effect seemed to be limited to high SES populations/neighbourhoods.[16] A non-RCT (n=NR) investigating the effect of displaying of calorie information at fast-food restaurants in Philadelphia before and after implementation and compared with a control comparison city found no change in calories purchased and number of fast food visits over time.[17] A RCT with university students (n=300) found that lunch menus with no label (control), labelled with energy content of food (Kcal-label) or exercise equivalent (exercise label) resulted in significantly less energy ordered and consumed in the exercise label vs control but not compared to Kcal-label; there was no significant difference in energy ordered or consumed between kcal-label and control groups.[18] A cross-sectional study on the use of calorie menu labels in McDonald's restaurants (n=29) located in low- and high-income neighbourhoods (n=329 participants) found that higher-income individuals were significantly more likely than low income participants to notice and use calorie labels; with a significant positive association found between individuals with a bachelor's degree or higher and use of calorie menu labels. There was no association between noticing calorie labels and purchasing fewer calories but those who reported using calorie information purchased significantly fewer calories than those who did not report using them.[19] A non-RCT study reporting on sales data of food items at catering outlets at 2 university campuses with calorie-labelling vs a control site found that calorie-labelling led to reduced sales of high calorie foods, 'without any compensatory changes in unlabelled alternative items'.[20] A BA study with young adults (n=120) observed consuming lunch in a catered setting over 3 study periods: 1st: a calorie label condition, 2nd: without calorie labels, 3rd: calorie labels plus information on estimated energy requirements, reported that calorie labelling resulted in significant reductions in calories. [21]		The majority of evidence (including a Cochrane review) on the **effect of portion size, package size and tableware size or shape** on energy consumption, reported that people consume significantly more food and drink when offered larger sized portions, packages and tableware than when offered smaller sized versions [40,42-44]. These findings are in line with recommendation 3 in Preventing excess weight gain (2015) NG7 which states that practical ways to reduce overall energy density within a diet may include 'choosing smaller portions or avoiding additional servings of energy dense foods'. Two systematic reviews indicate that **manipulating food position** (proximity or order) of healthy and unhealthy food can increase healthy food choice [9, 45]. There is an absence of studies which measure compensatory behaviour, hence it is unclear whether reductions in reported energy consumption following interventions is then compensated for at a later time by a (compensatory) increase in energy intake. Several systematic reviews also noted that many studies were of poor quality. **Physical activity:** Only 3 studies (2 BA studies [46,47] and an ITT study [48]) were identified on choice architecture interventions aiming to increase physical activity, all of which focussed on increasing stair use. While all studies reported an increase in stair use following an intervention, there remains a paucity of studies in this area. **Smoking:** Current evidence indicates that changing cigarette length does not have an effect on smoking behaviour,

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A BA study with normal and overweight adults (n=47) on consumption of identical meals with no labels (baseline), 'high fat/energy' or 'low fat/energy' found that food and energy intake was significantly increased in the low fat/energy condition compared to both of the other conditions.[22] A longitudinal study investigating the effect of displaying of calorie information on menu boards via register receipts in fast-food restaurants in New York City on consumer behaviour at 4 fast-food restaurants (n=7,699) found no statistically significant changes over time (2008 when calorie information was mandated, and 3 times points in 2013-14) in levels of calories or frequency of visits to fast-food restaurants. Survey data indicated customers used the information more often than their counterparts at fast-food restaurants without menu labelling but that noticing and using the information declined over time.[23] A cross-sectional study to determine whether purchase decisions at full-service restaurants varies depending on the presence of labelling of values for calories, sodium, fat, and carbohydrates for each menu item, collected transaction receipts and customer survey data (n=648) from 7 full-service restaurant chains (2 with menu labelling and 5 control sites). Customers at labelled restaurants purchased food with 151 fewer kilocalories (stats=NR) and customers who reported that nutrition information affected their order purchased 400 fewer food calories (stats=NR).[24] A cross-sectional survey of people (n=1,003) using a hospital cafeteria with or without energy (calorie), sodium and fat content on digital menu boards and a health logo for 'healthier' items found that people at the intervention site consumed significantly less energy that those at the control site.[25] **Traffic light labelling** A systematic review and meta-analysis of randomised studies (n=NR) assessing the effectiveness of food labelling in increasing the selection of healthier products and in reducing calorie intake reported that while food labelling increases the amount of people selecting a healthier food product by about 18% and decreases		however it should be noted that there have only been a few studies in this area [40]. While there is evidence to indicate that pictorial cigarette pack warnings are better than written labels at increasing intentions to change smoking behaviour, there is a lack of research on the effects of these interventions on reducing or quitting smoking [49], with only 1 study identified that indicates pictorial warnings led to a significant increase in 'forgoing cigarettes' in the UK [50]. There is limited evidence concerning the impact of plain packaging on smoking [51]. There is a paucity of research on other potential choice architecture interventions (such as shelf placement, visibility of cigarette packs) on smoking behaviour. **Alcohol:** There is a lack of research on choice architecture interventions aiming to influence alcohol intake, with only 1 study identified that assessed the impact of glass size on alcohol consumption [53] and a SR evaluating the impact of alcohol warning labels on adolescent drinking that reported little change in participation in risky alcohol-related behaviours [52].

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calorie intake/choice by about 3.6%, this is not significant. They reported that traffic light schemes are marginally more effective in increasing the selection of healthier options.[26] A non-RCT of sales data (n=2.6 million) from university cafeterias serving as control sites, receiving a 'choice architecture' intervention (how choices are presented to consumers) or 'choice architecture' + traffic-light labelling and 'healthy-plate' tray stickers found no significant changes from baseline in 'red' or 'green' items served at intervention sites vs control sites.[27] A RCT with adults (n=635) asked to order a free meal in one of four conditions: no nutritional information shown, calorie amounts only, calorie amounts in "traffic lights", or calorie, fat, sodium, and sugar shown in "traffic lights" found that the calorie content of meals was not significantly different across conditions; however, calorie consumption was significantly lower among participants in the Calorie-only condition compared to the No information condition.[28] A BA study of food purchases (n=2101 transactions) at a recreation and sport facility concession before and after implementation of traffic light labelling (TLL) of menu items found a significant increase in sales of 'green' items and decrease in 'red' items from baseline to 1 week post-implementation of intervention.[29] A BA study of traffic light food labelling in a hospital cafeteria (n=389) found that respondents who noticed labels during the intervention and reported that labels influenced their purchases were significantly more likely to purchase healthier items than respondents who did not notice labels.[30] A BA study of sales of food and beverage items (n=977,793) following a 1st phase introducing traffic light labelling within a hospital cafeteria, followed by a choice architecture phase that increased the visibility and convenience of some green items found that sales of red items significantly decreased in both phases, and green item sales significantly increased in phase 1, with the largest changes occurring among beverage sales.[31] A cohort study (n=2285) assessing the effectiveness of a traffic-light labelling and choice architecture hospital cafeteria intervention found		

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a significant reduction in sales of 'red' food and beverage items from baseline to 24 months and a significant increase in sales of 'green' items.[32] **Labels (non-specific)** A systematic review of studies (n=NR) reporting on the effect of health information at point of purchase on sales found no strong evidence for the effectiveness of product health information, but reported that interventions were more likely to be effective when they lasted for a longer time, included additional intervention components, and targeted the absence of unhealthy nutrients instead of, or in addition to the presence of healthy nutrients.[33] An RCT with cinema goers (n=287) offered a large tub of salted or toffee popcorn and randomised to receive their selected flavour with either a green low-fat label, a red high-fat label or no label found no main effect of nutritional labelling on consumption, nor impact of BMI or weight concerns but did find an interaction with weight concern and socio-economic status (SES): weight-concerned participants of higher SES who saw a low-fat label consumed significantly more than weight unconcerned participants of similar SES and weight-concerned participants of lower SES seeing either type of label, consumed less than those seeing no label.[34] A non-RCT assessing purchases (n=3,680) in a store at a large hospital under 5 conditions differing in labelling and taxation (latter out of scope) found that consumers were significantly more likely to purchase a healthier item when some products were labelled as 'less healthy'.[35] A non-RCT of a healthy labelling certification program at a worksite canteen compared to control site (n=270) found a significant reduction in energy consumed in the intervention site from baseline to end of intervention and 6 months follow-up (difference compared to control site = NR).[36] A BA study using weekly sales data before and after nutritional labels were introduced on a sample of pre-packaged foods in university dining facilities found that food labels resulted in a significant reduction in calories purchased per week from the		

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labelled foods; and that percent of sales from low-calorie and low-fat foods significantly increased, and sales from high-calorie and high-fat foods significantly decreased.[37] A cohort study investigating US Army soldiers (n=299) use of the 'Go-for-Green' nutrition labelling system in dining facilities found that 47% reported 'always' or 'sometimes' using the labels when choosing food and those people were significantly more likely to be on a special diet/taking dietary supplements; a comparison of 'users' vs 'non-users' found that users consumed significantly less energy from fat that non-users after adjusting for reported use of special diets.[38] An cross-sectional study undertaken in a coffee shop with consumer's (n=128) purchases assessed during an intervention using point-of-purchase signs to influence choosing a healthy food purchase compared to a control condition, found that the proportion of high calorie snack purchases were significantly lower in intervention vs control weeks and high calorie drink purchases were non-significantly lower.[39] **Impact of size of portion, packages and tableware on energy consumption** A Cochrane review of 72 RCTs assessing the effects of choice architecture interventions on food, alcohol or tobacco products in adults and children reported that most studies (69/72) manipulated food products (portion size, package size and tableware size or shape). More studies investigated effects among adults (n=55) than children and all studies were conducted in high-income countries – mostly in the USA (58/72). A meta-analysis indicated that people consistently consumed significantly more food and drink when offered larger-sized portions, packages or tableware than when offered smaller-sized versions.[40] A BA study with overweight/obese women (n=20) given a small (19.5 cm) or large (26.5 cm) diameter plate size at a free choice lunch meal found no significant difference in energy intake between conditions.[41]		

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A BA study in which participants (n=88) could freely eat M&Ms from either a small container with medium portion, large container with medium portion or large container with large portion found that the large container increased intake 'despite holding portion size constant, while controlling for different confounding variables'.[42] A BA study (n=60) investigating the effects of the amount of pasta entree available (275 vs 550g) and serving spoon size (teaspoon vs tablespoon) on children's self-served entree portions and intakes at dinner meals found that children served themselves significantly more entree when the amount available was doubled and when the serving spoon size was tripled; and larger self-served portion sizes related to significantly greater entree intakes.[43] A BA study with 8-13 year olds (n=255) presented in class with cucumber that varied in unit size (one piece vs pre-sliced) and portion size (1/3 vs 2/3 of a cucumber) found that significantly more cucumber was eaten when it was served as a large vs smaller portion, but there was no significant difference in consumption between different unit sizes.[44] **Placing of foods** A systematic review of 18 studies on the effect of interventions that manipulated food position (proximity or order) to generate a change in food selection, sales or consumption, among normal-weight or overweight individuals reported that manipulation of food product order or proximity can influence food choice (no data or stats reported).[45] **Physical activity** The 3 studies on choice architecture interventions aimed to increase physical activity all focus on increasing stair use [46-48]: A BA study comparing the effects of 2 messages differing in complexity about the health outcomes obtainable from stair climbing on use in a train station (n=48,697) found that there was an increase in the use of stairs for both interventions, and that simple messages		

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
were significantly more effective during periods of high traffic volume.[46] A BA study (n=16,583 observations) of a 18 month stair climbing campaign that made use of point-of-choice prompts in an office found that stair use significantly increased amongst men and women during months 1-3 of the campaign and was maintained in more than half of women and 60% of men during the campaign period.[47] An ITT study (n=300) testing a poster outlining the amount of calorific expenditure obtainable from stair climbing and a conventional point-of-choice prompt in a worksite (Poster alone site) and the effect of additional messages in the stairwell about calorific expenditure in another worksite (Poster + Stairwell messages site) found that the campaign increased stair climbing, with greater effects at the Poster + Stairwell messages site than Poster alone (CI data indicates a significant difference).[48] **Smoking** The 4 studies on choice architecture interventions aiming to influence smoking focussed on manipulation of cigarette length [40], the effect of pictorial or text-based warnings on cigarette packs [49, 50] and effect of plain packaging [51]. A Cochrane review of 72 studies assessing the effects of choice architecture interventions on food, alcohol or tobacco products in adults and children reported that only a few studies manipulated cigarettes. A meta-analysis of six independent comparisons from three studies (108 participants) indicated there was no effect of cigarette length on smoking consumption.[40] A meta-analysis of 37 experimental studies testing the impact of pictorial and text-based cigarette pack warnings found that pictorial warnings were significantly more effective than text-only warnings for 12 of 17 effectiveness outcomes - relative to text-only warnings, pictorial warnings were more effective at increasing intentions to not start smoking and to quit smoking. Impact on smoking behaviour not reported – the authors noted a lack of studies assessing smoking behaviour.[49]		

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
A longitudinal study of the impact of pictorial warning labels on the back of cigarette packs found that 'forgoing cigarettes' significantly increased in the UK following their introduction in 2008.[50] An RCT with smokers (n=128) randomised to smoke their usual UK brand or a plain Australian brand closely resembling their usual brand for 24 hours found no evidence of an effect of plain cigarette packaging on number of cigarettes smoked.[51] **Alcohol** Only 2 studies [52, 53] report on evidence on the impact of choice architecture interventions aiming to influence alcohol intake and 1 SR notes the lack of evidence in this area [40]. A Cochrane review of 72 studies assessing the effects of choice architecture interventions on food, alcohol or tobacco products in adults and children reported that none manipulated alcohol products.[40] A systematic review of studies (n=NR) evaluating the impact of alcohol warning labels on adolescent drinking found little change in participation in risky alcohol-related behaviours.[52] A BA study (n=NR) of the impact of wine glass size (standard; larger; smaller) on wine sales for on-site consumption, keeping portion size constant found that daily wine volume purchased was higher when sold in larger compared to standard-sized glasses.[53]		
PH6 – 07. Recommendation 7 - Principle 7: evaluating effectiveness		
No evidence identified	Initial intelligence gathering identified the following: Behaviour change: individual approaches (2014) NICE guideline PH49, recommendation 16 provides detailed recommendation on evaluating behaviour change interventions. Topic experts highlighted that they thought this recommendation should be updated with reference to	**New evidence was identified that may change the recommendation: refresh.** Principle 7 provides guidance on the importance of evaluation and monitoring for new behaviour change interventions and programmes Behaviour change: individual approaches (2014) NICE guideline PH49, recommendation 16 provides

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
	Process evaluation of complex interventions: Medical Research Council guidance,[62] the importance of intervention fidelity and the use of natural experiments in evaluation, with reference to Using natural experiments to evaluate population health interventions: new Medical Research Council guidance.[63]	detailed recommendation on evaluating behaviour change interventions, including reference to intervention fidelity and reference to the MRC guidance, it is recommended that principle 7 is refreshed with a link to recommendation 16 in PH49. The MRC reference on using natural experiments should be added to principle 7.
PH6 – 08. Recommendation 8 - Principle 8: assessing cost effectiveness		
No evidence identified	Initial intelligence gathering identified the following: Topic experts noted that there is ongoing work exploring the challenges of evaluating public health interventions where the costs and benefits fall in different sectors.	**No new evidence was identified, no changes** Principle 8 provides guidance on collecting data for cost-effectiveness analysis, including quality of life measures.
Research recommendations		
RR – 01 Provides a recommendation to research councils, national and local research commissioners and funders, research workers and journal editors on standardised information expected in research reports on behaviour change interventions, and what is considered good research.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
RR – 02 Provides a recommendation to research commissioners and funders on encouraging research that takes into account the social and cultural contexts in which people adapt or change their behaviour and the factors that encourage or inhibit change.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
RR – 03 Provides a recommendation to policy makers, research commissioners and local service providers on evaluation of interventions or policy changes.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
RR – 04 Provides a recommendation to policy makers, research funders and health economists on commissioning research on the cost-effectiveness of behaviour change interventions.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
Gaps in the evidence		
Gap – 01 **Evidence about the cost-effectiveness of behaviour change evaluations is lacking, in particular, in relation to specific sub-groups (for example, 19–30 year olds, low-income groups and particular ethnic and disadvantaged groups).**		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
Gap – 02 **Evaluations of behaviour change interventions frequently fail to make a satisfactory link to health outcomes. Clear, consistent outcome measures need developing.**		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
Gap – 03 **Evaluations of interventions based on specific psychological models tend not to relate the outcome measures to the model. As a result, it is difficult to assess the appropriateness of using the model as a means of describing behaviour change.**		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
Gap – 04 **Few studies explicitly address the comparative effect that behaviour change interventions can have on health inequalities, particularly in relation to cultural differences.**		
The following studies looked at the comparative effect of choice architecture interventions: A systematic review of 18 papers on the effectiveness of menu energy labelling at point of purchase by socioeconomic status (SES) found evidence of effectiveness was limited in quantity and quality: only 1 of 6 studies reporting on purchase outcome in low SES populations reported a positive effect; 2 of 5 studies comparing menu labelling across SES groups reported that the policy was effective overall, but the SR authors note that the effect seemed to be limited to high SES populations/neighbourhoods.[12] An RCT with cinema goers (n=287) offered a large tub of salted or toffee popcorn and randomised to receive their selected flavour with either a green low-fat label, a red high-fat label or no label found no main effect of nutritional labelling on consumption, nor impact of BMI or weight concerns but did find an interaction with weight concern and socio-economic status (SES): weight-concerned participants of higher SES who saw a low-fat label consumed significantly more	A topic expert noted that there is new theory concerning the impact of interventions on widening and narrowing inequalities: A study on What types of interventions generate inequalities? Evidence from systematic reviews found that media campaigns and workplace smoking bans showed some evidence of increasing inequalities between socioeconomic status groups, while provision of resources and fiscal interventions, such as tobacco pricing may reduce health inequalities. The authors noted that for many intervention types, data on inequalities are lacking.[58] A later study Are interventions to promote healthy eating equally effective for all? Systematic review of socio-economic inequalities in impact reported that 'Upstream' Price interventions (e.g. taxes and	**New evidence was identified that does not have an impact on the guideline** There remains a lack of evidence investigating the comparative effect that behaviour change interventions can have on health inequalities. This is an area that should be re-visited at the next surveillance review.

Summary of new evidence from 10-year surveillance	Summary of new intelligence from 10-year surveillance (from topic experts or initial internal intelligence gathering)	Impact
than weight unconcerned participants of similar SES and weight-concerned participants of lower SES seeing either type of label, consumed less than those seeing no label.[30] A cross-sectional study on the use of calorie menu labels in McDonald's restaurants (n=29) located in low- and high-income neighbourhoods (n=329 participants) found that higher-income individuals were significantly more likely than low income participants to notice and use calorie labels; with a significant positive association found between individuals with a bachelor's degree or higher and use of calorie menu labels. There was no association between noticing calorie labels and purchasing fewer calories but those who reported using calorie information purchased significantly fewer calories than those who did not report using them.[15]	subsidies) appeared to decrease inequalities, and 'downstream' Person interventions, in particular dietary counselling seemed to increase inequalities. However the authors noted that the 'vast majority of studies identified did not explore differential effects by socioeconomic position'.[59] Adams J, et al. Why are some population interventions for diet and obesity more equitable and effective than others? The role of individual agency (2016) which discusses the personal resources/agency individuals have and states that more effort is required to develop, evaluate, and implement population interventions that require low levels of agency for individuals to benefit.[61]	
Gap – 05 There is a need for more information on the links between knowledge, attitudes and behaviour. Conflation between them should be avoided.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**
Gap – 06 There is a lack of reliable data from which to extrapolate the long-term health outcomes of behaviour change interventions.		
No evidence identified	No evidence identified	**No new evidence was identified, no changes**

References

1. Cushing CC, Jensen CD, Miller MB, Leffingwell TR: **Meta-analysis of motivational interviewing for adolescent health behavior: efficacy beyond substance use**. *Journal of Consulting & Clinical Psychology* 2014, **82**(6):1212-1218.
2. Denford S, Abraham C, Campbell R, Busse H: **A comprehensive review of reviews of school-based interventions to improve sexual-health**. *Health Psychology Review* 2017, **11**(1):33-52.
3. Protogerou C, Johnson BT: **Factors underlying the success of behavioral HIV-prevention interventions for adolescents: a meta-review**. *AIDS & Behavior* 2014, **18**(10):1847-1863.
4. Laws R, Campbell KJ, van der Pligt P, Russell G, Ball K, Lynch J, Crawford D, Taylor R, Askew D, Denney-Wilson E: **The impact of interventions to prevent obesity or improve obesity related behaviours in children (0-5 years) from socioeconomically disadvantaged and/or indigenous families: a systematic review**. *BMC Public Health* 2014, **14**:779.
5. Martin J, Chater A, Lorencatto F: **Effective behaviour change techniques in the prevention and management of childhood obesity**. *International Journal of Obesity* 2013, **37**(10):1287-1294.
6. Chaplais E, Naughton G, Thivel D, Courteix D, Greene D: **Smartphone Interventions for Weight Treatment and Behavioral Change in Pediatric Obesity: A Systematic Review**. *Telemedicine Journal & E-Health* 2015, **21**(10):822-830.
7. Hynynen ST, van Stralen M, Sniehotta F, Araujo-Soares V, Hardeman W, Chinapaw M, Vasankari T, Hankonen N: **A systematic review of school-based interventions targeting physical activity and sedentary behaviour among older adolescents**. *International Review of Sport and Exercise Psychology* 2016, **9**(1):22-44.
8. Armitage CJ, Rowe R, Arden MA, Harris PR: **A brief psychological intervention that reduces adolescent alcohol consumption**. *Journal of Consulting & Clinical Psychology* 2014, **82**(3):546-550.
9. Skov LR, Lourenco S, Hansen GL, Mikkelsen BE, Schofield C: **Choice architecture as a means to change eating behaviour in self-service settings: a systematic review**. *Obes Rev* 2013, **14**(3):187-196.
10. Roy R, Kelly B, Rangan A, Allman-Farinelli M: **Food Environment Interventions to Improve the Dietary Behavior of Young Adults in Tertiary Education Settings: A Systematic Literature Review**. *J Acad Nutr Diet* 2015, **115**(10):1647-1681.e1641.
11. Allan J, Querstret D, Banas K, de Bruin M: **Environmental interventions for altering eating behaviours of employees in the workplace: a systematic review**. *Obes Rev* 2017, **18**(2):214-226.
12. Wilson AL, Buckley E, Buckley JD, Bogomolova S: **Nudging healthier food and beverage choices through salience and priming. Evidence from a systematic review**. *Food Quality and Preference* 2016, **51**:47-64.
13. Nikolaou CK, Hankey CR, Lean ME: **Calorie-labelling: does it impact on calorie purchase in catering outlets and the views of young adults?** *Int J Obes (Lond)* 2015, **39**(3):542-545.
14. Long MW, Tobias DK, Cradock AL, Batchelder H, Gortmaker SL: **Systematic review and meta-analysis of the impact of restaurant menu calorie labeling**. *Am J Public Health* 2015, **105**(5):e11-24.
15. Sinclair SE, Cooper M, Mansfield ED: **The influence of menu labeling on calories selected or consumed: a systematic review and meta-analysis**. *J Acad Nutr Diet* 2014, **114**(9):1375-1388.e1315.
16. Sarink D, Peeters A, Freak-Poli R, Beauchamp A, Woods J, Ball K, Backholer K: **The impact of menu energy labelling across socioeconomic groups: A systematic review**. *Appetite* 2016, **99**:59-75.
17. Elbel B, Mijanovich T, Dixon LB, Abrams C, Weitzman B, Kersh R, Auchincloss AH, Ogedegbe G: **Calorie labeling, fast food purchasing and restaurant visits**. *Obesity (Silver Spring)* 2013, **21**(11):2172-2179.
18. James A, Adams-Huet B, Shah M: **Menu labels displaying the kilocalorie content or the exercise equivalent: effects on energy ordered and consumed in young adults**. *Am J Health Promot* 2015, **29**(5):294-302.

19. Green JE, Brown AG, Ohri-Vachaspati P: **Sociodemographic disparities among fast-food restaurant customers who notice and use calorie menu labels**. *J Acad Nutr Diet* 2015, **115**(7):1093-1101.
20. Nikolaou CK, Lean ME, Hankey CR: **Calorie-labelling in catering outlets: acceptability and impacts on food sales**. *Prev Med* 2014, **67**:160-165.
21. Nikolaou CK, Hankey CR, Lean ME: **Effects of calorie labelling on macro- and micro-nutrients in main-meal choices made by young adults**. *Eur J Clin Nutr* 2016, **70**(3):386-392.
22. McCann MT, Wallace JM, Robson PJ, Rennie KL, McCaffrey TA, Welch RW, Livingstone MB: **Influence of nutrition labelling on food portion size consumption**. *Appetite* 2013, **65**:153-158.
23. Cantor J, Torres A, Abrams C, Elbel B: **Five Years Later: Awareness Of New York City's Calorie Labels Declined, With No Changes In Calories Purchased**. *Health Aff (Millwood)* 2015, **34**(11):1893-1900.
24. Auchincloss AH, Mallya GG, Leonberg BL, Ricchezza A, Glanz K, Schwarz DF: **Customer responses to mandatory menu labeling at full-service restaurants**. *Am J Prev Med* 2013, **45**(6):710-719.
25. Vanderlee L, Hammond D: **Does nutrition information on menus impact food choice? Comparisons across two hospital cafeterias**. *Public Health Nutr* 2014, **17**(6):1393-1402.
26. Cecchini M, Warin L: **Impact of food labelling systems on food choices and eating behaviours: a systematic review and meta-analysis of randomized studies**. *Obes Rev* 2016, **17**(3):201-210.
27. Seward MW, Block JP, Chatterjee A: **A traffic-light label intervention and dietary choices in college cafeterias**. *Am J Public Health* 2016, **106**(10):1808-1814.
28. Hammond D, Goodman S, Hanning R, Daniel S: **A randomized trial of calorie labeling on menus**. *Prev Med* 2013, **57**(6):860-866.
29. Olstad DL, Vermeer J, McCargar LJ, Prowse RJ, Raine KD: **Using traffic light labels to improve food selection in recreation and sport facility eating environments**. *Appetite* 2015, **91**:329-335.
30. Sonnenberg L, Gelsomin E, Levy DE, Riis J, Barraclough S, Thorndike AN: **A traffic light food labeling intervention increases consumer awareness of health and healthy choices at the point-of-purchase.[Erratum appears in Prev Med. 2014 Feb;59:86]**. *Prev Med* 2013, **57**(4):253-257.
31. Thorndike AN, Sonnenberg L, Riis J, Barraclough S, Levy DE: **A 2-phase labeling and choice architecture intervention to improve healthy food and beverage choices**. *Am J Public Health* 2012, **102**(3):527-533.
32. Thorndike AN, Riis J, Sonnenberg LM, Levy DE: **Traffic-light labels and choice architecture: promoting healthy food choices**. *Am J Prev Med* 2014, **46**(2):143-149.
33. van 't Riet J: **Sales effects of product health information at points of purchase: a systematic review**. *Public Health Nutr* 2013, **16**(3):418-429.
34. Crockett RA, Jebb SA, Hankins M, Marteau TM: **The impact of nutritional labels and socioeconomic status on energy intake. An experimental field study**. *Appetite* 2014, **81**:12-19.
35. Elbel B, Taksler GB, Mijanovich T, Abrams CB, Dixon LB: **Promotion of healthy eating through public policy: a controlled experiment**. *Am J Prev Med* 2013, **45**(1):49-55.
36. Lassen AD, Beck A, Leedo E, Andersen EW, Christensen T, Mejborn H, Thorsen AV, Tetens I: **Effectiveness of offering healthy labelled meals in improving the nutritional quality of lunch meals eaten in a worksite canteen**. *Appetite* 2014, **75**:128-134.
37. Cioffi CE, Levitsky DA, Pacanowski CR, Bertz F: **A nudge in a healthy direction. The effect of nutrition labels on food purchasing behaviors in university dining facilities**. *Appetite* 2015, **92**:7-14.
38. Arsenault JE, Singleton MC, Funderburk LK: **Use of the Go-for-Green nutrition labeling system in military dining facilities is associated with lower fat intake**. *J Acad Nutr Diet* 2014, **114**(7):1067-1071.
39. Allan JL, Johnston M, Campbell N: **Snack purchasing is healthier when the cognitive demands of choice are reduced: A randomized controlled trial**. *Health Psychol* 2015, **34**(7):750-755.
40. Hollands GJ, Shemilt I, Marteau TM, Jebb SA, Lewis HB, Wei Y, Higgins JP, Ogilvie D: **Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco**. *Cochrane Database Syst Rev* 2015(9):CD011045.

41. Yip W, Wiessing KR, Budgett S, Poppitt SD: **Using a smaller dining plate does not suppress food intake from a buffet lunch meal in overweight, unrestrained women**. *Appetite* 2013, **69**:102-107.
42. Marchiori D, Corneille O, Klein O: **Container size influences snack food intake independently of portion size.[Erratum appears in Appetite. 2012 Oct;59(2):616]**. *Appetite* 2012, **58**(3):814-817.
43. Fisher JO, Birch LL, Zhang J, Grusak MA, Hughes SO: **External influences on children's self-served portions at meals**. *Int J Obes (Lond)* 2013, **37**(7):954-960.
44. van Kleef E, Bruggers I, de Vet E: **Encouraging vegetable intake as a snack among children: the influence of portion and unit size**. *Public Health Nutr* 2015, **18**(15):2736-2741.
45. Bucher T, Collins C, Rollo ME, McCaffrey TA, De Vlieger N, Van der Bend D, Truby H, Perez-Cueto FJ: **Nudging consumers towards healthier choices: a systematic review of positional influences on food choice**. *Br J Nutr* 2016, **115**(12):2252-2263.
46. Lewis AL, Eves FF: **Prompts to increase stair climbing in stations: the effect of message complexity**. *J Phys Act Health* 2012, **9**(7):954-961.
47. Nomura T, Katayama K, Kashiwa T, Akezaki Y, Sato A: **Maintenance of the rate of stair use over a long-term period using a stair climbing campaign**. *J Occup Health* 2014, **56**(6):511-518.
48. Eves FF, Webb OJ, Griffin C, Chambers J: **A multi-component stair climbing promotional campaign targeting calorific expenditure for worksites; a quasi-experimental study testing effects on behaviour, attitude and intention**. *BMC Public Health* 2012, **12**:423.
49. Noar SM, Hall MG, Francis DB, Ribisl KM, Pepper JK, Brewer NT: **Pictorial cigarette pack warnings: a meta-analysis of experimental studies**. *Tob Control* 2016, **25**(3):341-354.
50. Nagelhout GE, Willemsen MC, de Vries H, Mons U, Hitchman SC, Kunst AE, Guignard R, Siahpush M, Yong HH, van den Putte B *et al*: **Educational differences in the impact of pictorial cigarette warning labels on smokers: findings from the International Tobacco Control (ITC) Europe surveys**. *Tob Control* 2016, **25**(3):325-332.
51. Maynard OM, Leonards U, Attwood AS, Bauld L, Hogarth L, Munafò MR: **Effects of first exposure to plain cigarette packaging on smoking behaviour and attitudes: a randomised controlled study**. *BMC Public Health* 2015, **15**(1):240.
52. Scholes-Balog KE, Heerde JA, Hemphill SA: **Alcohol warning labels: unlikely to affect alcohol-related beliefs and behaviours in adolescents**. *Aust N Z J Public Health* 2012, **36**(6):524-529.
53. Pechey R, Couturier DL, Hollands GJ, Mantzari E, Munafo MR, Marteau TM: **Does wine glass size influence sales for on-site consumption? A multiple treatment reversal design**. *BMC Public Health* 2016, **16**:390.
54. Moving More, Living More: Olympic and Paralympic Games legacy
55. Changing Behaviour, Improving Outcomes: A new social marketing strategy for public health
56. Bala MM, Strzeszynski L, Topor-Madry R, Cahill K: **Mass media interventions for smoking cessation in adults**. *Cochrane Database Syst Rev* 2013(6):CD004704.
57. Mosdøl A, Lidal IB, Straumann GH, Vist GE: **Targeted mass media interventions promoting healthy behaviours to reduce risk of non-communicable diseases in adult, ethnic minorities**. *Cochrane Database Syst Rev* 2017(2):CD011683.
58. Lorenc T, Petticrew M, Welch V, et al.: **What types of interventions generate inequalities? Evidence from systematic reviews**. *J Epidemiol Community Health* 2013,**67**:190-193.
59. McGill R, Anwar E, Orton L, et al.: **Are interventions to promote healthy eating equally effective for all? Systematic review of socioeconomic inequalities in impact**. *BMC Public Health* 2015,**15**:457.
60. Bull ER, Dombrowski SU, McCleary N, et al**.: Are interventions for low-income groups effective in changing healthy eating, physical activity and smoking behaviours? A systematic review and meta-analysis**. *BMJ Open* 2014,**4**:e006046.
61. Adams J, Mytton O, White M, Monsivais P: **Why Are Some Population Interventions for Diet and Obesity More Equitable and Effective Than Others? The Role of Individual Agency**. *PLoS Med* 2016,**13**(4):e1001990.
62. Moore GF, Audrey S, Barker M: **Process evaluation of complex interventions: Medical Research Council guidance** *BMJ* 2015,350:h1258.

63. Craig P, Cooper C, Gunnell D, et al.: **Using natural experiments to evaluate population health interventions: new Medical Research Council guidance**. *J Epidemiol Community Health* 2012,**66**:1182-1186.

64. Improving employees' diets by changing the size, availability and labelling of foods in workplace cafeterias

65. Identifying and understanding mechanisms of action in group-based health behaviour change interventions

66. Mass media for public health messages

67. The economic evaluation of public health programmes with costs and effects falling outside the NHS and local authority public health budgets