

APPENDIX 4

EXPERT ADVISORY GROUPS

INTERVENTION SUMMARIES

PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Multi-component school-based programmes to increase physical activity	
EAG outcome	Outcome 1: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years.
Rationale for inclusion	Six systematic reviews (1, 2, 3, 4, 5, 6), including a Cochrane Review (1) and a NICE evidence review (2), were identified which included this intervention.
Intervention description	Multi-component interventions (combination of curriculum; policy; environment; physical activity sessions; teacher training; family components) in the school setting to increase physical activity. The one systematic review that considered short bouts of physical activity included sessions in the classroom, PE lessons and break.
Population	The target population varied across studies but all included children and adolescents attending school between the ages of 6 and 18 years of age. The reviews include studies in USA, Canada, Europe, Australia, Brazil and Iran. A minority of studies took place in the UK.
Setting(s)	Primary, middle and secondary schools.
Study design and quality	<p>Review 1 included 44 studies, all covering randomised controlled trials (RCTs) of a minimum of 12 weeks duration. The evidence was graded as poor and it was recommended that results be interpreted cautiously. Weaknesses included a lack of blinding among participants, providers, outcome assessors, and data analysts. In most studies the data for behavioural outcomes were collected through student self-report.</p> <p>Review 2 included a sub-section of interventions, based within families and schools that were in essence multi-component interventions in schools. There were seven studies; four of them had a positive quality score; four were large (n= 475; 5,106; 954; 510; 2,991) cluster randomised controlled trials (CRCTs) of</p>

	<p>good quality; and three were non-randomised controlled trials (NRCTs), one of which was good quality, and the other two poor.</p> <p>Review 3 considered a range of physical activity interventions with children and is included in this summary as 17 of the trials were school-based. This review included thirty studies (RCTs or Controlled Clinical Trials) involving 14,326 participants. Sixteen studies (n=3,883) were judged to be of high methodological quality; 12 moderate and two weak. All studies in this review reported physical activity outcomes using objective measures.</p> <p>Review 4 included 20 trials (11 RCTs and 9 controlled trials) of good quality.</p> <p>Review 5 included seven studies: five RCTs and two experimental studies. The quality of these studies was not formally assessed but limitations were discussed and included e.g. reliance on self reports, lack of long-term follow up. Studies varied in size from 110-1,447 with four studies having sample sizes over 1,000.</p> <p>Review 6 included 17 studies which reported physical activity outcomes for brief bouts of physical activity interventions in schools and included five CRCTs, three RCTs, and nine quasi experimental pre- and post-studies. The quality of the included studies had not been assessed.</p> <p>There was a limited overlap between studies considered. Of the 114 studies included in this series of reviews, there were three studies which appeared in three reviews, 14 studies which appeared in two reviews and 97 studies which appeared in one review only.</p>
Reach	Information is not provided within the review on the reach of the interventions. The use of school settings however suggests that reach will be high as long as adoption by schools is sufficient.
Efficacy/ effectiveness	Review 1 found improvement in the proportion of children who engaged in moderate to vigorous physical activity during school hours (odds ratio 2.74; 95% confidence interval 2.01 to 3.75). Children and adolescents exposed to the intervention also spent more time engaged in moderate to vigorous physical activity (with results across studies ranging from 5 to

	<p>45 minutes more).</p> <p>Review 2 found six of the seven studies showed positive physical activity effects and one showed no effect. The studies reporting a positive effect range including:</p> <ul style="list-style-type: none">• an increase in moderate to vigorous physical activity of four minutes per day in the intervention group compared with a decrease of seven minutes per day in the control• the odds ratio (OR) of the proportion of pupils achieving the recommended level of physical activity (OR 1.63; 95% confidence interval 1.05 to 2.51 $p < 0.05$) <p>Review 3 found that a pooled intervention effect across all studies was small to negligible for total physical activity based on objectively measured outcomes (standardised mean difference 0.12; 95% confidence interval 0.04 to 0.20 $p < 0.01$), and small for moderate or vigorous activity (0.16; 0.08 to 0.24; $p < 0.001$). This review concluded that there is strong evidence that physical activity interventions have had only a small effect (approximately four minutes more walking or running per day) on children's overall activity levels.</p> <p>Review 4 found that every study with a physical activity outcome ($n=16$) reported a significant intervention effect in at least one domain of physical activity: in-school; out-of-school; or overall. The review concluded that taking into consideration both assessment quality and public health relevance, multi-component approaches in children including family components showed the highest level of evidence for increasing overall physical activity.</p> <p>Review 5 concluded that school-based multi-component interventions that were designed to reduce obesity and decrease sedentary behaviour were effective in increasing physical activity in adolescent girls. Five out of seven studies reported physical activity levels and three found a positive effect.</p> <p>Review 6 found that 12 of the 17 school-based studies with physical activity outcomes reported improvements in physical activity following the intervention. Although not available for all studies, effect sizes were moderate to large in most studies for which effect size estimates could be calculated, based</p>
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	<p>on self-reported physical activity (e.g. PAQ-C); direct observation (e.g. SOFIT); pedometer or accelerometer data; and teacher report.</p> <p>An economic analysis of physical activity interventions (7) found that school-based physical activity interventions targeting children and adolescents ranked well with a median of \$0.42/MET hour/day/person, generating an average of 16% of recommended physical activity. MET hour is a measure of metabolic activity.</p>
Adoption	To deliver a population-level impact this intervention would need widespread adoption in schools across Wales. In addition, the intervention components would require wide adoption within the school.
Implementation	<p>Multiple component interventions involve a variety of implementation strategies. At school level, it would require:</p> <ul style="list-style-type: none"> • organisational level support • the involvement of PE experts • training of classroom teachers • implementation of changes to school environment • implementation of changes to school policies • the availability of equipment • increased structured physical activity sessions <p>Implementation support would include:</p> <ul style="list-style-type: none"> • active dissemination of the intervention to schools • the provision of best practice guidance for schools • training for staff • monitoring
Maintenance	<p>Elements of change at school level may be maintained, once embedded, with limited support. However, other elements will require ongoing resourcing e.g. provision of physical activity sessions.</p> <p>There is little evidence from the systematic reviews of a sustained effect of the interventions at school or individual level.</p>
Potential impact	The systematic reviews provide limited information on the actual change in levels of physical activity as a result of the intervention for most studies. Where estimates are provided they suggest an increase of

	between 5 and 45 minutes per day.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG noted that while the evidence was inconsistent, multi-component school-based interventions can have a small to moderate effect on physical activity levels based on the current available evidence.</p> <p>School interventions have the advantage of reaching children as a universal intervention and can therefore reduce the impact on inequalities in opportunity to be physically active.</p> <p>A number of current programmes have potential to be incorporated within this approach and the Welsh Network of Healthy School Schemes (WNHSS), which includes 97% of all schools in Wales, could provide a co-ordinating vehicle for dissemination and monitoring.</p> <p>The inconsistency of the current evidence and the limitations of the current research evidence would suggest that implementation should be supported by research.</p>

References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Enhanced physical education (PE) lessons in schools	
EAG outcome	Outcome 1: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years.
Rationale for inclusion	Three systematic reviews (1, 2, 3) identified enhanced PE as an effective intervention for increasing physical activity levels in school age children.
Intervention description	Enhanced PE is characterised by a focus on increasing overall physical activity, particularly moderate-to-vigorous intensity physical activity (MVPA) during PE class. This may include increasing the amount of time students spend engaged in MVPA during PE lessons; adding more physical education classes to the school curriculum; lengthening the time of existing physical education classes; meeting the physical activity needs of all students, including those with disabilities; including activities that are enjoyable for students while emphasising knowledge and skills that can be used for a lifetime.
Population	School aged children aged 3 to 16 years.
Setting(s)	Primary and secondary schools. The majority of studies were undertaken in the USA, with others in UK, Australia and Europe.
Study design and quality	<p>Review 1 comprised 13 cluster randomised controlled trials (CRCTs), one randomised controlled trial (RCT), one quasi-experimental study and one crossover study. Five studies were rated as having high risk of bias. Eight studies had moderate risk, while one study had low risk of bias.</p> <p>Review 2 included 12 studies with greatest suitability of design, and one study with least suitable design. Four had good execution, nine had fair execution.</p> <p>Review 3 covered 21 studies: 19 RCTs; two quasi-experimental. Of those, 12 were assessed as high quality, nine of low quality. Most studies used a valid</p>

	outcome measurement instrument. Fourteen studies used objective tools.
Reach	Reach was not reported for the studies in these reviews. School-based interventions, if applied to the whole school, have the potential to reach a large proportion of school aged children.
Efficacy/ effectiveness	<p>Review 1: The meta-analysis indicated an absolute difference of 10.37% (95% confidence interval 6.33% to 14.41%) of lesson time spent in MVPA in favour of the interventions over controls. The weighted mean across the control groups was 43.45% of lesson time in MVPA. The estimated difference of 10.37% of lesson time corresponds to 24% more active learning time in the intervention groups compared with the control condition (standardised mean difference=0.62; 95% confidence interval 0.39 to 0.84).</p> <p>Review 2: These studies showed consistent increases in time spent in physical activity at school. Five arms from four studies showed increases in the amount and percentage of time spent in MVPA in PE classes. The net increase in the amount of PE class time spent in MVPA was 50.3% (range 6.0% to 125.3%). The net increase in the percentage of class time spent in MVPA was 10% (range 3.3% to 15.7%), with an additional study reporting a 762% increase from a very small baseline value. The review concluded that there is strong evidence that school-based PE is effective in increasing levels of physical activity.</p> <p>Review 3: This review included interventions aiming to increase physical activity in girls. Ten of the 21 studies reported a favourable intervention effect upon physical activity outcomes, seven of which were rated high quality. The review found that effective interventions to increase physical activity among girls (aged 5 to 18 years) appeared to be those that were school-based, with enjoyable PE being one of their main components, and which addressed multiple levels of influence on behaviour using a socio-ecological framework.</p>
Adoption	This intervention would require adoption by schools and by physical activity teachers within schools to achieve population impact.

Implementation	<p>Implementation at school level would require:</p> <ul style="list-style-type: none"> • organisational support • increase or maintenance of time for PE in curriculum • changes to delivery of PE to increase MVPA • access to equipment and facilities • staff training <p>Implementation support would include:</p> <ul style="list-style-type: none"> • advocacy and dissemination of interventions • guidance and support for schools • training for PE teachers • monitoring
Maintenance	<p>Once implemented, enhanced PE would become the norm and the only ongoing costs would relate to the cost of equipment / venue hire to ensure a choice of enjoyable PE activities.</p> <p>There is little evidence from the current studies of the longer-term maintenance of increased levels of physical activity.</p>
Potential impact	<p>It has been identified that levels of MVPA in PE lessons is low. Review 1 estimates that PE-based interventions can increase students' MVPA during lessons by about 24% compared with usual practice, and this increase could have a substantial positive influence on the total amount of physical activity that children and adolescents accumulate.</p>
Evidence summary and grading	<p>Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.</p>
Expert Advisory Group conclusion	<p>The EAG noted that the reviews indicate that increasing the level of PE sessions (duration and intensity) can have an effect on physical activity levels based on the current available evidence. The importance of activities which are seen to be enjoyable, particularly for girls was noted.</p> <p>School interventions have the advantage of reaching children as a universal intervention and can therefore reduce the impact on inequalities in opportunity to be physically active.</p> <p>A number of current programmes have potential to be incorporated within this approach and the Welsh Network of Healthy School Schemes which includes</p>

	97% of all schools in Wales could provide a co-ordinating vehicle for dissemination and monitoring.
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References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Multi-component interventions in pre-school settings	
EAG outcome	Outcome 1: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years.
Rationale for inclusion	Five systematic reviews (1, 2, 3, 4, 5) considered the effectiveness of physical activity interventions for pre-school children and concluded that there is moderate evidence of an impact on levels of physical activity.
Intervention description	Multi-component physical activity interventions in a pre-school setting including, but not limited to, redesign of outside space; new outdoor equipment; training teachers; more time and opportunities to practice fundamental motor skills.
Population	Pre-school children aged two to six years. The majority of settings were in the USA, with eight studies based in the UK. Two studies included were based on Latino pre-school children.
Setting(s)	Pre-schools, including nurseries and childcare settings (Review 3 considered playgrounds only and included schools as well as pre-school settings).
Study design and quality	<p>Review 1 included 15 studies, totalling 2,618 participants: six randomised controlled trials (RCTs); five cluster randomised controlled trials (CRCTs); two pre- and post-design; one quasi-experimental; one non-randomised controlled trial (NRCT). Nine out of fifteen studies used objective measures of physical activity. The quality of individual studies was not considered.</p> <p>Review 2 included 11 studies: seven CRCTs; one RCT; one pre- and post-study; one longitudinal observation study; and one intervention pilot study. The quality of individual studies was not considered.</p> <p>Review 3 included 33 studies: 16 experimental and 17 observational. Experimental studies included 13 NRCTs, and three CRCTs. The numbers of participants in five studies was small $n < 50$; nine studies had between 50</p>

	<p>and 500 participants and two studies had over 500 participants (583 and 5,488). The observational studies included a number of pre/ primary schools and participant numbers were in the hundreds for each study. The majority of studies were of moderate or high quality.</p> <p>Review 4 included 23 studies: seven high quality studies (three with large sample size); 12 moderate quality studies, four low quality studies. The design of the studies included: 15 CRCTs, one quasi-experimental study, the remainder were case control studies, before-and-after studies or lacked a control group.</p> <p>Review 5 included 19 studies: eleven CRCTs; four RCTs; one quasi-experimental study; two pre- and post-test studies, one NRCT. The quality of individual studies was not considered.</p> <p>There was some overlap between studies considered. Of the 51 studies included in this series of reviews there were seven studies which appeared in three reviews, seven studies which appeared in two reviews and 37 studies which appeared in one review only.</p>
Reach	<p>In order to deliver population-level change, a large proportion of pre-schools in Wales would need to implement this intervention. The number of children's day care settings in Wales totals 1,425: 648 providing full day care and 777 providing sessional day care¹. In addition, there are 80 schools providing education to children in the early years².</p>
Efficacy/ effectiveness	<p>Review 1 concluded that overall physical activity interventions had small to moderate effects on the level of MVPA (Hedges' $g=0.51$, moderate, $SD=0.88$, $p<0.05$). An additional 358 additional studies with null results would have been needed to render this finding non-significant. Interventions that focused on physical activity alone had a moderate statistically significant effect ($g=0.43$) while interventions involving environmental changes (e.g. play equipment, floor markings) had a large statistically significant effect</p>

¹ <http://cssiw.org.uk/docs/cssiw/publications/140528quarterlyen.pdf>

² <https://statswales.wales.gov.uk/Catalogue/Education-and-Skills/Schools-and-Teachers/Schools-Census/Pupil-Level-Annual-School-Census/Schools/Schools-by-LocalAuthorityRegion-Type>

($g=0.92$) on MPVA. No significant effects were found for those interventions that included physical activity plus education or education alone. The greatest effects for MVPA were identified for interventions that were less than four weeks in duration, offered in an early learning environment, led by teachers, involved outdoor activity, and incorporated unstructured activity.

Review 2 was a narrative review that concluded that studies reporting positive outcomes implemented physical activity sessions that lasted at least 30 minutes. Several studies showed that children are most active in the first 10 to 15 minutes. The existence or installation of playground markings or fixed play equipment was found to have no effect, whereas the presence or addition of portable play equipment was positively correlated with MVPA. The study considered that teacher training may be a key element for successful interventions.

Review 3 showed that experimental studies generated: moderate evidence for an effect of the provision of play equipment; inconclusive evidence for an effect of the use of playground markings, allocating play space and for multi-component interventions; and no evidence for an effect of decreasing playground density, the promotion of physical activity by staff, and increasing break duration on children's health. In line with this, observational studies showed positive associations between play equipment and children's physical activity level. In contrast to experimental studies, significant associations were also found between children's physical activity and a decreased playground density and increased break duration.

Review 4 found that significant changes in children's physical activity levels were reported in fourteen (61%) intervention studies, five of which were rated high in methodological quality, five as moderate, and four as low. Five studies found no significant changes in children's physical activity levels. The high quality studies were more likely to report a significant increase in children's physical activity than the lower quality studies, except when they used playground or playtime modifications as a physical activity promotion strategy. The review identified the following factors associated with more physical activity: physical activity related teacher training; teachers joining in activities; more space per child; and a substantial amount of additional

	<p>structured, but not free, outdoor play time.</p> <p>Review 5 concluded that although all the studies with a physical activity-related outcome and motor skill outcome had positive intervention effects, findings should be interpreted carefully because of the limitations in research design (e.g. non-random assignment, no control group, or pilot/feasibility nature). Thus 'cautious optimism' about their conclusions is suggested.</p>
Adoption	For population-level impact this intervention based in pre-schools, would need to be adopted widely across pre-school settings in Wales and consistently by teachers and other staff within those settings.
Implementation	<p>Implementation at school level would require:</p> <ul style="list-style-type: none"> • organisational commitment • training / guidance for staff (assuming one trained teacher per setting 1,425 nursery teachers trained in PE) • the availability of outdoor play equipment • the re-design of outdoor space • changes to the pre-school day to include supervised sessions <p>Implementation support:</p> <ul style="list-style-type: none"> • active dissemination of best practice • provision of advice and guidance • training for pre-school staff • monitoring and evaluation
Maintenance	Partnership working with Care and Social Service Inspectorate Wales could enable ongoing support for this intervention which, once effectively implemented, should require minimal ongoing support.
Potential impact	The systematic reviews did not include information on the magnitude of change in children's physical activity. It is difficult therefore to make an assessment of the difference that these interventions might make to the intensity or duration of physical activity in this group i.e. how many additional minutes of physical activity per day. Few of the studies undertook a longer-term follow up to assess whether the intervention and the effect were maintained.
Evidence summary and	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.

grading	
Expert Advisory Group conclusion	<p>The EAG noted that while the evidence was inconsistent and at times contradictory, interventions to increase physical activity in pre-school settings are likely to have a small to moderate effect on physical activity levels based on the current available evidence.</p> <p>Pre-school settings are not attended by all children but will reach all of those who do attend.</p> <p>A number of current programmes have potential to be incorporated within this approach and the Healthy and Sustainable Pre-School Scheme could provide a co-ordinating vehicle for dissemination and monitoring.</p> <p>The inconsistency of the current evidence and the limitations of the current research evidence would suggest that implementation should be supported by research.</p>

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT	
Multi-component community interventions to promote physical activity	
EAG outcome	Outcomes 1, 2 and 3: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years, working age adults, and older adults.
Rationale for inclusion	Two systematic reviews were identified that included this intervention: one a Cochrane Review (1); the other a review for the US Community Preventive Taskforce (2).
Intervention description	These interventions comprise a combination of different components delivered as an integrated programme. In addition to incorporating substantial communication activities through mass media, typically also included is some combination of social support such as: self-help groups; risk factor screening; counselling; education about physical activity in a variety of settings, including worksites, schools, and community events; and environmental or policy changes such as the creation of walking trails.
Population	Either whole population or targeted to a specific group.
Setting(s)	In Review 1, 19 studies were conducted in high income countries (nine in USA, two in Australia, eight in Europe), and six in low income countries of which four were in China. In Review 2, studies were conducted in the US (five), Europe and Australia. They included rural, suburban and urban areas, and included all socio-economic groups.
Study design and quality	Both reviews followed standardised methodologies which included an assessment of quality. In Review 1, 25 studies were included in total of which 16 were considered at high risk of bias and for the remainder the risk was unclear. This was largely due to the lack of randomisation which is challenging in studies of this type.

	<p>In Review 2, based on ten studies, two studies had the greatest suitability of study design and good execution. The remaining eight studies had fair execution. Of those, five had the greatest suitability of study design and three were of moderate suitability. These two reviews had different inclusion/exclusion criteria, for example a number of studies included in Review 2 were excluded from Review 1 as they were not primarily intended to promote physical activity.</p>
Reach	<p>Limited information is available within the reviews. In Review 1 the lower intensity studies were reported as having low reach. If appropriately adapted to the target populations, these interventions should be applicable to diverse settings and groups.</p>
Efficacy/ effectiveness	<p>Review 1 concluded that there is a noticeable inconsistency in the findings of the available studies and this is confounded by serious methodological issues. The body of evidence in this review does not support the hypothesis that multi-component community-wide interventions effectively increase population levels of physical activity.</p> <p>Review 2 concluded that there is strong evidence of effectiveness in increasing physical activity and improving physical fitness among adults and children.</p> <ul style="list-style-type: none"> • Percentage of people who report being physically active: median net increase of 4.2% (interquartile range -2.9% to 9.4%; six study arms) • Other measures of physical activity: all but one of five study arms showed increases in physical activity. • This review also found evidence that community-wide campaigns are effective in increasing knowledge about exercise and physical activity.
Adoption	<p>These were multi-component studies and would require adoption in the first instance by local health or government agencies and the co-operation and engagement of a range of sectors and settings. To achieve a population level impact, a large number of communities would need to adopt this intervention.</p>
Implementation	<p>Implementation at a local level, would require:</p> <ul style="list-style-type: none"> • senior executive and political leadership at local level

	<ul style="list-style-type: none"> • engagement by a wide range of agencies • changes to infrastructure or facilities • programme management approach <p>Implementation support would include:</p> <ul style="list-style-type: none"> • intervention component development • best practice guidance • monitoring and evaluation
Maintenance	Elements are likely to require minimal maintenance but individual-based components would require ongoing support. Over time the impact of the intervention is likely to diminish without boost. In Review 1, studies had a minimum of six months follow-up.
Potential impact	The inconsistent findings of the reviews mean that assessing impact is difficult. There is evidence to support an increase in population levels of self-reported physical activity of approximately 4%.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG recognised the importance of leadership and cross-sectoral co-ordination of efforts to increase physical activity at both local and national level.</p> <p>The inconsistency in findings of these studies suggests that these approaches would need to be implemented on a demonstration or development basis with rigorous evaluation.</p>

References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT	
Multi-component cycling interventions	
EAG outcome	Outcomes 1 and 2: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years, and working age adults.
Rationale for inclusion	One systematic review (1) (basis of NICE guidance) concluded that there is moderate evidence that multi-component interventions are effective in increasing population levels of cycling for active travel up to two years post-intervention.
Intervention description	Multi-component interventions aimed at increasing cycling. Interventions included: cycle lanes; road speed limits; map provision; information booklets and branded equipment; cycle skills course; signage; mass participation events; increased cycle access to public transport.
Population	The whole population was targeted in this intervention. One study, set in the USA was in a deprived area. Three of the six towns in the UK study were less affluent (Derby; Darlington; Lancaster and Morecambe).
Setting(s)	Settings of studies: urban areas (USA, Australia and six cycling demonstration towns in the UK).
Study design and quality	Five studies: one non-randomised controlled trial (NRCT) of moderate quality; two before-and-after (BA) studies of moderate quality; one interrupted time series (ITS) study; one evaluation report. All were moderate in quality.
Reach	Information about the number of people cycling in Wales is not available. However 3.1% of the total population of commuters cycle to work in England and Wales. It likely that multi-component interventions in an area have the potential to reach a significant proportion of that population.

Efficacy/ effectiveness	<p>All studies showed a positive impact:</p> <ul style="list-style-type: none"> • increase in the mean number of riders per day 57% (SD 18.5) at six months follow-up • significantly greater use of the cycle paths in the intervention area (28.3%) at two year follow-up compared with the comparison area (16.2% p<0.001) • an average increase in cycles counted of 27% • proportion of pupils cycling to school at least once a week increased from 12% pre-survey to 26% post-survey • data from automatic cycle counts indicated 12% increase over all cycle routes and up to 60% at specific sites • proportion of adult cycling for at least 30 minutes once or more per month increased from 11.8% in 2006 to 15.1% in 2008, an increase of 3.3 percentage points or 28%
Adoption	This intervention would require adoption by Local Authorities.
Implementation	<p>Implementation at a local level would require:</p> <ul style="list-style-type: none"> • adoption at senior political and executive level • cross agency support for implementation • environmental changes to improve cycling routes • promotion campaign • cycle training opportunities <p>Implementation support:</p> <ul style="list-style-type: none"> • advocacy at a national and local authority level • best practice guidance • monitoring and evaluation
Maintenance	This intervention is not a 'one-off' project but would need continued monitoring and support. Monitoring reports, ongoing feedback to local areas, and updating guidance to ensure that it remains up-to-date would all be required until sustained cultural change had been achieved.
Potential impact	This intervention has the potential to increase cycling in Wales by a small amount if implemented widely.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.

<p>Expert Advisory Group conclusion</p>	<p>The EAG noted the potential impact of these interventions on cycling behaviour. The scale of investment required is significant and would require long-term investment to sustain change at population level. This intervention would require Welsh Government support and would need to be Local Government led. However, Public Health Wales could provide support to key elements of the work such as education / behaviour change and monitoring at population level.</p> <p>The Active Travel (Wales) Act places a requirement on Local Authorities to continuously improve facilities and routes for walkers and cyclists, and to prepare maps identifying current and potential future routes for their use. The Bill will also require new road schemes to consider the needs of pedestrians and cyclists at design stage. This intervention has the potential to build on the work that Local Authorities will be required to do under the Active Travel Act.</p>
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References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT	
Active travel to school	
EAG outcome	Outcome 1: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years.
Rationale for inclusion	Three systematic reviews (1, 2, 3) (two of which form the basis of NICE guidance) concluded that evidence suggests that active transportation to school increases physical activity among children and young people of school age.
Intervention description	The interventions were varied and were usually multi-component (involving schools, parents and the local community) and included: cycling promotion; walking promotion/buses; and environmental changes such as pavement or road crossing improvements.
Population	School aged pupils 5 to 16 years old.
Setting(s)	Settings varied (urban, semi-urban and rural) but all were school-based. The majority of these studies were conducted in the UK, with others in the USA, Australia and New Zealand. One study targeted disadvantaged school children.
Study design and quality	<p>Review 1 included ten studies: seven before-and-after (BA) of moderate quality; one cluster randomised controlled trial (CRCT) of moderate quality; two non-randomised controlled trials (NRCTs) of moderate quality.</p> <p>Review 2 categorised interventions into three groups: i) cycling promotion, including seven uncontrolled before-and after-studies (UBAs) of moderate quality; ii) walking buses, including three UBAs of moderate quality and one UBA of poor quality; iii) walking promotion, including two UK-based controlled before-and-after (BA) studies of moderate quality and three UBAs, also of moderate quality.</p> <p>Review 3 included 14 studies: three were rated as strong, with randomized controlled trial study designs.</p>

	<p>Most of the study designs were moderately rated, with quasi-experimental designs. Three interventions were weak because they had only post-intervention measures or were conducted as observational studies.</p> <p>There was minimal overlap between these reviews: of the forty studies identified five studies were in two reviews.</p>
Reach	<p>The proportion of children in these studies that were engaged in active travel before and after the intervention was not always reported. Where it was reported, the proportions varied considerably from around 4% to 28% for walking interventions and 4% to 12% for cycling.</p>
Efficacy/ effectiveness	<p>Review 1 found that eight out of ten studies showed statistically significant positive effects; one study had a non-significant positive effect and one demonstrated no effect on walking. Increases in the number of children walking to school ranged from 5% to 25%.</p> <p>Review 2 found five out of seven studies showed a statistically significant positive effect of cycling promotion with increases in cycling by up to 50%. However two studies found that walking to school declined when cycling increased. However in two studies walking did not decline and car use did decline.</p> <p>Three out of four studies of walking bus interventions showed a statistically significant positive effect with increases in walking by 8% and 16% points. In one study 62% of the children who used the walking bus had previously been driven to school by car. For walking promotion four out of five studies showed a positive effect. The effect size varied: some schools reported a near doubling of the number of pupils walking to school, some increasing walking by 3.4%.</p> <p>Review 3: The degree of change in physical activity varied from 3% to 64%, with nine studies showing trivial or small effect sizes, two showing large effect sizes, and one showing very large effect sizes. Effect size could not be calculated for two studies.</p>
Adoption	<p>For population impact there would need to be widespread adoption by all schools in Wales.</p>
Implementation	<p>School level implementation would require;</p>

	<ul style="list-style-type: none"> • organisational support • educational/promotional activities and materials • cycle storage • availability of safe routes • local volunteers • support from external agency in implementation <p>Implementation support would require:</p> <ul style="list-style-type: none"> • Local Authority and Transport Body support • establishment and promotion of safe routes • social Marketing/Mass Media promotion • funding for support to schools for active dissemination • monitoring
Maintenance	<p>It is not clear from the evidence whether those interventions with paid staff/ co-ordinators maintained improvements in physical activity levels once co-ordinator roles ceased. Environmental changes are likely to be a one-off cost.</p> <p>There is little evidence from the literature that the intervention or the beneficial effects were maintained long-term.</p>
Potential impact	<p>The potential benefit of walking or cycling to school for an individual will be dependent on the distance travelled and the intensity of the activity.</p> <p>The National Travel Survey 2011³ (of travel in Great Britain) found: 31% primary school children who travel one to two miles to school, walk; 4% of those who travel two to five miles, walk. Among secondary school children, 62% who travel one to two miles either walk or cycle; 15% of those who travel two to five miles either walk or cycle. An increase of 5% to 25% in children walking would result in 32.6% to 38.6% of primary school children who walk one to two miles to school, and 65% to 77.5% of secondary school children who travel one to two miles.</p>
Evidence summary and grading	<p>Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.</p>

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/35738/nts2011-01.pdf

<p>Expert Advisory Group conclusion</p>	<p>The EAG noted that active travel has been found to be an important component of action to increase overall physical activity. The evidence base is not strong due to the generally small number of low quality studies.</p> <p>The potential for increasing active travel to school was felt to be positive but that this would require support. There are a number of programmes currently in place that could be used to support this work.</p> <p>Inclusion of work to promote active travel should be included as a criterion within the National Quality Award for the Welsh Network of Healthy School Schemes.</p> <p>The group noted that the potential impact was reduced within rural communities where children may travel some distance to school and where safe routes are not available.</p>
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References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT	
Social marketing / mass media campaigns to increase population level physical activity	
EAG outcome	Outcomes 1, 2 and 3: Increasing intensity and duration of physical activity in children and young people aged 3 to 18 years, working age adults, and older adults.
Rationale for inclusion	Three systematic reviews (1, 2, 3) (two NICE evidence reviews) concluded that there is moderate evidence that mass media interventions are effective in increasing population levels of physical activity. However, one American review (4) concluded that there is insufficient evidence to determine the effectiveness of stand-alone mass media campaigns to increase physical activity at the population level.
Intervention description	Multi-component interventions including: paid advertisements (TV, radio, cable, newspapers); public relations; community participation; telephone support line.
Population	The reviews considered studies with adults of all ages, children and young people. The majority of the studies were conducted in high-income countries most commonly the USA, Australia, and Canada. Review 3 related to children in the USA.
Setting(s)	Mass media.
Study design and quality	<p>Review 1 included three studies: two non-randomised controlled trials (NRCTs), one of strong and one of moderate quality; and one large before-and-after (BA) study of moderate quality. Two studies were conducted over a period of 12 months and the other over eight weeks.</p> <p>Review 2 included 18 campaigns: five quasi-experimental studies; 12 non-experimental studies; and a mixed methods design. Campaign duration ranged from: 8 to 13 weeks (n = 6); around 6 months (n = 3); 12 months (n = 2); several phases over 12–24 months (n = 2); and greater than two years (n =</p>

	<p>5).</p> <p>Review 3 included only one longitudinal study (which examined the effects of the VERB mass media campaign) using a telephone survey to assess physical activity behaviours and attitudes at baseline and for two years of follow-up. Nationally representative cohort of 2,257 parent-child dyads.</p> <p>Review 4 included 16 studies: three NRCTs; five cohort studies; five cross-sectional studies; and three single-group studies using before-and-after (BA) designs. Of these, eight studies were rated as having greatest design suitability, including three with good and five with fair ratings of execution quality. Eight studies were rated as having least-suitable design, including one with good and seven with fair ratings of execution quality.</p> <p>The overlap between these reviews was moderate; ten studies were reported in two of the four reviews.</p>
Reach	Individual studies reported on awareness of the campaign among the target audience.
Efficacy/ effectiveness	<p>Review 1 found that two out of three studies reported a positive impact on walking odds ratio</p> <ul style="list-style-type: none"> a) OR 1.72; 95% confidence interval 1.01 to 2.95) b) OR 1.31; 95% confidence interval 1.14 – 1.50, $p < 0$; No change in number of days walking. <p>Review 2: Change in physical activity behaviour was measured in 15 of the 18 campaigns and seven studies reported a statistically significant increase in physical activity levels.</p> <p>Review 3: After one year, there was no effect on the number of sessions in the past seven days of organised or free-time physical activity for the population as a whole, but increased participation in free-time physical activity for: nine to ten year old children; girls; children of parents with lower educational attainment; and children from urban areas (all $p < 0.05$). Children who were 'low' active at baseline showed increases in both free-time sessions and organised physical activity. By the end of the second year, free-time physical activity reported during the past week, and on the day before the</p>

	<p>survey had increased ($p < 0.05$) for the whole population. In addition a dose-response effect was evident ($p < .05$), such that, as self-reported frequency of exposure to VERB increased, so did self-reported indicators of physical activity (free-time physical activity the previous day and median number of weekly sessions of physical activity during their free-time). Effect sizes for the awareness effect on behaviour were: $r = 0.07$ for median number of weekly sessions of free-time physical activity; $r = 0.12$ for physical activity on the day before the interview; and $r = 0.06$ for organised physical activity. All effect sizes were small.</p> <p>Review 4: Intervention effects, based wholly on self-reported measures, were modest and inconsistent. The conclusion was that there is insufficient evidence to determine the effectiveness of stand-alone mass media campaigns to increase physical activity. In addition, the review concluded that without stronger evidence for their effectiveness, such campaigns may be better used as part of a broader multi-component community-wide intervention to increase awareness and knowledge about the benefits of physical activity and to change attitudes and norms i.e. to create a broader social environment supporting population behaviour change.</p>
Adoption	This intervention would not require adoption by intermediary bodies.
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • insight work to identify key messages and target audience(s) • the development and testing of the messages • the purchase of TV/radio/newspaper/magazine/poster/social media • engagement with partners to support the campaign
Maintenance	One study found that continuation into the second year was an important element of its success. Few studies reported sustained effects.
Potential impact	Few of the studies report a sustained effect on activity levels. Whilst there is potential for mass media campaigns to have a small sustained effect on behaviour, the majority of the consistent findings

	relate to awareness.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG noted that the strength of the evidence for the use of mass media for promoting physical activity was weaker than that for other lifestyle behaviours. However, the potential for this intervention as a component of a multi-faceted approach was noted.</p> <p>Rigorous evaluation of any intervention would be needed as would social research to develop messages for different population groups.</p>

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Point-of-choice prompts	
EAG outcome	Outcomes 2 and 3: Increasing intensity and duration of physical activity in working age adults and older adults.
Rationale for inclusion	Three reviews (1, 2, 3) found moderate to strong evidence that overall, point-of-choice prompts are able to increase the rate of stair climbing, especially in escalator settings. In elevator settings, point-of-choice prompts seem less effective.
Intervention description	Informational or motivational signs near stairs, lifts or escalators encouraging people to use the stairs.
Population	Whole population.
Setting(s)	<p>Review 1 included 25 studies: thirteen were conducted in the UK, seven in the USA, two studies each in Australia and Hong Kong, and one study in Denmark. The majority of studies were conducted in public transport stations (train, bus, and airport), shopping malls, or office buildings.</p> <p>Review 2 included seven studies which looked at stair walking; these were conducted in the UK (three), Europe (two), and Australia/New Zealand (two), and largely in public sector workplace settings.</p> <p>Review 3 included studies in varied settings: airports, banks, shopping malls, universities, bus and train stations.</p>
Study design and quality	<p>Review 1 included before-and-after (BA) studies or studies with a comparison group and noted that the nature of the interventions means that rigorous control settings are difficult. The quality of the included studies was not assessed. The sample size ranged from 1,779 to 158,350. Most studies evaluated two to four week interventions.</p> <p>Review 2 included seven studies, the majority of which were BA studies; two with a control group. Four studies were rated as weak; two moderate and one good. With</p>

	<p>the exception of one study, measurement consisted of behavioural observation of stair/lift usage in a worksite setting rather than objective tracking of individual physical activity behaviour.</p> <p>Review 3 included 11 studies, all of which were time series studies, of moderate quality. The number of observations ranges from approx 3,500 to 100,000.</p>
Reach	<p>This intervention has been tested in a wide variety of settings: in review 3 in a variety of population subgroups, including men and women, younger, older, obese and non-obese people, and among various racial/ethnic subgroups. No studies report on the impact on children.</p>
Efficacy/ effectiveness	<p>Review 1 found that the 25 studies reported 42 results, ten results for elevator settings and 32 results for escalator settings. With a range of 17% to 71% the baseline rate of stair climbing was higher in elevator settings than in escalator settings (range 0.4% to 41%). Three out of ten results for elevator settings reported a significant increase whereas 28 of 32 results for escalator settings reported a significant improvement. In studies with a significant increase in stair climbing, the increase ranged from 0.3% to 10.6% and the odds ratio (OR) ranged from 1.05 to 2.93. Overall, point-of-choice prompts are able to increase the rate of stair climbing, especially in escalator settings. In elevator settings, point-of-choice prompts seem less effective. The long-term efficacy and the most efficient message format have yet to be determined in methodologically rigorous studies.</p> <p>Review 2 found that five of seven studies found that the use of posters/signs can increase stair (instead of lift) use. However, in two of these studies stair usage declined back to baseline levels at follow-up or by the end of the study period, suggesting that the effectiveness of these posters is short-term. One of these was a very large high quality study. In addition, two studies reported a decline in stair use/step count.</p> <p>Review 3 included 11 studies. In ten of the studies reviewed, more people used the stairs when point-of-decision prompts were posted. Stair use baseline: range 1.7 % to 39.7% of potential users. During the intervention period: range 4.0% to 41.9%. The median change for the 21 study arms was an increase of 2.4%</p>

	<p>(statistically significant in 15 of 21 study arms). Two study arms reported a significant decrease in stair use. Findings from several of the studies suggest that tailoring the prompts to describe specific benefits or to appeal to specific populations may increase the intervention's effectiveness.</p> <p>An economic analysis of physical activity interventions (4) found that point-of-decision prompts were the most cost-effective strategies, with a median cost of \$0.07/MET-hour/day/person. These had small effects, adding only 0.2% of minimum recommended physical activity levels. MET hour is a measure of metabolic activity.</p>
Adoption	This intervention would require adoption in key settings including workplaces, public buildings, transport and shopping centres.
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • production of prompts • advocacy/promotion of their use <p>Implementation support would include:</p> <ul style="list-style-type: none"> • advocacy and dissemination of interventions • guidance on production of prompts / templates and their promotion <p>There is potential for use of these with new technology.</p>
Maintenance	<p>This intervention would need minimal maintenance. However, evidence suggests the effect is short-term and therefore may require repeated/ refreshed messages.</p> <p>Longer-term effects are not sustained based on studies conducted to date.</p>
Potential impact	The median rate of using the stairs at the start of the studies was 8.05%. Taking the OR from Review 1 would suggest this increased to between 8.45% and 23.6%.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	The EAG considered that while these interventions would clearly have no sustained impact as standalone activities, they are relatively easy to implement at low cost and could be adopted in a range of public and

	<p>private settings. There is a potential use of new technology to enable individuals to capture and record stairs climbed. The short-term nature of the impact suggests that the intervention would require refreshing on a regular basis.</p> <p>The EAG considered that this intervention should be considered as a component of multi-component interventions in key settings, particularly workplaces. Consideration should be given to testing messages which stress the risk of inactivity rather than the benefits of activity i.e. a health warning on escalators and lifts. Longer term, building design changes which prioritise access to stairs rather than lifts or escalators were likely to be more effective and sustained.</p>
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2. **Dugdill L, Brettle A, Hulme C, McCluskey S, Long AF.** *A review of effectiveness of workplace health promotion interventions on physical activity and what works in motivating and changing employees health behaviour.* London: NICE; 2007.
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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Multi-component workplace interventions including active travel to work	
EAG outcome	Outcome 2: Increasing intensity and duration of physical activity in working age adults.
Rationale for inclusion	Three systematic reviews (1, 2, 3) (including two NICE evidence reviews) found evidence of the effectiveness of workplace physical activity interventions. Two focused on walking interventions and the third looked at all workplace physical activity interventions (12 of 20 including walking).
Intervention	Interventions varied but included some or all of the following elements: pedometers; health promotion sessions; taught strategies for behaviour change and maintenance; information about walk routes around grounds of worksite; encouragement to accumulate steps between occupational tasks; weekly group emails sent; and group walking sessions.
Population	Working aged adults, public sector workers, and commercial sector workers. Study populations ranged from 23 to 1,442. The majority were with larger employers with 100 employees or more. Six of the studies took place in the UK; other settings included Australia, Canada, and the USA.
Setting(s)	Workplaces of various types. Review 1 considered public sector work places only.
Study design and quality	<p>Review 1 included four studies: two randomised controlled trials (RCTs) of which one was of poor quality n=37 and the other of good quality n=70; and two before-and-after (BA) studies of which one was of poor quality n=927 and the other of good quality n=177. The duration of studies was: two studies lasting ten weeks; one study of 12 weeks; and one of four months. Three of the studies measured physical activity objectively with pedometers.</p> <p>Review 2 included 15 studies (categorised in the review as: workplace walking intervention with pedometers;</p>

	<p>work place delivered health information interventions to increase walking; and workplace-based interventions to increase independent walking). Seven of the studies were RCTs (all good quality) with numbers of participants ranging from 32 to 106; the duration of intervention ranged from 1 week to 7 months. One was a non-randomised controlled trial (NRCT) of moderate quality (n= 322), conducted over 12 months. Four were BA studies (all of moderate quality) n=188 to 290. Three were interrupted time series studies (of moderate quality); n=106 to 2,600; conducted over 12 weeks.</p> <p>Review 3 included 20 studies: three pre- and post- test, five quasi-experimental, and 12 RCTs. Studies were assessed for quality (max score 7). Nine studies scored four or above.</p> <p>There was minimal overlap between the reviews: of the 35 studies included in these reviews, one study appears three times, two studies appear twice, and the remaining 32 studies appear once.</p>
Reach	<p>Review 3: the proportion of participation varied from 3% to 78% (14 out of 20 studies).</p> <p>A review of recruitment rates in workplace physical activity interventions characteristics for success (4) found that 76% of studies failed to report recruitment rates (n = 30). Studies with high recruitment rates (n = 8) tended to have longer study duration (mean 1.6 years) and target smaller cohorts of employees (mean n = 199) than comparison studies (3.9 months; n=1,241). For recruitment strategies and intervention components of high studies, involvement of employees was driven by the organisation, with physical activity interventions provided as part of the working day in paid time.</p> <p>The majority of evidence relates to public sector employees. It is unclear whether this approach can work successfully in the private sector. However 25.7% of the workforce in Wales works in the public sector⁴.</p>
Efficacy/ effectiveness	<p>Review 1: Four studies reported increases in step counts. Two RCT studies found a statistically significant increase in steps. The BA studies reported:</p>

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<http://www.ons.gov.uk/ons/rel/pse/public-sector-employment/regional-analysis-of-public-sector-employment--2012/sty-uk-public-sector-employment.html>

	<ul style="list-style-type: none"> • a 10% increase in number of steps per day; 25% increase in average number of days participants reached 10,000 steps. • an average daily step increase by 3,451 – plateau reached at around 4 weeks (intervention lasted 12 weeks). <p>In Review 2, 11 of 15 studies reported an intervention effect. Five out of six good quality RCTs reported a significant effect. Those studies reporting effect sizes were around 900 steps increase per day.</p> <p>Review 3: 12 of 20 interventions report significant effectiveness on at least one physical activity outcome; eight did not improve outcomes significantly. Seven out of 12 RCTs were shown not to be effective. All seven interventions that used pedometers to measure steps were found to increase steps or slow step reduction. Six out of seven of the interventions with an online tool showed positive changes. All five interventions with activities targeting social and environmental aspects were effective in increasing physical activity levels.</p>
Adoption	The intervention would need to be adopted by workplaces.
Implementation	<p>Implementation at workplace level would require:</p> <ul style="list-style-type: none"> • organisational support for adoption • co-ordination within the workplace • best practice guidance • increase or maintenance of time for physical activity in the working day • access to equipment and facilities • staff training <p>Implementation support would include:</p> <ul style="list-style-type: none"> • development of programme criteria/components based on evidence reviews • dissemination and advocacy for adoption • training for work place coordinators • monitoring
Maintenance	Once established, and a culture of active work places created, there would be small ongoing costs. There is little evidence for the maintenance of the interventions at a setting or individual level from the reviews, although a few of the included studies had longer term follow-up evaluation.
Potential	It is difficult to establish the potential impact of this

impact	intervention. If well implemented with high recruitment rates within organisations and large numbers of organisations taking part, it could play a role in increasing physical activity levels in the population.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusions	<p>The EAG noted the potential of interventions in the workplace setting to increase physical activity. Based on the evidence provided there is evidence of a short-term effect. Further work would be needed to establish longer term maintenance.</p> <p>These interventions would need to be considered in conjunction with active travel to work interventions.</p> <p>Wales has a number of smaller employers; the feasibility of these approaches with smaller employers would need to be considered.</p>

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Social support and group interventions to increase physical activity	
EAG outcome	Outcomes 2 and 3: Increasing intensity and duration of physical activity in working age adults and older adults.
Rationale for inclusion	Two systematic reviews (1, 2) were found that provided evidence to support this intervention: one looking specifically at social support and another looking specifically at group-based interventions. There was no overlap between the two reviews.
Intervention	Social support interventions focus on changing physical activity behaviour through building, strengthening, and maintaining social networks that provide supportive relationships for behaviour change e.g. setting up a buddy system, making contracts with others to complete specified levels of physical activity, or setting up walking groups or other groups to provide friendship and support.
Population	In Review 1, the population comprised women aged 19 to 64 years, predominately from disadvantaged groups in the UK. In Review 2, seven studies were conducted in the US, one in Canada, and one in Australia. Six of the nine studies reported only on women, while three also included men. The majority of study participants were middle-aged.
Setting(s)	In Review 1 all settings were community-based in community or health centres, or churches. In Review 2 the majority were conducted in community centres and churches with one at a worksite and two at universities.
Study design and quality	Review 1 included 11 studies: six randomised controlled trials (RCTs) and five non-randomised trials with a control group. The number of participants ranged from 46 to 1,443, but most around 100. The majority (nine out of eleven) were considered at high

	<p>risk of bias.</p> <p>Review 2 included nine studies: one was rated as high suitability and good execution; the remaining eight had fair execution and of those, seven had good study design and one moderate.</p>
Reach	Information is not available on the potential reach of these programmes.
Efficacy/ effectiveness	<p>Review 1 included a meta-analysis. The standard mean difference between the group-based and individual interventions was 0.36 (95% confidence interval 0.17 to 0.54). Interventions including groups had both a statistically and clinically significantly greater effect than studies using other modes of delivery, equating to achieving an additional 70 minutes per week of physical activity or approximately 1,000 steps per day.</p> <p>Review 2: in all nine studies reviewed, social support interventions in community settings were effective in getting people to be more physically active, as measured by various indicators (e.g. blocks walked or flights of stairs climbed daily, frequency of attending exercise sessions, or minutes spent in physical activity):</p> <ul style="list-style-type: none"> • time spent being physically active: median increase of 44.2% (Interquartile interval [IQI]: 19.9% to 45.6%; five study arms) • frequency of physical activity: median increase of 19.6% (IQI: 14.6% to 57.6%; six study arms) • one study found that those who received more frequent support were more active than those who received less frequent support, although both highly structured and less formal support were equally effective. • these interventions were effective in various settings including communities, worksites, and universities, among men and women, adults of different ages, and both sedentary people and those who were already active
Adoption	This intervention would be dependent on adoption by an intermediary as it requires the facilitation of group/social support activities. This could be through workplaces; community or voluntary groups etc.

	Achieving population impact would be challenging.
Implementation	<p>Implementation at local level would require:</p> <ul style="list-style-type: none"> • a delivery partner e.g. a local community group, charity, or Communities First group⁵ • staff (community worker, health professional, exercise professional or a volunteer) • co-ordination • a venue • materials and equipment <p>Implementation support would include:</p> <ul style="list-style-type: none"> • advocacy and dissemination of interventions • guidance and support for delivery partners • training for facilitators • monitoring
Maintenance	This intervention would require ongoing funding.
Potential impact	This intervention has the potential to have an effect on health in those individuals who participate. It is unlikely to have a measurable effect at a population level as the reach is unlikely to be large. However, the findings would be relevant in conjunction with other interventions where an element of social support may increase uptake and reduce drop out.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG recognised that these interventions demonstrated a potentially significant impact at an individual level. The difficulty in achieving large scale adoption and implementation would be likely to limit the impact at population level, although potential vehicles for implementation e.g. Communities First, were noted.</p> <p>However, the group noted the important finding that social support was a significant factor in determining uptake and adherence of physical activity. This was particularly noted for women who form one of the groups less likely to be active. The opportunity to build social support into all physical activity interventions was noted.</p>

⁵ There are 52 Communities First Clusters which focus on the 10% most deprived communities in Wales

References

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PHYSICAL ACTIVITY	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Technological / remote interventions	
EAG outcome	Outcomes 2 and 3: Increasing intensity and duration of physical activity in working age adults and older adults.
Rationale for inclusion	One systematic review (1), a Cochrane review, found evidence of the effectiveness of this intervention.
Intervention	<p>The main components of the interventions in this review were delivered through a variety of remote and web-based methods:</p> <ul style="list-style-type: none"> • internet • smartphone • telephone • mail outs <p>They were delivered to groups or individuals, one-off or ongoing, and included: counselling or advice or both; home-based or facility-based exercise or both; written educational material or motivational support material or both.</p>
Population	Generally white, well-educated, middle-class. Details of ethnic groups were reported in seven studies with 7% to 33% of participants from ethnic minorities.
Setting(s)	Where the interventions took place was not reported in the review. Participants were recruited from primary care and community settings.
Study design and quality	All of the eleven studies included were randomised controlled trials (RCTs), judged as moderate and high quality.
Reach	There is limited information on the reach of these studies although the potential reach is high.
Efficacy/ effectiveness	The review found consistent evidence to support the effectiveness of remote and technology driven interventions for promoting physical activity with positive, moderate sized effects on increasing self-reported physical activity, at 12 month follow-up.

	<p>The mean self-reported physical activity at 12 months was 0.18 standard deviations higher in the intervention groups (95% confidence interval 0.1 to 0.27). The mean self-reported physical activity at 24 months was 0.2 standard deviations higher in the intervention groups (95% confidence interval 0.08 to 0.32). The quality of the evidence was graded as moderate for this outcome.</p> <p>It also investigated whether or not participants met current public health recommendations, or frequency of participation expressed as a yes / no variable (dichotomous outcomes) at 12 months (odds ratio 1.42; 95% confidence interval 1.21 to 1.66) and 24 months (odds ratio 1.27; 95% CI 0.99 to 1.63).</p>
Adoption	The intervention would need to be adopted by intermediate bodies such as primary care for use as an adjunct to brief intervention. There is potential for recruitment to the intervention via mass media or social media.
Implementation	Implementation of the intervention would require: <ul style="list-style-type: none"> • development of the intervention • advocacy for adoption and uptake • training and dissemination to primary care • training for primary care staff • monitoring
Maintenance	In order to ensure that this intervention continued to be of value and have an impact, Public Health Wales would need to: <ul style="list-style-type: none"> • monitor progress • continue to 'sell the resource' • evaluate the resource's usefulness and adapt, improve and amend it in response to feedback
Potential impact	Implementation of this intervention has the potential to increase the numbers of people meeting current guidelines by between 21% and 66% at 12 months.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	The EAG noted the potential impact of these relatively low intensity approaches, either as standalone interventions or as an adjunct to brief advice.

	<p>The group noted the rapid development of platforms and the need to be able to reflect changes in available technology. The group also noted the potential for these interventions to widen health inequalities if not accessible to all groups.</p>
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Reference

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PHYSICAL ACTIVITY**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Brief interventions in primary care**

EAG outcome	Outcomes 2 and 3: Increasing intensity and duration of physical activity in working age adults and older adults.
Rationale for inclusion	Two systematic reviews (1, 2), both NICE evidence documents, found moderate evidence that there is an increase in self-reported physical activity levels in those participants who received brief advice or were seen by primary care professionals trained to deliver brief advice.
Intervention description	Brief interventions in primary care. Brief advice is defined by NICE as "verbal advice, discussion, negotiation or encouragement, with or without written or other support or follow-up. It can vary from basic advice to extended, individually focused discussion".
Population	Middle-aged or older populations. Ethnicity was rarely reported, but where it was, it was mostly white.
Setting(s)	Primary care. Although neither the country nor setting was reported in Review 1, NICE described the intervention as potentially applicable to the UK. In Review 2, four of 15 studies were conducted in the UK.
Study design and quality	Review 1 covered 11 studies: six randomised controlled trials (RCTs); two cluster randomised controlled trials (CRCTs); three non-randomised controlled trials (NRCTs). Six of eleven studies were judged to be of moderate or good quality. Review 2 comprised 15 studies: four NRCTs; four CRCTs; and seven RCTs. Eight of fifteen were judged to be of good to moderate quality.
Reach	Information on reach was not reported.
Efficacy/ effectiveness	Review 1 concluded that there is a small body of evidence from five RCTs and one NRCT showing that brief interventions in primary care can be effective in producing moderate increases in physical activity in

	<p>middle-aged and older populations in the short term (6 to 12 weeks), longer term (more than 12 weeks) or very long term (more than 1 year). For the effect to be sustained at one year, the evidence suggested that several follow-up sessions over a period of three to six months are needed after the initial consultation episode.</p> <p>Review 2 concluded that six out of 15 studies showed a positive effect that was statistically significant. Pooled results showed a small positive, statistically significant effect favouring brief advice over usual care risk ratio 1.30 (95% confidence interval 1.12 to 1.50). It was not possible to determine if this effect is a clinically useful increase in physical activity effect.</p>
Adoption	The intervention would need to be routinely adopted by primary care and other healthcare settings and by practitioners within settings for routine use.
Implementation	<p>Implementation at primary care level would require:</p> <ul style="list-style-type: none"> • adoption at practice level • training / information for staff <p>Implementation would need to be supported by:</p> <ul style="list-style-type: none"> • identification of what additional support/ information/ training is needed (3,140 GPs, registrar GPs, locum GPs, practice nurses) • development, trial and launch of the intervention • advocacy for the uptake of the intervention • monitoring systems for routine recording of activity
Maintenance	There is limited evidence of sustained behaviour change (12 months or more) from the reported studies. In addition there is limited evidence of sustained adoption of the intervention by professionals.
Potential impact	Approximately 70% of the adult population visits their GP in a typical year which provides opportunity for intervention.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG noted the potential for a small but sustained impact on physical activity through routine intervention in primary care and other healthcare settings.</p> <p>The potential need for training in recognising the</p>

	<p>importance of physical inactivity on health was noted.</p> <p>The practical barriers to consistent intervention were noted as well as the importance of any intervention being supported by recording mechanisms which would enable the number of interventions to be assessed.</p>
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References

1. **Bazian.** *Individual-level behaviour change: external evidence review 1; review of current NICE guidance and recommendations.* London: Bazian; 2012.
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TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****ASSIST intervention in high prevalence communities
to reinforce tobacco free norms**

EAG outcome	Outcome 1: Preventing smoking uptake (including experimentation and initiation of tobacco use) in children aged 8 to 16 years, leading to a decline in smoking prevalence in this age group.
Rationale for inclusion	The ASSIST programme is currently delivered by Public Health Wales.
Intervention description	Social norms/peer influence programme in which influential peers are nominated by the year group and invited to attend a two day training session. The training encourages them to engage in discussions with peers to promote smoke-free lifestyles.
Population	Year 8 pupils (aged 12 to 13 years) in Wales.
Setting(s)	Secondary schools.
Study design and quality	The intervention was evaluated via a cluster randomised controlled trial (CRCT) (1) and subsequent cost effectiveness analysis (2).
Reach	Between 45 and 60 schools receive the programme across Wales each year. These schools are selected from a list of 150 schools provided by the Welsh Government, based on deprivation. In a typical year the programme reaches 51 of the 215 secondary schools in Wales. The programme is delivered to between 15% and 18% of Year 8 pupils within one school. It trains 1320 Year 8 peer supporters that can pass smoke-free messages to a further 6,500 Year 8 pupils.
Efficacy/ effectiveness	The CRCT found a reduction in likelihood of being a smoker in the intervention group compared with control schools: odds ratio (OR) 0.75 (95% confidence interval 0.55 to 1.01) immediately after the intervention (n=9,349 students); 0.77 OR (0.59 to 0.99) at one year follow-up (n=9147); and 0.85 OR (0.72 to 1.01) at two year follow-up (n=8,756) (3). ASSIST was shown to

	<p>cost £32 per student and produce a 2.1% reduction in smoking in the study sample. ASSIST was shown to be cost-effective with an Incremental Cost-Effectiveness Ratio (ICER) of £1,500 (4).</p> <p>The ASSIST intervention was also considered favourable by NICE who recommended evidence-based peer-led interventions designed to prevent smoking uptake such as ASSIST (1). The intervention was further identified as one which may have an impact on inequalities in smoking among young people in a review undertaken as part of a European Project (2).</p>
Adoption	The programme needs to be adopted by schools, which are required to allow access to the Year group by the programme team, and allow pupils who are selected as peer supporters to attend two days of training accompanied by a staff member.
Implementation	To deliver the programme the following is required: <ul style="list-style-type: none"> • trained staff • training materials • schools to support the programme • costs to cover training venues and refreshments • travel costs
Maintenance	This intervention would need to be carried out yearly as pupils move through the school and require the above resources.
Potential impact	Based on the findings of the initial trial, the intervention has the potential to reduce smoking prevalence by just over two percentage points, a 15% reduction in the likelihood of being a smoker at two year follow up.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG concluded that there were no other programmes or interventions identified that had any greater evidence of effectiveness or cost-effectiveness and on that basis, and, as the programme is already established in Wales, it should continue. Given the relative costs, further work is required to identify a universal intervention that could be delivered alongside the targeted intervention of ASSIST.</p> <p>The group was asked to consider information relating to</p>

	<p>the current delivery of ASSIST and make recommendations for the future. Taking the evidence into account the group considered that maximum impact is likely to be achieved by delivering the programme to a smaller number of schools on an annual basis. Options were considered to identify which schools should be included and the group supported an approach which used a combination of educational attainment and deprivation.</p>
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References

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4. **Hollingworth W, Cohen D, Hawkins J, Hughes R, Moore L, Holliday J, et al.** *Reducing smoking in adolescents: cost-effectiveness results from the cluster randomised ASSIST (a stop smoking in schools trial).* Oxford: Nicotine and Tobacco Research; 2012. 14:161-168.

TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Multi-component interventions that reduce
young people's access to tobacco**

EAG outcome	Outcome 1: Preventing smoking uptake (including experimentation and initiation of tobacco use) in children aged 8 to 16 years, leading to a decline in smoking prevalence in this age group.
Rationale for inclusion	Four systematic reviews were identified that included this intervention (1, 2, 3, 4) and concluded that there was evidence of effectiveness. One was a NICE rapid review that supported NICE guidance.
Intervention description	Multi-component interventions that included action with retailers of tobacco including active enforcement and education by local enforcement agents, often supported by community awareness campaigns.
Population	The interventions were targeted at children and young people under the legal age to purchase cigarettes and took place in whole communities in the USA and Australia.
Setting(s)	Community settings / tobacco retailers.
Study design and quality	<p>Review 1 followed NICE methodology and included 20 studies: five systematic reviews; fourteen cross-sectional studies and one non-randomised controlled trial (NRCT). Two studies were graded ++; seventeen studies +; and three studies -.</p> <p>Review 2 included 35 studies: 18 uncontrolled before-and-after studies (UBA); eight control trials; seven randomised controlled trials (RCTs); and two times series studies.</p> <p>Review 3 followed NICE methodology and included 21 studies: five systematic reviews; fifteen cross-sectional studies; and one RCT. Two studies met all or most of the quality criteria; 16 met some of the criteria; and 3 fulfilled few or none of the criteria.</p> <p>Review 4 looked at the impact of effective enforcement</p>

	<p>on prevalence.</p> <p>Reviews 1 and 3 were based on the same study and contained common studies with the exception of three. Six of these studies were also included in Review 4. Review 2 contained 35 studies of which 13 were also in Review 4.</p>
Reach	<p>The systematic reviews provided limited information with which to assess reach. Effective population level action would need to reach a majority of tobacco retailers and the staff within each setting.</p>
Efficacy/ effectiveness	<p>The reviews concluded that multi-component interventions are effective in preventing young people from taking up smoking.</p> <p>Review 1 found multiple studies that suggested interventions are most effective when they are multi-component (e.g. youth access policies, community and merchant education, vending machine policies). Review 3 concluded that multi-faceted interventions (active enforcement, multi-component educational strategies, and increased taxing and restrictions on smoking in public places respectively) are most effective for reducing youth's ability to access tobacco, particularly when combined with ongoing and active enforcement of minimum age restrictions.</p> <p>Review 2 concluded that actively enforcing the law or using multi-component educational strategies was more effective than providing retail staff with information about illegal sales. Four out of seven trials found some effect where smoking prevalence in young people was measured. It also suggests that interventions (such as education, law enforcement, community mobilisation) with retail staff can decrease the number of outlets selling tobacco to youth.</p> <p>Review 4: When those studies that demonstrated an effect on sales were considered, there was a consistent effect on smoking levels e.g. amount smoked and prevalence of smoking in young people. This would suggest that effective enforcement of legislation is necessary to achieve the benefits of legislation passed.</p>
Adoption	<p>Intervention would need to be adopted by all 22 Local Authority trading standards departments and other enforcement bodies such as HM Revenue and Customs.</p>

Implementation	<p>As it contains multi-component interventions a co-ordinated collaborative approach with the above partners is needed:</p> <ul style="list-style-type: none"> • organisational commitment to support and prioritise the work • development of a co-ordinated programme of work • materials to support retailers e.g. posters, leaflets • staff to make test purchases and enforcement visits • young people to participate in test purchases • media campaign to raise awareness • monitoring and evaluation
Maintenance	<p>Active enforcement of the legislation is required to maintain awareness. There is evidence that this can contribute to reinforcing social norms.</p>
Potential impact	<p>Information on the current level of illegal sales to young people in Wales is not available. There is evidence that enforcement action is declining. There is the potential for effective enforcement to reduce smoking prevalence in children and young people.</p>
Evidence summary and grading	<p>Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.</p>
Expert Advisory Group conclusion	<p>The EAG noted the evidence to support the benefits of legislative enforcement i.e. it is not sufficient to just introduce legislation. The emerging evidence relating to the potential impact of effective enforcement on prevalence was noted and that action is more effective in younger children. The research has been conducted largely in the USA and therefore would need consideration in a UK context. The EAG also noted that the landscape is changing in relation to further legislation e.g. standardised packaging; point of sale promotion; and the possibility of a retail register. This would provide opportunities for further work.</p> <p>The group also noted that work on access to tobacco should be widened to include illegal or illicit sources of tobacco, although currently the international literature is very limited on effective action.</p>

References

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2. **Stead LF, Lancaster T.** *Interventions for preventing tobacco sales to minors (review).* Oxford: Cochrane Database of Systematic Reviews; 2008.
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4. **DiFranza JR.** *Which interventions against the sale of tobacco can be expected to reduce smoking?* Massachusetts: Tobacco Control; 2012. 21:436-442.

TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Social marketing / mass media campaigns to
reinforce smoke-free norms**

EAG outcome	Outcome 1: Preventing smoking uptake (including experimentation and initiation of tobacco use) in children aged 8 to 16 years, leading to a decline in smoking prevalence in this age group.
Rationale for inclusion	Three systematic reviews were identified which included this intervention (1, 2, 3). One was a NICE rapid review that supported NICE guidance. All found evidence of effectiveness.
Intervention description	Mass-reach health communication interventions target large audiences through television and radio broadcasts, print media (e.g. newspaper), out-of-home placements (e.g., billboards, movie theatres, point-of-sale), and digital media to change knowledge, beliefs, attitudes, and behaviours affecting tobacco use. These may be considered in isolation, or more commonly as part of a comprehensive tobacco control programme.
Population	The target population varied across studies but all included children and young people. Most studies took place in the USA and a few in Europe.
Setting(s)	Mass media.
Study design and quality	<p>Review 1 followed Community Preventive Services Taskforce methodology and included 70 studies: two randomised controlled trials (RCTs); 25 controlled before-and-after studies (CBAs); and 43 time series or uncontrolled before-and-after studies (UBAs). Overall the evidence for this intervention was graded as strong. Limitations of the evidence included incomplete reporting of statistical analysis, low participation or response rate.</p> <p>Review 2 followed NICE methodology and included 41 studies: six RCTs; two focus groups; 25 cross sectional studies; one non-randomised controlled trials (NRCTs); four systematic reviews; one cluster randomised</p>

	<p>controlled trial (CRCT); and one cohort study. The majority of studies (39) were considered to be of moderate or good quality.</p> <p>Review 3 included ten studies: three CRCTs and seven longitudinal studies of moderate strength evidence.</p> <p>Reviews 1 and 3 were of mass media for tobacco control generally, not just prevention. In total the reviews considered included 252 papers, of which 19 appeared in two and one appeared in all three reviews.</p>
Reach	<p>A mass media campaign would be aimed at all those aged 8 to 16 year in Wales. The current (2013) population figure for this age group is 308,024. Using a variety of different media channels and methods has the potential for a large proportion of the target group to be aware of the campaign. The Truth campaign in America was recalled by 75% of 12 to 17 year olds. In Wales that same proportion would mean a total of 231,018 children and young people aged 8 to 16 years being aware of the campaign.</p>
Efficacy/ effectiveness	<p>The reviews concluded that mass media campaigns can prevent the uptake of smoking and also influence knowledge, attitudes and intentions of children and young people, particularly as part of wider tobacco control programmes.</p> <p>Review 1 found median decrease in prevalence of tobacco use among young people (aged 11 to 24 years) 3.4% (interquartile intervals [IQI]: 5.3 to 1.6 percentage points from 11 studies). Seven studies evaluating campaigns of two or more years' duration observed reductions in tobacco use among youth in favour of the intervention communities.</p> <p>Review 2 found four studies showed a reduction of 20% to 40% in the odds of smoking initiation.</p> <p>Review 3 found that factors that have been shown to influence effectiveness in terms of attitudes, perceptions, beliefs and intentions include message source, message content, message format, message framing, duration, target audience, demographics of the audience, and the site/setting of the campaign.</p>
Adoption	<p>The intervention would not require adoption by an intermediary delivery agent.</p>
Implementation	<p>Mass media campaigns require significant investment,</p>

	<p>particularly where television advertising is included. Expertise in the design and evaluation of social marketing campaigns is also required. Partners required would include media, young people, local public health teams and third sector organisations.</p> <p>Evidence indicates that these interventions can be effective when implemented alone. However, the studies generally evaluated nation-wide campaigns with substantial resources to broadcast messages on television with high intensity.</p>
Maintenance	The reviews identified that campaigns were most effective when of sustained duration as campaign effects can rapidly dissipate.
Potential impact	There are approximately 35,000 children in a school year group and smoking prevalence at age 15 is between 11% and 13%. A reduction of two to three percentage points or a 20% reduction in likelihood of smoking would result in between 700 and 900 fewer smokers in a year group at age 15.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG concluded that there is evidence to support the effectiveness of sustained programmes of mass media interventions in preventing uptake of smoking in young people as part of wider tobacco control programmes.</p> <p>The group noted that the primary barrier to implementation of these interventions is funding but that they represent a cost effective approach due to the population reach achieved.</p>

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TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Universal school smoking education based
on the best available evidence**

EAG outcome	Outcome 1: Preventing smoking uptake (including experimentation and initiation of tobacco use) in children aged 8 to 16 years, leading to a decline in smoking prevalence in this age group.
Rationale for inclusion	One Cochrane Systematic review (1) was identified that included the intervention.
Intervention description	<p>Combined social competence and social influence programmes.</p> <p>Social competence comprises social learning processes or life skills such as: problem-solving and decision-making; cognitive skills for resisting interpersonal or media influences; increased self-control and self-esteem; coping strategies for stress; and general social and assertive skills.</p> <p>Social influence programmes adopt resistance skills training in which students are taught how to deal with peer pressure, high risk situations, and how to effectively refuse attempts to persuade substance use from both direct and indirect sources.</p> <p>This programme is delivered during school lessons ranging from 6 to 15 weeks.</p>
Population	Primary aged children (9 to 11 years) and secondary aged (12 to 14 years). Most studies took place in the USA but one was conducted in South Africa and another in Germany. The majority of participants were white apart from the South African study where 85.7% were black and 9.9% white.
Setting(s)	All studies were school-based in either primary or secondary schools.
Study design and quality	Studies included 49 randomised controlled trials (RCTs) and cluster randomised controlled trials (CRCTs) with 142,447 participants of which eight RCTs with ten arms looked at combined social competence

	and social influence curricula. An assessment of risk of bias was undertaken and the majority of studies were found to have an unclear risk of bias in all areas with the exception of reporting bias.
Reach	There are currently 1,357 primary, 4 middle schools, and 213 secondary schools in Wales (2). If the intervention was taught in one year group each year it would reach between 30,000 and 33,000 children per year group.
Efficacy/ effectiveness	The implementation of combined social competence and social influences programmes versus control groups showed significant effect at one year and at longest follow-up of preventing young people taking up smoking (eight CRCTs/10 arms), (odds ratio 0.50, 95% confidence interval 0.28 to 0.87; $p = 0.01$).
Adoption	This is a school-based intervention. Population impact would require widespread adoption by schools (1,357 primary, 4 middle schools and 213 secondary schools). Based on two teachers per primary school being trained, 1,714 teachers would require training. In a secondary school six teachers would need to be trained per school, totalling 1,278 teachers.
Implementation	<p>Implementation at school level would require:</p> <ul style="list-style-type: none"> • organisational commitment to the programme • education pack to be available • time off to attend training • resources to deliver sessions <p>Implementation support would be required to:</p> <ul style="list-style-type: none"> • source programme for implementation in Wales • disseminate programme to gain adoption by schools • training for teachers (1,714 primary; 1,278 secondary teachers) • monitoring
Maintenance	Once developed this intervention can be delivered on a yearly basis as children move through the school. Top-up training sessions would be required for new teachers. Maintaining consistency of implementation would be challenging.

Potential impact	If this intervention was adopted there could be a 50% reduction in the likelihood of children who receive the programme becoming smokers.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	The EAG noted that these studies were undertaken some time ago and that the quality of the research showed some weakness. The potential impact of the programmes however was noted and that the programmes also addressed a number of other areas e.g. substance use which would increase their feasibility. However, the length of the programmes and the curriculum time that would be needed would be very challenging in a Welsh context. Widespread adoption with high fidelity in implementation seems unlikely.

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TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Interventions to reduce exposure to tobacco in the home****EAG outcome**

Outcome 3: Reducing exposure to environmental tobacco smoke (ETS) for infants and children aged 0 to 16 years.

Rationale for inclusion

An extensive review of the impact of passive smoking on children undertaken by the Royal College of Physicians (1) confirmed that exposure of children to tobacco smoking, before and after birth, is associated with substantial risk. Family and household exposure was associated with risk of sudden infant death, lower respiratory infection, middle ear disease, wheeze, asthma and meningitis. The review estimated that passive smoking in children in the UK results annually in: over 165,000 new episodes of disease; 300,000 primary care contacts; 9,500 hospital admissions; at least 200 cases of bacterial meningitis; and about 40 sudden infant deaths. A critical conclusion also relates to this disease burden falling on the more disadvantaged children in society. The costs to the system of treating this additional disease are estimated at approximately £24m in the NHS alone.

The impact continues into later life as the study also identified that approximately 25,000 children in the UK will start smoking by the age of 16 as a result of exposure to smoking by family members, acknowledging the increased risk of becoming a smoker if growing up in a smoking household.

The decline in smoking prevalence in the UK and the introduction of legislation to restrict smoking in public places has substantially reduced exposure. However, exposure in the home remains one of the key areas yet to be addressed and the evidence base for action, particularly at a population level, is limited to intensive one-to-one programmes which may be difficult to implement and sustain (2).

Wales has higher rates of smoking in pregnancy than any other UK country. Around a quarter (26%) of mothers in the UK smoked directly before or during their pregnancy. Smoking levels before or during pregnancy were highest

	in Wales (33%) and lowest in England (26%). Across the UK, one in eight mothers (12%) continued to smoke throughout pregnancy, and was still smoking after the baby was born. Mothers in Wales were most likely to smoke throughout their pregnancy (16%) (3).
Intervention description	<p>The current available evidence suggests that mass media campaigns promoting the importance of smoke-free homes, supported by behavioural intervention for individual families are likely to be the most suitable approach. The potential for use of harm reduction strategies based on short or long-term substitution with alternative forms of nicotine also need to be explored.</p> <p>Wider measures to reduce smoking prevalence will also have a positive effect.</p>
Population	Smoking parents and household members in homes containing children.
Setting(s)	Mass media; homes; and healthcare settings.
Reach	The NHS provides a universal service for all pregnant women and young children. There is clearly potential to deliver more effective intervention through this route. Programmes such as Flying Start and Families First have the potential to work with families in the most disadvantaged communities.
Adoption	The intervention would require adoption by paediatric services and Health Visitors.
Potential impact	The scale of impact is such that a relatively small change in exposure could result in a significant impact on a population level.
Evidence summary and grading	Grade E: There is good evidence to suggest that this intervention has a sound theoretical basis or that work in this area is likely to have an impact but this has not been demonstrated in trials.
Expert Advisory Group conclusion	The EAG was unable to identify any robust evidence of interventions which reduced exposure to passive smoking in the home at a population level. Further work is required to investigate approaches that may be effective, including innovative interventions from other UK countries and internationally that could be tested in Wales, accompanied by robust evaluation.

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TOBACCO CONTROL

**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION**

**Social marketing / mass media campaigns
to reduce prevalence**

EAG outcome	Outcome 2: Increasing smoking cessation among working age adults who smoke leading to a decline in smoking prevalence in this group.
Rationale for inclusion	Five systematic reviews were identified which included this intervention (1, 2, 3, 4, 5). One was a NICE rapid review that supported NICE guidance. All found evidence of effectiveness.
Intervention description	Mass-reach health communication interventions target large audiences through television and radio broadcasts, print media (e.g. newspaper), out-of-home placements (e.g., billboards, movie theatres, point-of-sale), and digital media to change knowledge, beliefs, attitudes, and behaviours affecting tobacco use. These may be considered in isolation, or more commonly as part of a comprehensive tobacco control programme.
Population	Adults aged 18 years or 25 years and over who regularly smoke. Studies took place in the USA and a few in Australia, UK and South Africa.
Setting(s)	Mass media communication channels.
Study design and quality	Review 1 identified ten cost-effectiveness studies assessed as acceptable quality; two randomised controlled trials (RCTs); five cross-sectional studies; and three longitudinal studies. Review 2 included 11 studies of variable quality and at high risk of bias. Two studies were interrupted time series (ITS); eight quasi-experimental studies; and one quasi-randomised study. Review 3 included 26 studies: seven cross-sectional studies; nine cohort studies; one interrupted time studies (ITS); ten forced exposure. Study quality was not discussed overall. The paper states strengths, and although limitations of each study were noted these were not published in the review. Review 4 followed Community Preventive Services Taskforce methodology and was part of a wider review including

	<p>prevention of uptake of smoking. The total study designs included two RCTs; 25 controlled before-and-after studies (CBAs); 43 time-series or before-and-after evaluations. Common limitations across this body of evidence included incomplete reporting of statistical analyses, low participation or response rates, and incomplete control for other concurrent tobacco control efforts. Review 5 contained 39 studies and followed NICE methodology. It included 12 uncontrolled before and after studies (UBAs); ten CBAs; seven RCTs; five systematic reviews; one ITS; one observational study; one control study; and two cross-sectional studies.</p>
Reach	<p>Mass media campaigns would have the potential to reach large numbers of smokers. Campaign awareness figures are typically high.</p>
Efficacy/ effectiveness	<p>Review 1 concluded that the evidence on cost-effectiveness was limited but of acceptable quality and consistently suggested value-for-money using commonly used thresholds.</p> <p>Review 2 found that 11 campaigns met the inclusion criteria for this review, reporting different outcomes. Five out of nine found effect on prevalence; three of seven found statistically significant decreases in tobacco consumption. Among the seven studies presenting abstinence or quit rates, four showed some positive effect, although in one of them the effect was measured for quitting and cutting down combined. The review concluded that there is evidence that comprehensive tobacco control programmes which 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.</p> <p>Review 3 concluded that there is strong empirical evidence that, within the context of comprehensive tobacco control programmes, mass media campaigns can promote adult quitting and reduce adult smoking prevalence. Effectiveness may depend upon campaign reach, intensity, duration and the messages used. Campaigns require ongoing investment to sustain a level of at least 1,200 Gross Ratings Points (GRPs) per quarter for a total of 4,800 GRPs per year. Sufficient population exposure is crucial: television remains the primary channel to reach most smokers. Higher mass media campaign exposure also appears to confer</p>

	<p>greater benefit on socio-economically disadvantaged population subgroups. Head-to-head comparative studies of message themes find that those carrying messages of negative health effects, many of which feature graphic imagery and/or testimonial stories and elicit negative emotions, tend to perform well compared with messages without such features.</p> <p>Review 4 found eight studies which looked at the prevalence of tobacco use. Four studies reported change in prevalence median -5.0 percentage points (Range: -5.2 to -1.9 percentage points). Four further studies found that exposure to anti-tobacco media interventions was significantly associated with decreases in prevalence. Seventeen studies looked at cessation of smoking: the median percentage points change reported by 12 studies was +3.5 (inter-quartile interval 2 to 5 percentage points) in quitting smoking. A further five studies reported that exposure to anti-tobacco media interventions was associated with increase in successful cessation.</p> <p>Review 5 concluded that multi-mass media campaigns (combined with other interventions) are effective in increasing tobacco use cessation.</p>
Adoption	Intervention would not require adoption by an intermediary body.
Implementation	Mass media campaigns require significant investment, particularly where television advertising is included. Expertise in the design and evaluation of social marketing campaigns is also required.
Maintenance	The reviews identified that campaigns were most effective when of sustained duration as campaign effects can rapidly dissipate.
Potential impact	Based on Review 4 this type of intervention could reduce smoking prevalence in Wales by 5 percentage points resulting in a smoking prevalence of 16%. Evidence indicates these interventions can be effective when implemented alone; however, the studies included in the reviews generally evaluated nationwide campaigns with substantial resources to broadcast messages on television with high intensity.
Evidence summary and	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.

grading	
Expert Advisory Group conclusion	<p>The EAG noted the potential population impact of these interventions and the learning from other countries where these approaches have been used to some effect.</p> <p>The EAG noted the difficulty in securing funding for these interventions but also that they are typically among the most cost-effective based on reach and impact.</p> <p>The group further noted that these approaches have been underutilised in Wales and should be more actively considered as core components of future tobacco control work.</p>

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TOBACCO CONTROL**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Telephone quitlines**

EAG outcome	Outcome 2: Increasing smoking cessation among working age adults who smoke leading to a decline in smoking prevalence in this group.
Rationale for inclusion	Three systematic reviews (1, 2, 3) were identified which included this intervention. All three reviews concluded that there was good evidence of effectiveness of telephone-based quitlines for stopping or reducing regular smoking in adults.
Intervention description	Quitlines use the telephone to provide information and support to help tobacco users who want to quit. Counselling may be provided proactively or offered reactively to callers to smoking cessation help lines.
Population	Approximately 75% of the studies in Review 1 were from the USA and Canada, 10% each from the UK and Australia, and 5% from Europe. Review 2 included 60 studies from a range of countries, although primarily the USA. Review 3 included 32 international studies including USA, Sweden, Australia, and UK. Studies were mostly on adult smokers although a few included sub-populations including young smokers. Other sub-populations considered were low income smokers, pregnant smokers, and recent quitters.
Setting(s)	Community, clinical settings, workplace, general public quitlines, and private health.
Study design and quality	<p>Review 1 included 77 randomised or quasi-randomised control trials. A small number of trials were judged to be at risk of bias but the reviewers did not judge the overall results at high risk of bias.</p> <p>Review 2 was based on an earlier version of Review 1 with an additional updated search which identified seven studies, six of which were included in the current version of Review 1.</p> <p>Review 3 included 11 studies that were subsequently also considered in Reviews 1 and 2.</p>

Reach	The studies do not report population reach so this could not be assessed. However these interventions have the potential to reach relatively large groups of smokers.
Efficacy/ effectiveness	<p>Review 1 concluded that among smokers who contacted help lines, quit rates were higher for groups randomised to receive multiple sessions of proactive counselling (nine studies, >24,000 participants, risk ratio (RR) for cessation at longest follow up 1.37, 95% confidence interval (CI) 1.26 to 1.50). From 12 trials there was evidence that people receiving call-back counselling were more likely to have stopped smoking. Use of quitlines increased the relative success of quitting by between 25% and 50%, but since the proportion quitting in the control groups was quite low, this was equivalent to an absolute increase of only 2 to 4 percentage points.</p> <p>To supplement findings on quitline effectiveness, Review 2 looked at additional evidence from 49 studies that evaluated interventions to promote quitline use. Mass-reach health communication interventions that used messages tagged with the quitline number were evaluated in 23 studies and found absolute increases in cessation rates of 3.0 and 5.3 percentage points compared with callers who were not exposed to media messages (two studies).</p> <p>Review 3 concluded that there is evidence that reactive quitlines improve abstinence rates over the distribution of self-help materials alone and there is also a consistent body of evidence that proactive telephone counselling has a modest effect on smoking cessation. There is some evidence that proactive support may be slightly more effective, although further research is needed in this area.</p>
Adoption	The intervention would not require adoption by an intermediary body.
Implementation	Investment would be needed to support promotion of a telephone counselling service with the public and health professionals. Staff would need to be trained to provide support over the phone, and mechanisms put in place to provide/refer for further support/treatment.
Maintenance	There is evidence from the literature of sustained cessation from between six month follow-up to 30

	months. This is an individual level intervention and would require ongoing funding. This would be reduced if it was an adjunct to existing provision rather than a standalone service.
Potential impact	If 5% of smokers were to receive cessation support from a quitline rather than quitting unaided, an additional 375 smokers would quit per year.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	The EAG noted the potential advantage of offering these services at an all-Wales level for those who require minimal support to quit or who for access reasons (e.g. shift work, rurality, or disability) find it difficult to attend face-to-face services. It is anticipated that this could be offered at minimal additional cost as an adjunct to existing Stop Smoking Wales provision.

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TOBACCO CONTROL

**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION**

**Brief intervention for smoking cessation
delivered by health professionals**

EAG outcome	Outcome 2: Increasing smoking cessation among working age adults who smoke leading to a decline in smoking prevalence in this group.
Rationale for inclusion	Three systematic reviews (1, 2, 3) found evidence that brief intervention advice from health professionals to provide smoking cessation interventions had a measurable effect on the point prevalence of smoking, continuous abstinence, and professional performance.
Intervention description	Brief interventions involve opportunistic advice, discussion, negotiation or encouragement to quit smoking. These reviews defined a 'minimal intervention' as an initial visit lasting up to 20 minutes and no more than one follow-up appointment. It should be noted that most of the interventions described were much shorter than 20 minutes, ranging from one to 15 minutes, and generally lasting less than five minutes. Health practitioners trained to deliver brief intervention included doctors/physicians, nurses, dentists and pharmacists. One of the reviews looked specifically at training to deliver smoking cessation, typically brief advice.
Population	Participants were patients who were adult smokers and although the participants in some trials were at risk of specified diseases (respiratory disease, diabetes, ischaemic heart disease), most were from unselected populations. The smokers were recruited during standard GP, nursing, dental or outpatient visits, or from waiting rooms. Most of the reviews were based in USA followed by the UK, Australia and Canada.
Setting(s)	The most common setting for delivery of advice was primary care clinics. Other settings included hospital wards and outpatient clinics, dental clinics, and pharmacies.
Study design	Review 1 included 42 trials, conducted between 1972

<p>and quality</p>	<p>and 2012, covering over 31,000 smokers. They comprised randomised trials in which the intervention was training of health care professionals in smoking cessation.</p> <p>Review 2 considered evidence from 38 reviews (including Review 1) and 31 papers. It includes well-conducted meta-analyses, systematic reviews of randomised controlled trials (RCTs), and cluster randomised controlled trials (CRCTs), all with a low risk of bias.</p> <p>Review 3 included 17 studies using a randomised controlled trial design. Studies were assessed as having either a low or unclear risk of bias.</p> <p>With the exception of five studies, all studies included in Review 2 were also subsequently included in Reviews 1 or 3.</p>
<p>Reach</p>	<p>Between 70% and 80% of adults visit their general practitioner (GP) at least once a year which provides a large potential reach. However, in practice, consistent implementation of these interventions is difficult.</p>
<p>Efficacy/ effectiveness</p>	<p>Review 1 pooled data from 17 trials of brief advice versus no advice (or usual care) which detected a significant increase in the rate of quitting (relative risk (RR) 1.66, 95% confidence interval (CI) 1.42 to 1.94). Assuming an unassisted quit rate of 2% to 3%, a brief advice intervention can increase quitting by a further 1% to 3%. This indicates that the number who need to be treated to benefit one person (NNTB) is between 50 and 120.</p> <p>Review 2 concluded that evidence supports the efficacy of physician advice giving routine brief intervention for smoking cessation (Review 1) and nurse advice as a brief structured intervention only (but there is insufficient evidence for the efficacy of nurse advice as an opportunistic intervention during routine care). There is insufficient evidence to determine the efficacy of brief interventions from other health professions.</p> <p>In Review 3, 13 of 17 studies found no evidence of an effect for continuous smoking abstinence following the intervention. Meta-analysis of 14 studies for point prevalence of smoking produced a statistically and clinically significant effect in favour of the intervention (odds ratio [OR] 1.36, 95% CI 1.20 to 1.55, $p= 0.004$). Meta-analysis of eight studies that reported continuous</p>

	<p>abstinence was also statistically significant (OR 1.60, 95% CI 1.26 to 2.03, $p=0.03$).</p> <p>Healthcare professionals who had received training were more likely to perform tasks of smoking cessation than untrained controls including: asking patients to set a quit date ($p<0.0001$); make follow-up appointments ($p<0.00001$); counselling of smokers ($p<0.00001$); provision of self-help material ($p<0.0001$); and prescription of a quit date ($p<0.00001$). No evidence of an effect was observed for the provision of nicotine gum/replacement therapy.</p>
Adoption	<p>For this intervention to have an impact on population smoking prevalence it would need to be routinely delivered as part of healthcare delivery in primary and secondary care settings. Training would also need to be integrated into all post-graduate training programmes for medical professionals.</p>
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • definition of the intervention e.g. AAA • a one-off group training session for health professionals of between one and two hours • organisational commitment and capacity to integrate into routine care <p>Implementation support would be required for:</p> <ul style="list-style-type: none"> • dissemination and uptake • development of routine recording systems to monitor that brief intervention is taking place • training and support for health professionals of which there are 51,636 (4) working in Wales
Maintenance	<p>Training and monitoring would need to be ongoing as would the commitment to maintain delivery of the intervention by health professionals.</p>
Potential impact	<p>These interventions are of interest because 70% to 80% of the adult population see a health professional (typically a GP) in a year. If GPs were to deliver brief interventions to 20% of the smokers who attend, that would reach 74,000 smokers. A 2% cessation rate Wales would generate 1,480 non-smokers.</p>
Evidence summary and grading	<p>Grade A: This intervention is supported by good evidence of its effectiveness and is recommended for use in the UK.</p>

Expert Advisory Group conclusion	<p>The EAG noted the importance of brief advice to motivate smokers to make a quit attempt and signpost to sources of additional help.</p> <p>The group noted that training of between one and two hours was required to generate an improvement in smoking cessation activity.</p> <p>The group noted the importance of monitoring systems that routinely prompt and record the outcome of brief interventions and for consideration of the realistic prospect of these being routinely incorporated into routine care, prior to investment in training.</p>
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OBESITY, DIET AND NUTRITION**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Multi-component school-based interventions on diet
and physical activity**

EAG outcome	Outcomes 1 and 2: Prevention of obesity in children aged 0 to 16 years.
Rationale for inclusion	<p>Systematic reviews were identified that considered interventions in the school setting (n=37). These included interventions to address diet; physical activity; sedentary behaviour; and combinations of all of these.</p> <p>This summary is based on two of the more recent, large wide-ranging reviews of high quality. One was a Cochrane review (1) and one was an Effective Health Care programme review conducted by the Agency for Healthcare Research and Quality (2). Reference has also been made to a synthesis of reviews (3).</p>
Intervention description	Multi-component interventions (combination of curriculum; policy; environment; physical activity sessions; food provision,) in the school setting to prevent overweight and obesity.
Population	<p>Target population varied across studies but all included children attending school aged between 4 and 16 years. Reviews included studies based mostly in the USA and Europe, with a total of seven in the UK covered in Reviews 1 and 2.</p> <p>Study populations ranged from targeted year groups in a single school to whole school populations i.e. 25 to nearly 4,000 children.</p>
Setting(s)	All settings were predominantly school-based; the majority were primary although middle and secondary schools were also included. They ranged across rural and urban areas.
Study design and quality	Review 1 included 55 interventions of which 35 were based in an educational setting. Eight targeted children aged 0 to 5 years; 39 targeted 6 to 12 years; and eight targeted 8 to 13 years. All included a range of educational, behavioural and health promotion

	<p>interventions involving diet and nutrition, physical activity, lifestyle and social support. The overall quality of studies was assessed as reasonable, and many were assessed as having a low risk of bias, across a number of domains. Selection bias is a potential concern but many of the non-randomised controlled trials (NRCTs) sought to minimise the impact of potential selection bias. Many studies reported validity of outcome measures but many did not, and some used self-reporting of behavioural measures which may be less accurate. However all studies used objective measures of adiposity, helping to limit the impact of outcome assessors not being blinded. The studies included 16 cluster controlled randomised control trials (CRCTs); seven randomised controlled trials (RCTs); and two NRCTs. The minimum duration was 12 weeks.</p> <p>Review 2 included 124 interventions of which: 104 were school-based; six home-based; one primary care-based; four childcare-based; and nine further studies which were community-based, environment-led, and consumer health informatics-based. Nearly 70% of the studies were RCTs, and the remainder were NRCTs. All required a minimum six month follow-up in the school setting. The overall quality was assessed using the Downs and Black instrument and the majority were rated as being at moderate risk of bias. All studies used objective measures of adiposity, and reported the difference between intervention and control groups.</p> <p>Review 3 included eight systematic reviews of school-based interventions for controlling and preventing obesity and the overall quality of the reviews were assessed using Joanna Briggs Institute (JBI) Critical Appraisal of systematic reviews. Five out of eight were assessed to be of high quality.</p> <p>There was overlap between studies in Reviews 1 and 2, with 25 studies featuring in both reviews.</p>
Reach	<p>Individual studies include information on reach as a component of evaluation. The majority of studies used school as a setting and therefore reach would be assumed to be high if adoption is sufficient. The majority of studies were either whole-year or whole school based.</p> <p>There are 1,357 primary, 4 middle, 213 secondary schools in Wales (4). If the intervention were to be implemented in one primary year group it would reach</p>

	between 30,000 and 33,000 children.
Efficacy/ effectiveness	<p>There is review level evidence for the effectiveness of multi-component programmes in the school setting, looking at diet and physical activity, independently or combined. The strongest evidence is for children aged 6 to 12 years.</p> <p>Review 1 found 35 interventions based in an educational setting. The standardised mean change in body mass index (BMI) from baseline to post-intervention compared to the control group was -0.14 (range from -0.21 to -0.08). Among children aged 6 to 12 years the difference was -0.17 (from -0.25 to -0.09).</p> <p>Review 2 found moderate evidence of the effectiveness of physical activity and diet interventions in the school setting. Evidence for combined diet and physical activity interventions was weak. The review found strong evidence of the effectiveness of school/home interventions for physical activity and school/community interventions for combined diet and physical activity.</p> <p>Review 3 concluded that interventions in the school setting associated with a significant weight reduction in children included long-term interventions with combined diet and physical activity and a family component.</p>
Adoption	The majority of interventions were primary school-based. Population-level impact would require widespread adoption by primary schools across Wales (1,357 primary schools) and by school staff and pupils.
Implementation	<p>The majority of the interventions were delivered by school staff with varying levels of support for training, resources, and consultation. Some of the interventions included specific practitioners appointed to the interventions such as dietitians, trained peer leaders, and trained instructors.</p> <p>Multiple component interventions involve a variety of implementation strategies, for which implementation at school level would require:</p> <ul style="list-style-type: none"> • organisational level support • involvement of specialist practitioners and professionals such as dietitians, trained peer leaders, physical activity experts/instructors • training of classroom teachers • implementation of changes to school environment • implementation of changes to school policies

	<ul style="list-style-type: none"> • availability of resources to support curriculum changes • increased structured physical activity sessions <p>Implementation support would include:</p> <ul style="list-style-type: none"> • active dissemination of the intervention to schools • provide best practice guidance for schools • training for staff • monitoring
Maintenance	<p>This would be variable. Components of the intervention that relate to changes in school environment would require minimal maintenance. Components that work with individual children would require ongoing support:</p> <ul style="list-style-type: none"> • ongoing delivery team as at implementation • ongoing training of staff • ongoing educational resources, IT support e.g. website, monitoring and feedback. <p>There is no evidence from the systematic review of sustained effect of the interventions post follow-up period.</p>
Potential impact	<p>If the intervention were to be adopted, it has the potential to have a small but positive effect on obesity levels in school-aged children. The intervention has the additional advantage of being universal and would be expected to help reduce inequalities in rates of obesity.</p>
Evidence summary and grading	<p>Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.</p>
Expert Advisory Group conclusion	<p>The EAG ranked this intervention highly due to the potential reach at a population level although recognising the relatively small effect of the intervention taken across the whole population.</p> <p>The universal approach of the intervention is important in relation to health inequalities and the existing Welsh Network of Healthy School Scheme (WNHSS) which would provide a vehicle for delivery.</p>

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OBESITY, DIET AND NUTRITION**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Whole system or multiple setting programmes to
prevent childhood obesity**

EAG outcome	Outcomes 1 and 2: Prevention of obesity in children aged 0 to 16 years.
Rationale for inclusion	Three systematic reviews considered 'whole system' or multi-setting interventions to prevent childhood obesity. One undertaken for NICE (1), another for the Agency for Healthcare Research and Quality (2) and a third review of community-based approaches (3). While these do not provide convincing evidence of the effectiveness of these approaches, the underpinning theoretical framework is sound and supports consideration for implementation via a research and development pathway.
Intervention description	A whole-system approach has been described as one that comprises nine core features of systems working: capacity building; encouragement of local creativity; developing working relationships; community engagement; enhancing the degree to which policy and action are embedded in communication; robustness and sustainability; facilitative leadership; monitoring and evaluation; and finally that the design and development of the community-wide programme explicitly recognises the causes of the problem as a system (1).
Population	The target population varied across twenty studies but all included children aged 4 to 16 years. Populations were drawn predominantly from the USA, Australia and Europe. None of the studies took place in the UK.
Setting(s)	Interventions took place in the community and a combination of one or more of home, school and environment.
Study design and quality	Review 1 included eight studies: two adopted a before-and-after (BA) study design; three were non-randomised controlled trials (NRCTs); one was a controlled before-and-after (CBA) study; one was a longitudinal epidemiological study; and one a repeated

	<p>cross-sectional survey. All studies were graded as being of moderate quality. Review 2 included three studies: two were randomised controlled trials (RCTs) and one NRCT, which combined physical activity and diet in the community with a school component. These were of a moderate risk of bias. These studies included 4,071 participants.</p> <p>Review 3 included nine community-based studies: five RCTs and four NRCTs. Risk of bias was assessed by using the Downs and Black instrument (4). Of the ten intervention studies reported, six were rated to have a moderate risk of bias and four had a high risk of bias. The review stated that many of the studies published had suboptimal study designs which may have led to biased results.</p> <p>There was some overlap between studies considered. Of the 20 studies identified, one study was cited in all three reviews, two studies were cited in Review 1 and Review 3, and two studies were cited in Review 2 and Review 3. Nine studies appeared in only one review.</p>
Reach	<p>Typically these are whole-population/community studies. Information on the reach of each study was not provided. However, the use of the community setting with school and/or home components suggests that reach would be high if adoption by the relevant agencies is sufficient.</p>
Efficacy/ effectiveness	<p>Review 1 concluded that there is evidence from a number of community-wide programmes that they can have a beneficial effect on reducing BMI scores in children. There was a statistically significant and favourable change (over 3 years) in both the prevalence of overweight/obese children and the within-group change pre/post intervention in BMI-z scores in one BA study set in the USA. Two studies in France (a longitudinal epidemiological study and a repeated cross-sectional survey design respectively found a statistically significant between-groups difference at post-intervention for prevalence of overweight or obese children, and a statistically significant within-groups change from pre- to post-intervention, although not significant for both genders. In one CBA study set in Australia there was a between-groups difference post-intervention only in BMI and BMI-z scores within the two year old age group, with results favouring the intervention. However, within the 3.5 year old age</p>

	<p>group there was a statistically non-significant result which did not favour the intervention for BMI scores. Results for BMI-z scores and prevalence of children rated as obese or overweight favoured the intervention in all age groups, but these results were not statistically significant.</p> <p>Review 2 found moderate strength of evidence of the effectiveness of combined physical activity and diet interventions in the community setting with a school component. Two of the RCTs detected a statistically significant beneficial effect compared with the control.</p> <p>Review 3 reviewed common studies and concluded that there was moderate evidence of effect. Four of the studies which used combined diet and physical activity approaches, reported significant reductions in adiposity and weight related outcomes as a result of the intervention.</p>
Adoption	To deliver a whole system/multiple settings intervention would require adoption by the local health/local authority with support at senior leadership and political level, and engagement with partners from all sectors.
Implementation	<p>Whole system / multi-setting interventions would involve a variety of implementation strategies. At a community plus school and/or home level, it would require:</p> <ul style="list-style-type: none"> • senior executive and political leadership • cross-sectoral commitment • development of a project plan with buy-in from a multi-agency steering group to oversee its co-ordination • identification of resources and confirmation of roles and responsibilities in leading/supporting the project • clarity of outcomes and robust measurement of achievement • monitoring and evaluation mechanisms established from outset to add to the limited evidence base in this research area • dedicated programme/project support for implementation
Maintenance	This would be variable. Components of the intervention that relate to changes in local system working would require minimal maintenance; components that work with individual children would require ongoing support.

	<p>Maintenance might include:</p> <ul style="list-style-type: none"> • ongoing delivery team as at implementation • ongoing training of staff • ongoing educational resources, IT support e.g. website, monitoring and feedback etc.
Potential impact	The systematic reviews present some evidence of interventions which show a statistically significantly difference in individual BMI or BMI-z scores. However, even if interventions have a modest effect on individual body weight, the cumulative impact across the population has the potential to yield significant public health benefits.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG considered that this approach offered the greatest potential, as it recognises the complex range of inter-related determinants of obesity as highlighted by the Foresight Report. The group also acknowledged however, that obtaining genuine political support and executive leadership at a system level as demonstrated in the successful studies would be challenging. The current financial climate and pending Local Government reorganisation may mitigate against successful implementation.</p> <p>Consideration should be given to implementation on a demonstration basis.</p>

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OBESITY, DIET AND NUTRITION**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Primary care brief interventions including tailored advice**

EAG outcome	Outcome 3: Achievement of dietary guidelines for adults of working age.
Rationale for inclusion	Three reviews were identified that considered interventions with healthy adults in primary care settings. A Cochrane review (1), a synthesis of review evidence (2), and a systematic review (3) were considered.
Intervention description	Interventions initiated within primary care settings including cognitive behavioural change or brief intervention, plus supporting activities which could include: self-administered and physician-led questionnaires; telephone interviews; posters; brochures; health education leaflets; group lectures; and healthy eating advice.
Population	The majority of studies included healthy adults of varying ages, primarily conducted in the USA but also in Canada, New Zealand, the Netherlands, Japan, Italy, the USA and the UK. Review 1 included a group of interventions targeted at people at risk of cardiovascular disease, and a few at risk of cancer.
Setting(s)	Primary care.
Study design and quality	<p>Review 1 consisted of 44 RCTs which included 18,175 participants. Sixteen studies (8,456 participants) reported the combined outcome of servings of fruit and vegetables per day. Dietary fibre intake was reported in eight studies and fat intake was reported in 21 studies. Quality was assessed using strict inclusion criteria.</p> <p>Review 2 consisted of 17 systematic reviews. All the reviews were deemed of strong methodological quality against a ten point quality assessment tool with three reviews scoring 10 out of a possible score of 10.</p> <p>Review 3 was a systematic review and meta-analysis of randomised controlled trials of primary care-based dietary interventions for primary prevention in adults</p>

	<p>with minimum 12 month follow-up. Ten studies were included with three studies being women only. Intervention was compared to usual care or no intervention. Study sizes varied from 213 to 3,179 with a total number of 12,414 participants. In general, the authors concluded that the description of randomisation method, blinding of the outcome assessment, and allocation concealment were poor in the trials.</p> <p>There were eight studies which featured in Reviews 1 and 3.</p>
Reach	<p>The reach of the interventions is potentially significant as approximately 70% of the population attend their general practitioner (GP) practice in a given year. Actual reach will be dependent on adoption by practitioners in each setting. The studies provide no specific information on this element.</p>
Efficacy/ effectiveness	<p>Review 1 reported that diet promotion interventions in health care settings increased fruit and vegetable intake by 1.88 (95% confidence interval [CI] 1.07 to 2.70) servings per day. Dietary fibre increased by 6.5g per day and reported total fat intake as a percentage of total calorie intake fell by 4.48%.</p> <p>Review 2: Evidence illustrates that healthy eating exposure to cognitive/behavioural change strategies results in statistically significant large effects on eating behaviours amongst adults, being 31 times more likely to engage in healthy eating behaviours in comparison to those not exposed. For fruit and vegetable consumption, tailored nutrition education also associated with a 35% increase (CI 0.19 to 0.52, $p < 0.0001$).</p> <p>Review 3 comprised three studies that reported intervention effects on consumption of fruit and vegetables, showing a mean difference of 0.25 (95%, CI 0.01 to 0.49, $p = 0.04$) serving per day for fruit consumption. Vegetable consumption was increased by 0.25 (0.06 to 0.44, $p = 0.01$) servings per day. Three studies reported interventions with fruit and vegetable consumption combined together showing a pooled effect of 0.50 (range from 0.13 to 0.87) servings per day. Four studies showed a pooled effect for dietary fibre of 1.97 (0.43 to 3.52) and five studies showed a total fat intake decline of 5.2% energy (1.5% to 8.8%).</p>

Adoption	Interventions would need to be adopted by primary care and other healthcare settings and by individual practitioners within those settings to achieve population reach.
Implementation	<p>Implementation at primary care level would require:</p> <ul style="list-style-type: none"> • adoption at practice level • training /information for staff <p>Implementation support:</p> <ul style="list-style-type: none"> • identification of what additional support/information / training is needed (3,140 GPs, registrar GPs, locum GPs, practice nurses) • development, trial and launch of the intervention • advocacy for the uptake of the intervention • monitoring systems for routine recording of activity
Maintenance	Review 3 considered studies with a minimum 12 month follow-up and demonstrated moderate sustained change. None of the reviews commented on maintenance of the intervention within the setting i.e. whether or not practitioners continue to intervene after the study period had ended.
Potential impact	The primary care interface has the potential to reach approximately 70% of the population every year. Therefore interventions which show a modest increase in adherence to dietary guidelines may have an impact at population level if a systematic approach is adopted.
Evidence summary and grading	Grade A: This intervention is supported by good evidence of its effectiveness and is recommended for use in the UK.
Expert Advisory Group conclusion	<p>Primary care is a key setting for health promotion action. There is potential for enhanced action at this level. However, the EAG was aware of the difficulties of busy frontline staff engaging with these actions at the scale necessary to effect change.</p> <p>The potential offered by programmes such as <i>Making Every Contact Count</i> was recognised, but also the importance of routine data collection so that there is a way to measure activity.</p>

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OBESITY, DIET AND NUTRITION	
INTERVENTION SUMMARY FOR CONSIDERATION FOR IMPLEMENTATION	
Multi-component workplace interventions on diet	
EAG outcome	Outcome 3: Achievement of dietary guidelines for adults of working age.
Rationale for inclusion	Three reviews (1, 2, 3) were identified that found a positive effect of nutrition interventions implemented in the workplace.
Intervention description	Workplace-based interventions promoting healthy diet and food choices.
Population	Working age adults. All the studies in Review 1 were set in Europe. The majority of studies in Review 2 were set in the USA (11 out of 17), and one from the UK. Three studies included mainly women, eight studies included mainly men, and six studies had a mixed gender population. In eight studies the participants are described as being mainly blue-collar workers and in three, mainly white-collar workers. In six studies the workforce was described as of mixed socio-economic status. One study included fewer than 100 participants, while five included more than 2,000. The majority of studies in Review 3 were set in the USA (11 out of 14), and one study in the UK. The number of participants in the studies was generally large, all with over 100 participants, and five with over 1,000 participants. 50% of participants were blue-collar workers.
Setting(s)	The workplace.
Study design and quality	Review 1 comprised 17 studies: five randomised controlled trials (RCTs); three cluster randomised controlled trials (CRCTs); two non-randomised controlled trials (NRCTs); four before-and-after (BA) studies; one independent cross-sectional survey; and two case studies. Ten were considered to be of weak quality and seven of moderate quality Review 2 also comprised 17 studies: ten RCTs with randomisation at the level of the workplace; four NRCTs; and three BA studies. The quality of studies was

	<p>evaluated but not reported.</p> <p>Review 3 included 14 studies, all with control groups: six studies were RCTs, four of which were randomised at the level of the workplace. Quality of the studies did not appear to be systematically assessed or taken into account in analysis</p> <p>There was minimal overlap between reviews.</p>
Reach	Reach is only reported for one study (Review 3) with 43% at follow-up.
Efficacy/ effectiveness	<p>Review 1: 13 of 17 studies reported positive effects on dietary behaviour, three of which were long term. The review concluded that there was limited to moderate evidence for positive effects of nutrition interventions implemented in the workplace.</p> <p>Review 2: Meta-analysis shows an increase in consumption of 0.18 servings per day fruit and vegetables. Nine studies reported on fat intake. A meta-analysis was not performed. The largest evaluation reported a decrease of fat consumption of 0.37% energy from fat, the next largest reported a 1% decrease in fat consumption. The review concluded that interventions which target fruit and vegetable intake were most likely to be successful, and that the effect size is likely to be small.</p> <p>Review 3: All 14 trials observed changes in intervention group in a positive direction for at least some outcome measures. A statistically significant increase in vegetable intake was reported in 6/7 studies (range 0.09 to 0.19 servings per day); a statistically significant increase in fruit intake in 4/5 studies (range 0.11 to 0.24 servings per day); a statistically significant increase in fruit and vegetable intake in 3/3 studies (range 0.18 to 0.5 servings per day); a statistically significant decrease in fat intake in 6/10 studies (range decrease 3% to increase 1.35% calories from fat per day; a statistically significant increase in fibre intake in 3/5 studies (0.02 to 0.17 g fibre intake per 1,000 calories).</p>
Adoption	The intervention would need to be adopted by workplaces across Wales.
Implementation	<p>Implementation at workplace level would require:</p> <ul style="list-style-type: none"> organisational support and leadership for adoption

	<ul style="list-style-type: none"> • co-ordination within the workplace • involvement of employees at all stages • increase or maintenance of healthy food options in canteens • changes to options in vending machines etc • staff training <p>Implementation support would include:</p> <ul style="list-style-type: none"> • development of programme criteria/components based on evidence reviews • dissemination and advocacy for adoption • best practice guidance • training for work place co-ordinators • monitoring • support for evaluation
Maintenance	Once established, and a culture of healthy eating in work places created, there would be small ongoing costs. There is little evidence for the maintenance of the interventions at a setting or individual level from the reviews.
Potential impact	The actual scale of change at an individual level of these interventions is small (maximum of half a portion of fruit and vegetables per day). However, the effect is at the level of the workplace potentially and therefore has a greater impact potentially than the interventions in other settings with a similar effect size.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The workplace provides an opportunity to reach those individuals in work and can support relatively small changes to policy and practice which enable change at individual level.</p> <p>Public Health Wales currently has a Healthy Working Wales programme which would have the potential to deliver these interventions.</p>

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OBESITY, DIET AND NUTRITION**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Social marketing / mass media campaigns to promote
adherence to dietary guidelines**

EAG outcome	Outcome 3: Achievement of dietary guidelines for adults of working age.
Rationale for inclusion	One structured policy review (1), one review of reviews (2), and one systematic review (3) were identified that included this intervention.
Intervention description	Public information campaigns utilising media communication and social marketing tools at population level to improve knowledge and potentially attitudes and behaviours about healthy eating, either relating to overall diet or targeting specific foods.
Population	Adult general population. Studies took place in developed countries, typically North America and Europe.
Setting(s)	Mass media communication channels.
Study design and quality	Review 1 considered ten European programmes, typically from before-and-after non controlled studies. One programme also featured in Review 2. Review 2 considered systematic reviews of mass media interventions, either singly or as part of multi-component programmes. Review 3 considered evidence from single randomised trials or non-randomised studies. Review 3 contained one study that also appeared in Review 2.
Reach	Mass media campaigns have the potential to reach a large number of people and campaign awareness figures are typically high.
Efficacy/ effectiveness	Review 1 concludes that the evidence is suggestive of a positive strong impact on awareness and attitudes for public information campaigns on healthy eating, and these are widely reported. The review also suggests a small impact on behaviour, mainly through change in self-reported behaviour. Examples reported include:

	<p>improvement in fruit and vegetable consumption from 2.87 to 3.42 servings per day for the total population in Denmark (Meyer, 2003); increase in fruit and vegetable consumption of between 0.2 and 0.6 portions per person per day (systematic review of 44 studies).</p> <p>Based on three systematic reviews, Review 2 concluded that there was moderate evidence for the benefit of media campaigns when specific healthy food choices are promoted.</p> <p>Review 3 concluded that focused media and educational campaigns, using multiple modes, were in favour of the intervention as part of multi-component strategies for increasing consumption of specific healthful foods or reducing consumption of specific less healthful foods or beverages. The evidence for mass media used alone is less strong.</p>
Adoption	Intervention does not require adoption by an intermediary.
Implementation	Mass media campaigns require significant investment, particularly where television advertising is included. Expertise in the design and evaluation of social marketing campaigns is also required.
Maintenance	Mass media campaigns should be included as a key component of interventions to improve population health. Sufficient funding needs to be secured to ensure widespread and continuous exposure to the campaign messages.
Potential impact	According to Review 1, consumption of fruit and vegetable could increase by 0.2 to 0.6 portions per person per day. Evidence also indicates that these interventions can be effective in changing knowledge and attitudes and with a small impact on behaviour.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	The EAG recognised the potential of these interventions as part of a multi-component programme. The group recognised the importance of campaigns of this kind being integrated into wider programmes of work and that single food or nutrient campaigns appear to have greatest impact.

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OBESITY, DIET AND NUTRITION**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Food retail and catering environment interventions**

EAG outcome	Outcome 3: Achievement of dietary guidelines for adults of working age.
Rationale for inclusion	Three systematic reviews (1, 2, 3) were identified which considered strategies to influence food purchasing decisions in the retail or catering environment.
Intervention description	Provision of food subsidies in promoting healthy purchases in a range of settings, including catering establishments through menu modification and promotion. Interventions included menu promotion; food composition; cooking methods and portion size; signage and menus; pricing or cost reduction.
Population	<p>Review 1 included: adolescents aged 12 to 17 years, most commonly school/university students; adults aged 18 and over; and mainly transit workers and low income women.</p> <p>Review 2 included mainly adults, from urban and rural settings, and generally of mixed race. Three were specified as being in low income areas</p> <p>Review 3 covered the general population. Eight out of 33 studies targeted racial/ethnic minority populations or low socio-economic groups.</p> <p>The reviews include interventions based mainly in the USA and in some European countries, but also Canada, New Zealand, Australia, Japan, South Korea, and the Marshall islands. One study was conducted in the UK.</p>
Setting(s)	Retail food environments including school and university cafeterias, supermarkets, restaurants, worksites, farmers' markets, organic food stores, take-outs and fast food outlets.
Study design and quality	Review 1 included 20 studies: nine randomised controlled trials (RCTs); three cohort studies; and eight controlled before-and-after (BA) studies. Quality was assessed using a scoring system: on average, studies met six out of ten quality criteria.

	<p>Review 2: Thirteen studies met the inclusion criteria. Most were non-experimental interventions with voluntary participation and a pre-post test exposure assessment with or without a comparison group. Two had a quasi-experimental design and one had a true experimental design.</p> <p>Review 3 covered 33 studies, six of which used randomisation.</p> <p>Study quality was assessed using a scoring system of 1 to 3, rating study design, effectiveness and reach, with a score of 3 for studies with concurrent comparison and prospective measurement of outcomes. Mean score was 2.6 for study design, 1.1 for effectiveness, and 0.3 for reach.</p> <p>Most interventions relied on voluntary participation. Review 2 reported problems with adoption of the programme among establishments as a weakness in the intervention design. There was a small amount of overlap with eight studies featuring in two reviews.</p>
Reach	<p>Review 1 studies were limited in scale in specific settings.</p> <p>Review 2 reported limited reach among the target population.</p> <p>Review 3 formally assessed reach: the overall score was 0.3 suggesting less than 1%.</p>
Efficacy/ effectiveness	<p>Review 1: all but one study found subsidies significantly increased purchase and consumption of promoted products e.g. a fourfold increase in fruit sales following a 50% price reduction in school, 30% increase in fruit intake in hospital cafeterias when price was lowered 15% to 25%. Seven studies included a follow-up period after withdrawal of incentives; three found sustained improvement.</p> <p>Review 2: Seven out of 13 studies measured sales and five of seven reported sales increases on promoted foods. Seven interventions assessed consumer behaviour directly, and four of these reported increase in frequency of purchasing more healthful food options. Two interventions showed positive result using price reduction.</p> <p>Review 3 found sufficient evidence for three of the seven intervention categories:</p> <ol style="list-style-type: none"> 1. point of purchase (POP) promotion and advertising

	<p>(based on seven interventions reporting sales data)</p> <p>2. POP, including direct work with stores to increase availability of healthier choices (based on six interventions)</p> <p>3. POP pricing; promotion and advertising (based on three interventions.)</p>
Adoption	Interventions would need to be adopted by a range of retail establishments including both public and private sectors across Wales.
Implementation	<p>Implementation at population level would require: engagement with retailers and food outlets</p> <ul style="list-style-type: none"> • support for menu redesign • availability of healthier options • pricing policies • promotional materials and evaluation
Maintenance	Variable and likely to require ongoing input to maintain effectiveness.
Potential impact	Consideration of the types of interventions with sufficient evidence could increase adoption of healthful food choices.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG recognised the potential of interventions which seem to influence the food retail environment. The evidence available is weak and is reliant on indirect measures such as sales in many instances.</p> <p>There is however potential to consider these interventions on a developmental basis as part of a wider programme of activity. The potential is greatest in prepared food settings particularly in public sector; educational and workplace settings.</p>

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ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Curriculum-based intervention in schools
to reduce substance misuse**

EAG outcome	Outcome 2: The prevention and reduction of alcohol consumption in young people (aged 15 and younger).
Rationale for inclusion	Three systematic reviews addressed this issue: one systematic review (1) of Australian school based prevention programmes for alcohol and other drugs: two Cochrane reviews (2, 4); and one review undertaken to inform the development of NICE Public health Guidance (3), which found evidence that school-based interventions could be effective in preventing substance use (alcohol and drugs).
Intervention description	Universal programmes delivered to all children and adolescents in a year group, regardless of their level of risk for alcohol or drug use. The programmes take different approaches but typically include some element of skills-based work to build social competence.
Population	<p>Review 1: the population was secondary school pupils, aged 13 to 14 years, in Australia.</p> <p>Review 2: school-aged children aged up to 18 years. The majority of the studies were from the USA and Canada, with six from Europe and six from Australia.</p> <p>Review 3 identified 101 primary studies conducted in the US, and 19 from other countries including seven from Australia, three from the UK, two from The Netherlands, and one each from Sweden, Canada, Israel, Spain, Norway, Russia and one study was conducted across a number of countries.</p> <p>Review 4: 28 of the 32 studies identified were conducted in the USA, most of which were focused on 6th and 7th grade students.</p>
Setting(s)	Schools.
Study design and quality	Review 1 included eight studies of seven interventions reaching a total of 7,867 pupils, conducted between

1995 and 2010. Seven studies were randomised controlled trials and one used a quasi-experimental design.

Study quality was assessed using a validated measure. Of the eight studies, three scored three, four scored two, and one scored zero of a possible five. The authors noted that intervention trials within schools rarely score above three as double blind conditions and full randomisation are often not possible.

Other limitations were that only a small number of Australian papers were identified for review, and results were derived from students' self-report.

Review 2 included 53 trials most of which were cluster-randomised. The reporting quality of trials was poor: only 3.8% of them reported adequate method of randomisation and programme allocation concealment. Incomplete data were adequately addressed in 23% of the trials. Due to extensive heterogeneity across interventions, populations and outcomes, the results were summarised only qualitatively.

Review 3 followed the evidence review protocols for the development of NICE guidance. It covered 14 systematic reviews and meta-analyses and 134 primary studies that evaluated 52 programmes. Results were summarised in terms of short (<6 months), medium (up to 1 year), and long (>1 year) term outcomes.

The majority of the reviews examined the effectiveness of substance use prevention programmes and only one review specifically examined the effectiveness of programmes that aimed to prevent alcohol use. This systematic review found that there was no consistent evidence to determine which programmes were effective over the short to medium term, but highlighted three programmes which were effective over the longer term.

Review 4 included 29 randomised controlled trials (RCTs) and three controlled prospective studies (CPS) that included 46,539 participants evaluating school-based intervention designed to prevent substance use.

A rigorous data collection and analysis of studies was undertaken. The quality and limitations of the studies are reported; despite these limits the review produced a consistent pattern of results: programmes based on life skills are the most effective in reducing drug use.

Reach	The reach of the intervention is potentially extensive. The greater proportion of children and adolescents in Wales will be engaged in full-time education.
Efficacy/ effectiveness	<p>Review 1: Of the eight trials, seven targeted alcohol and five of these were associated with a reduction in the consumption of alcohol. The effect sizes for between-group differences on alcohol consumption were small and ranged from 0.16 to 0.38.</p> <p>Two trials targeted cannabis and both trials were associated with some reduction in cannabis use. In one trial the evidence was only modest, and in the other trial the intervention was effective in reducing frequency of cannabis use only. Two trials targeted tobacco and both were associated with modest and positive outcomes (regular smoker odds ratio 0.51–0.72).</p> <p>The effectiveness of the intervention persisted for at least six months for the positive trials.</p> <p>To improve programme efficacy overall the authors suggest that it may be useful to combine universal programs with targeted programmes for high risk students.</p> <p>Review 2: The reviewers could not pool the results from individual trials due to heterogeneity in study populations. Studies were found that observed no effects of preventative interventions, as well as studies that demonstrated some statistically significant effects, for both alcohol-specific and generic prevention interventions. Five of the 11 studies that evaluated alcohol-specific interventions did not find any statistically significant effects, whereas six studies found significant beneficial effects of the intervention programmes.</p> <p>Review 3: Fourteen systematic reviews and meta-analyses, and 134 primary studies, which evaluated 52 programmes. A broad range of programmes were identified including classroom-based programmes delivered by teachers or other professionals, multi-component programmes that combined classroom-based intervention components with family-based and/or community-based components, and other approaches delivered outside of lesson time including brief interventions and peer support programmes. Results were summarised in terms of short (<6 months), medium (up to 1 year) and long (>1 year)</p>

	<p>term outcomes.</p> <p>Reviews were identified that examined the effectiveness of school-based interventions aimed at the prevention or reduction of alcohol use. There was no consistent evidence to determine which programmes were effective over the short to medium term, but highlighted three programmes which were effective over the longer term. These included the family-based, <i>Strengthening Families</i> programme, Botvin's <i>Life Skills Training</i> (LST) and a culturally-focused curriculum for Native American students.</p> <p>Review 4: Reviews were identified that evaluated the effectiveness of school-based interventions in improving knowledge developing skills, promoting change, and preventing or reducing drug versus usual curricular activities or a different school-based intervention. Skills-based interventions, compared with usual curricula were associated with reduced drug use outcomes drug use (RR 0.81; CI 95% 0.64 to 1.02), marijuana use (RR 0.82; CI 95% 0.73 to 0.92) and hard drug use (RR 0.45; CI 95% 0.24 to 0.85). The authors concluded that skills based programmes appear to be effective in deterring early-stage drug use. The replication of results with well designed, long-term randomised trials, and the evaluation of single components of intervention (peer, parents, booster sessions) are the priorities for research.</p>
Adoption	<p>Curriculum-based interventions would need to be adopted in all schools in Wales, possibly as part of the Welsh Network of Healthy School Schemes. Some local public health teams (LPHTs) have developed their own substance misuse materials for schools, and any Wales-wide implementation would need to take this into account and work with LPHTs.</p>
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • adoption by both local authority education departments and individual schools • training and information for staff • advocacy for the delivery of the intervention • appropriate resources • liaison with LPHTs
Maintenance	<p>As the implementation effect is not long-lasting, it is suggested that the intervention would need to be repeated at agreed intervals throughout education,</p>

	adapted to suit the age of the students. It would require updating of training and resources and whole-school commitment to the intervention.
Potential impact	Although the effect size in the studies was generally small, the intervention has the potential to achieve a reduction in alcohol related harm amongst school-aged children when applied at population level.
Evidence summary and grading	Grade B: This intervention is supported by moderate to good quality evidence of its effectiveness.
Expert Advisory Group conclusion	<p>The EAG acknowledged that the focus for the majority of studies is on substance use prevention programmes and that there is weakness in the evidence base and long-term effectiveness of school-based alcohol interventions. However, the applicability of the few programmes that have demonstrated partial effectiveness should be considered further.</p> <p>The Expert Advisory Group (EAG) noted the potential advantage of offering this to all pupils in schools in Wales. There is potential for it to be delivered as a component of the Welsh Network of Healthy School Schemes and it should receive further consideration.</p>

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ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Social marketing/mass media campaigns to change
alcohol consumption or behaviour**

EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales. Outcome 2: The prevention and reduction of alcohol consumption in young people (aged 15 and younger).
Rationale for inclusion	One overview of systematic reviews (1) that include three reviews for mass media that report some effectiveness.
Intervention description	Mass media campaigns include newspapers and other printed material, radio, television, billboards, etc. Mass media health promotion campaigns can be used to educate the public about alcohol issues with the aim of influencing individuals to change their drinking behaviour. Campaigns usually focus on issues and causal factors identified from broad population data and aim messages at broad general or youth audiences. Most campaigns focus on responsible drinking and the risks of drink-driving, but can also provide information such as what a standard drink is, or raise awareness about alcohol laws.
Population	Young people and working aged population.
Setting(s)	Most studies took place in the USA, Holland and Australia.
Study design and quality	Three reviews were included, two of which were meta-analyses. Studies were considered to be of medium or low quality.
Reach	Social marketing/ mass media campaigns could target the whole population. To be effective they should use a variety of media channels and methods to raise awareness among the target group.
Efficacy/ effectiveness	Studies targeted a range of ages including young people and ethnic minorities in the USA.

	<p>The two meta-analyses calculated an overall beneficial effect of mass media campaigns on alcohol use or behaviour. However both lack primary study details needed to make confident conclusions concerning their findings. Substance-use media campaigns are associated overall with better behaviour outcomes than controls (−0.04 standard deviations), with alcohol-targeted campaigns associated with better behaviour outcomes than campaigns targeting other substances. No information is given about the behaviour outcomes to which these results refer.</p> <p>An average 7% change in desired behaviour outcomes for alcohol-themed campaigns was found; outcome indicators are not specified. Over half of included alcohol-related social marketing studies demonstrated significant effects on alcohol use or initiation. They conclude that whilst the effects are strongest in the short-term, several studies report effects after longer follow-up.</p> <p>Media alcohol interventions showed positive relative effects on relevant behaviours compared to interventions targeting other substances. Media campaigns are more effective at changing behaviour of parents or youth-influential adults than directly targeting youth. Video messages associated with larger gains in substance-use behaviour than other media types.</p> <p>Beneficial changes in behaviour that measured alcohol related outcomes were found. Empirical support found that campaigns were more successful if they used enforcement-linked messages or imparted new information.</p> <p>There is reasonable evidence that social marketing interventions can be effective in addressing alcohol use or harm. Social marketing campaigns may also have an effect on retailer behaviour and encourage environmental-level changes.</p>
Adoption	The intervention would not require adoption by an intermediary delivery agent.
Implementation	Social marketing and mass media campaigns require significant investment, particularly where television advertising is included. Expertise in the design and evaluation of campaigns is also required.

	Partners would include media, public health teams, third sector organisations and representation from the target audience e.g. young people, depending on the focus of the campaign.
Maintenance	Effects of campaigns are reported to be strongest in the short-term and sustaining longer-term impact will be required.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG concluded that while the evidence on social marketing and mass media to support the effectiveness of alcohol and substance misuse is low grade, there is potential to utilise the concepts in wider programmes.</p> <p>The primary barrier is cost but because of the population reach could be considered cost-effective. This type of intervention should be considered for development.</p>

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ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Brief interventions for alcohol**

EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales.
Rationale for inclusion	<p>The review included a Cochrane review (1), a recent systematic review of reviews (2), and a review of the evidence undertaken in the development of NICE guidance (3).</p> <p>Alcohol brief interventions are presently delivered by Public Health Wales, together with an all-Wales training initiative.</p>
Intervention	<p>Brief intervention is structured brief advice to help an individual reduce their alcohol consumption (sometimes even to abstain) and can be carried out by non-alcohol specialists (3).</p> <p>Brief intervention comprises a single session, and up to four (1) or five (2) sessions designed to achieve a reduction in risky alcohol consumption or alcohol-related problems.</p> <p>In general practice, brief intervention is opportunistic. Patients tend not to be seeking help for alcohol problems when presenting. Many trials in primary medical care settings have reported that brief interventions are effective in reducing excessive drinking. However, some trials have been criticised for being unrepresentative of the real clinical situation and therefore are unable to inform clinical practice (1).</p> <p>Intervention in accident and emergency settings has been evaluated to a lesser degree.</p>
Population	<p>Adults visiting a primary health care clinic for any reason, but not specifically for an alcohol-related issue. Potential participants were usually excluded from the trials if they were heavily alcohol dependent or already on an alcohol treatment programme, or had been in the previous year (1).</p>

	<p>Review 3: The primary studies included in the 27 systematic reviews included were largely drawn from the USA. However, a smaller proportion of the included studies were undertaken in the UK and therefore, the evidence base can be considered to have some applicability to a UK-based setting. The majority of included studies were also conducted in primary care.</p>
Setting(s)	<p>Primary care settings (and to a lesser degree emergency departments).</p>
Study design and quality	<p>Review 1 comprised a meta-analysis of 22 randomised controlled trials of 7,619 participants; 29 controlled trials from various countries were identified (24 in general practice, and five in an emergency setting).</p> <p>Several sensitivity analyses were performed and all yielded similar results i.e. a statistically significant benefit of brief intervention.</p> <p>Individual trials in primary care are reported to have had specific weaknesses but that this would make little difference to the overall conclusions.</p> <p>Review 2 evaluated 24 systematic reviews (covering 56 randomised controlled trials across 80 papers published between 2002 and 2012) which identified four focussed review questions.</p> <p>Several limitations associated with the review of reviews are acknowledged; these include some inherent weaknesses with this methodological approach, primarily as conclusions are reached on the findings of previous systematic reviews.</p> <p>Review 3: This review of systematic reviews was undertaken in accordance with the NICE evidence review methodology. Due to the considerable number of systematic reviews previously published in the field, a decision was made to undertake a review of systematic reviews (or evidence briefing). A range of outcomes were reported in the 27 included systematic reviews, including alcohol consumption, mortality, morbidity, alcohol-related injuries, alcohol-related harm, alcohol-related social consequences, health care resource use, referral to specialist treatment, readiness to change, and impact on smoking.</p> <p>Considerable heterogeneity was observed between included reviews. Variation was evident in the characteristics of the brief interventions evaluated in</p>

	<p>primary studies. Study populations also varied considerably. Settings varied in terms of country of study and in service context.</p>
Reach	<p>A large percentage of the population visit their GP practice and other community-based services in a year, where opportunistic brief interventions may take place. Should this approach be extended to other health care settings where the evidence is less strong, this reach may expand to those attending accident and emergency departments and other community-based health settings. Many of these people will not attend for an alcohol related problem, but opportunistic advice could be provided.</p>
Efficacy/ effectiveness	<p>Review 1: Overall, brief interventions lowered alcohol consumption. When data were available by gender, the effect was clear in men but not in women. Longer duration of counselling probably has little additional effect. The lack of evidence of any difference in outcomes between efficacy and effectiveness trials suggests that the current literature is relevant to routine primary care. It was reported that participants receiving brief intervention had lower alcohol consumption than the control group after follow-up of one year or longer (mean difference -38 grams/week, 95% confidence interval -54 to -23). This equates to around four units.</p> <p>Review 2: the focus for this review of reviews was effectiveness rather than efficacy. It highlights the large volume of primarily positive evidence across 56 trials and a wide range of patients supported by brief alcohol interventions. Short and simple interventions are effective but there are still uncertainties with regards to the effectiveness of brief alcohol intervention across different cultural settings, in specific population groups, and in respect of the optimum content of brief interventions.</p> <p>Review 3 supports the comprehensive guidance from NICE outlining recommendations to address alcohol related problems. The 27 included systematic reviews provided a considerable body of evidence supportive of the effectiveness of brief interventions for alcohol misuse in reducing alcohol consumption, mortality, morbidity, alcohol-related injuries, alcohol-related social consequences, healthcare resource use and laboratory</p>

	indicators of alcohol misuse.
Adoption	<p>Within primary care and primary care settings, the delivery of the intervention could be undertaken by: General Practitioners, practice nurses and other primary care clinical staff including locum staff.</p> <p>Wider adoption by those working with individuals at a “teachable moment” could be supported with appropriate evaluation of impact.</p>
Implementation	<p>Adoption in primary care and other relevant settings requires:</p> <ul style="list-style-type: none"> • training and information for staff • advocacy for the delivery of the intervention • access to screening tools e.g. AUDIT
Maintenance	<p>Sustained maintenance requires:</p> <ul style="list-style-type: none"> • ongoing commitment, promotion and support materials • staff motivation and opportunities to share experiences • monitoring systems to record numbers of people trained and reporting delivering the intervention • review of the intervention at appropriate stages
Potential impact	<p>Generally, the systematic reviews reported that participants receiving brief intervention had lower alcohol consumption than the control group after follow-up of one year or longer, equating to around five units per week on average.</p> <p>Benefits of brief interventions were shown in men but not in women.</p> <p>Longer treatment (extended interventions) showed little evidence of greater reduction in alcohol consumption.</p>
Evidence summary and grading	<p>Grade A: This intervention is supported by good evidence of its effectiveness in primary care settings and is recommended for use in the UK.</p>

Expert Advisory Group conclusion	The EAG concluded that there is good evidence of effectiveness and cost-effectiveness for alcohol brief interventions as part of a strategic approach to the delivery of brief interventions in primary care settings. The EAG considered that there was value in applying brief interventions through other professionals and in settings other than primary care, although the evidence is less strong.
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References

1. **Kaner EF, Dickinson HO, Beyer FR, Campbell F, Schlesinger C, Heather N, et al.** *Effectiveness of brief alcohol interventions in primary care populations (review)*. Oxford: Cochrane Database of Systematic Reviews; 2007. Issue 2.
2. **O'Donnell A, Anderson P, Newbury-Birch D, Schulte B, Schmidt C, Reimer J, et al.** *The impact of brief alcohol interventions in primary healthcare: a systematic review of reviews*. Oxford: Alcohol and Alcoholism; 2014. 49:66-78.
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ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Workplace interventions to reduce alcohol consumption**

EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales.
Rationale for inclusion	One overview of systematic reviews (1) that include three reviews for workplaces that all report some positive outcomes; one noted that effects were not long lasting.
Intervention description	<p>Interventions varied in the studies. One review looked at the use of alcohol and drug screening for the prevention of injury or work related harm in occupational drivers.</p> <p>Two reviews looked at the impact of a variety of health promotion interventions on excessive alcohol use, abuse or problems including: health information mail out; counselling; peer support; brief intervention; and psycho-social skills building. One of these reviews also looked at alcohol consumption as one of several lifestyle factors in relation to risk factors for cancer.</p>
Population	Working age adults in employment. Studies took place in Canada and the USA.
Setting(s)	Studies were conducted in a number of settings, including health, retail, manufacturing, industry, postal and transport settings.
Study design and quality	<p>Three small reviews investigated workplace interventions using a variety of randomised controlled trials (RCTs), cluster-randomised trials, controlled clinical trials, controlled before-and-after studies, and interrupted time-series (ITS).</p> <p>One of the reviews (two studies) was rated high quality, and focused specifically on occupational drivers.</p> <p>The second of the reviews (45 studies of which a</p>

	<p>number related to alcohol) looked at workplace health promotion trials and effect on cancer risk, and was rated as having low quality.</p> <p>The third review (ten studies) was rated as medium quality and focused on a variety of workplace alcohol interventions.</p>
Reach	Potential to reach a large percentage of working age adults in employment in Wales.
Efficacy/ effectiveness	<p>The three studies showed some beneficial effect on alcohol consumption or harm. The heterogeneity of study setting, design and lack of intervention replication, combined with a small empirical base preclude conclusions concerning relative effectiveness of intervention or setting characteristics.</p> <p>The evidence from the first of the reviews suggests that it is insufficient to advise for or against the use of drug and alcohol testing of occupational drivers for preventing injuries as a single, effective, long-term solution.</p> <p>All other studies varied in design, setting and intervention, making comparison of results difficult. However, all reported at least one beneficial outcome.</p>
Adoption	This is a work-based settings intervention. Population impact would require widespread adoption by workplaces.
Implementation	<p>Implementation of interventions would require:</p> <ul style="list-style-type: none"> • raising awareness of the benefits of implementing the interventions and adoption by workplaces • development and dissemination of a compendium of best practice workplace-based alcohol interventions made available to all workplaces in Wales, including advice on how to evaluate impact. <p>In conjunction with the Healthy Working Wales scheme, this could provide a framework to encourage workplaces and small businesses to pursue the Corporate Health Standard award. Health promotion activity regarding substance misuse and alcohol is a requirement of the award.</p>
Maintenance	<p>Maintenance requires:</p> <ul style="list-style-type: none"> • regular awareness-raising of benefits and interventions to employees and employers

	<ul style="list-style-type: none"> • updating of a best practice compendium • monitoring and review of the number of workplaces adopting interventions, and their outcomes
Potential impact	If this intervention was adopted, there could be a reduction in the number of working adults drinking alcohol above recommended sensible limits.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	It was recognised by the EAG that the evidence around workplace interventions could not be considered strong, mainly due to weaknesses in the research protocol of some of the studies. However, the quality of several of the individual studies was judged to be medium to high. Therefore, the EAG considered this approach to have merit, and recommended that population-level alcohol interventions which decrease alcohol consumption based within the workplace should be investigated further as part of development.

References

1. **Martineau F, Tyner E, Lorenc T, Petticrew M, Lock K.** *Population-level interventions to reduce alcohol-related harm: an overview of systematic reviews.* London: Preventive Medicine; 2013. 57(4):278-296.

ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Server training interventions on licensed premises**

EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales.
Rationale for inclusion	One overview of systematic reviews (1) that include five reviews for alcohol server training that reported some effectiveness.
Intervention description	Training for servers and managers in premises that sell alcohol covering harm reduction topics such as ID checks, responsible serving and environmental signs of responsible serving e.g. encouraging consumption of low-alcohol or non-alcoholic drinks.
Population	Adults aged 18 years and above. Studies took place in the UK, USA, Australia, Canada and Sweden.
Setting(s)	Settings varied across the studies but all were in the night-time economy.
Study design and quality	Most studies had a controlled before-and-after (BA) design; the others were randomised controlled trials (RCTs), non-randomised controlled trial studies (NRCTs) or time series quasi-experimental studies.
Reach	Clientele of all licensed premises in Wales.
Efficacy/ effectiveness	Five reviews: one was rated high quality and four reported mixed results for studies investigating server training. Some studies showed significantly beneficial effects on patron alcohol consumption, night-time vehicle crashes and on-premises violence; others demonstrated no significant effects. Two reviews argue that server and manager compliance are important factors governing intervention success, citing evidence that mandatory or enforced interventions improve effectiveness. The clearest evidence for effectiveness comes from multi-component interventions that combine server training with enforcement and

	<p>community-level components.</p> <p>The overview concluded that server training is effective if embedded in the community and supported by regular enforcement. Server training is the only intervention shown to successfully reduce violence, although one study did show an increase in patron blood-alcohol.</p> <p>Multi-component interventions combining community, server training and licensing enforcement showed the clearest effectiveness. Server training has minimal effect on consumption and drink-driving unless training is mandated.</p> <p>There is no reliable evidence that server-setting interventions prevent injuries or consumption. Lack of compliance may be a particular problem; mandated or incentivised interventions may be more effective.</p>
Adoption	<p>This is a night-time economy settings-based intervention. Population impact would require adoption by all such licensed premises, with good server/manager compliance.</p>
Implementation	<p>This intervention could be implemented via Area Planning Boards and local licensing committees.</p> <p>Resources required include: training package; management and staff engagement; time to attend training; businesses and chambers of commerce engagement; police involvement.</p>
Maintenance	<p>Server training programmes should be delivered to all existing and potential bar managers and bar staff. Ensuring compliance may be challenging. Implementation of the legislation e.g. serving to minors and people who are intoxicated, would need to be enforced.</p>
Potential impact	<p>If training was enforced as part of a multi-component intervention combining enforcement and community-level components, this could have a positive effect on alcohol consumption. This could lead to a reduction in violence and road traffic accidents, and as a consequence, a reduction in the need for the NHS and emergency services.</p> <p>Server setting training if delivered across the night-time economy could have significant benefit on alcohol</p>

	related harm.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	<p>The EAG noted that whilst the majority of the studies showed a beneficial effect, there was variation in the quality and outcome of the studies.</p> <p>The EAG concluded that the programme should be considered as part of a research and development programme of work.</p>

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1. **Martineau F, Tyner E, Lorenc T, Petticrew M, Lock K.** *Population-level interventions to reduce alcohol-related harm: an overview of systematic reviews.* London: Preventive Medicine; 2013. 57(4):278-296.

ALCOHOL AND SUBSTANCE MISUSE	
INTERVENTION SUMMARY FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT	
Online and technology based interventions	
EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales.
Rationale for inclusion	Two systematic reviews (1, 2) were identified that included this intervention, which focussed on computer and internet-based alcohol interventions.
Intervention description	The aim of this intervention is to reduce binge and hazardous drinking by providing bespoke, computerised feedback to adults aged 18 plus who regularly drink over the guidelines.
Population	College and university students, adults aged 18 years and above; male and female.
Setting(s)	The intervention was delivered in educational settings and in the community. Review 1 focused on at-risk heavy or binge drinkers.
Study design and quality	Review 1: Seventeen RCTs were included in the review; no information is provided on quality assessment. Five RCTs were included in the meta-analysis where effect sizes could be extracted. Review 2: Twenty-two RCTs involving 7,275 participants were included. Several sources of potential bias in the individual studies were detected
Reach	No information was provided on reach.
Efficacy/ effectiveness	Review 1: In relation to alcohol units per week or month and based on five RCTs where a measure of alcohol units per week or month could be extracted, differential effect sizes to post-treatment ranged from 0.02 to 0.81 (mean 0.42, median 0.54). Pre-post effect sizes for brief personalised feedback interventions ranged from 0.02 to 0.81; in two multi-session modularised interventions, a pre-post effect size of 0.56 was obtained. Pre-post differential effect sizes for peak blood alcohol concentrations (BAC)

	<p>ranged from 0.22 to 0.88, with a mean effect size of 0.66.</p> <p>The review concluded that the available evidence suggests that users can benefit from online alcohol interventions and that this approach could be particularly useful for groups less likely to access traditional alcohol-related services, including women, young people, and at-risk users. However, caution should be exercised given the limited number of studies allowing extraction of effect sizes, the heterogeneity of outcome measures and follow-up periods, and the large proportion of student-based studies.</p> <p>Review 2 – significant reduction with web/computer feedback is reported for alcohol related problems report (SMD-0.31 95% CI -0.59 to -0.02); Peak Blood Alcohol Content (SMD-0.77 95% CI -1.25 to -0.28); Drinking Frequency (SMD -0.38 95% CI -0.63 to -0.13); Drinking Quantity (SMD -0.35 95% CI -0.51 to -0.18) and Binge drinking (SMD -0.47 95% CI -0.92 to -0.03).</p> <p>Individual face-to-face feedback is reported to be probably effective in reducing alcohol misuse. No direct comparisons of web/computer feedback against individual face to face feedback were found, but web/computer feedback impacted across a broader set of outcomes and is less costly so therefore might be preferred. Significant effects were more apparent for short-term outcomes (up to three months). For mailed and group feedback, and social norms marketing campaigns, the results are on the whole not significant and therefore cannot be recommended.</p>
Adoption	Intervention would need to be adopted at different levels, including via key settings such as higher education, and promoted to potential users.
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • staff and volunteer training • computer based resources • motivation from the target audience

Maintenance	Maintenance would require: <ul style="list-style-type: none"> • training • computer resources • appropriate targeting for future development
Potential impact	These interventions have the potential to impact at a population level and be cost effective if effectively targeted and disseminated through networks.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	The EAG acknowledged the potential of technology driven applications and that technology is rapidly developing in this field. Further development work and evaluation would be required prior to widespread implementation.

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1. **White A, Kavanagh D, Stallman H, Klein B, Kay-Lambkin F, Proudfoot J, et al.** *Online alcohol interventions: a systematic review.* Journal of Medical Internet Research; 2010. 12(5):e62.
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ALCOHOL AND SUBSTANCE MISUSE**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Multi-component community interventions
to prevent alcohol related harm**

EAG outcome	Outcome 1: A reduction in the number of adults drinking above the guidelines and/ or binge drinking in Wales. Outcome 2: The prevention and reduction of alcohol consumption in young people (aged 15 and younger).
Rationale for inclusion	Two systematic reviews (1, 2) were identified that included the intervention. Both reviews concluded that there was evidence from three studies that multi-component interventions could be effective.
Intervention	The studies included within the reviews varied in detail but typically included a range of actions combining community mobilisation; responsible beverage server (RBS) training; house policies and enforcement of licencing laws.
Population	Young people and working age population.
Setting(s)	Settings varied between individual studies but all were in and with the community including alcohol environments. The studies took place in the US, Australia, Sweden, Netherlands and India.
Study design and quality	Review 1: a narrative review including 19 papers from seven interventions; one moderate quality RCT; three poor quality CCTs; one high and one moderate quality ITS; and two poor quality UBA studies. Review 2 included 20 parallel group RCTs. Twelve trials showed some evidence of effectiveness compared to a control or other intervention with persistence of effort ranging from 3 to 3 years. One trial reported significant effects using one-tailed tests and seven trials reported no significant effects. Due to extensive heterogeneity across interventions, populations and outcomes, the reports are summarised qualitatively.
Reach	Review 1: this was not recorded within the reported

	<p>papers but it might be assumed that a community-based programme could have a wide reach. No information was provided on the willingness of alcohol retail environments to participate in the intervention.</p> <p>Review 2: young people up to 18 years attending school.</p>
Efficacy/ effectiveness	The included studies suggested effectiveness in reducing violent crime; drink related motor vehicle accidents and under age sales.
Adoption	This is a multi-component community based intervention and would require a wide range of partners to commit to being a part of the intervention for a population effect. This would include local authorities, licensing committees, individual landlords, community groups like Communities First etc.
Implementation	This intervention would require numerous local and national partners to work together in order for effective delivery.
Maintenance	This intervention would need to be imbedded into standard community practice.
Potential impact	The intervention has the potential to impact at a population level if effectively targeted and disseminated.
Evidence summary and grading	Grade C: There is some evidence supporting the use of this intervention but it is not conclusive.
Expert Advisory Group conclusion	The EAG concluded that this approach had promise in reducing a range of alcohol related harms at community level. It was recognised that this would require cross agency commitment and that the role that Public Health Wales might contribute would be limited but could be significant in terms of stimulating uptake of the approach and supporting aspects of community mobilisation.

References

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MENTAL HEALTH**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION**

Multi-component schools-based programme for mental health including curriculum; student/pupil support; links with services; home component; emotional literacy and resilience

EAG outcome	Outcome 2: Increase in reported mental health (wellbeing) of children and young people.
Rationale for inclusion	A systematic review of reviews (1) and two systematic reviews conducted for NICE (2, 3/4).
Intervention	A range of strategies were adopted including: whole school approaches including teacher training and parent support; interventions which develop prosocial behaviours; and conflict resolution training including peer mediation. Interventions to address bullying and other aspects of violence were also considered.
Population	Primary and secondary school children.
Setting(s)	Schools and the wider community in the USA, UK, Germany, Canada, Australia, New Zealand, Norway, Netherlands and Belgium.
Study design and quality	<p>The systematic review (1) found 52 reviews: 34 were randomised controlled trials (RCTs) and 18, a wider range of designs. All used a stated and appropriate comprehensive search strategy, and 51 studies provided a meta-analysis or narrative data synthesis. Of the 52 reviews, 27 were of a high quality, 18 medium quality, and seven low quality.</p> <p>The main area of methodological weakness identified was the inclusion of studies without an element of control, most commonly interrupted time line, failure to enumerate results, and inclusion of non-school work in clinical contexts.</p> <p>Review 2 included 31 studies: 15 RCTs and 16 controlled clinical trials (CCTs). Review 3 included 17 studies (23 papers): 11 were RCTs and six CCTs.</p> <p>Review 4 included 40 studies: 19 RCTs (15 of which were moderate quality); nine CBAs (eight of moderate</p>

	quality); nine interrupted time studies (ITS) (five of which were moderate quality); and three other designs (all with methodological weaknesses).
Reach	Children in school settings.
Efficacy/ effectiveness	<p>Review 1 reported findings relating to specific outcomes including:</p> <p>Internalizing mental health problems such as anxiety and depression (nine reviews, eight of which enumerated results). Three high quality reviews showed a small to moderate effect size (ES) of 0.10 to 0.50 and one suggested modest to large impacts with ES of 0.41 to 1.70. Four moderate quality reviews showed effect sizes ranging from moderate to large (ES of 0.41 to 1.70) The impact on higher risk children was in general shown to be consistently higher than that of children with milder problems, and quite strong, with average ES of 1.00 rising to 2.46, for some specific selective interventions and measures;</p> <p>Positive mental health and wellbeing and social and emotional learning (SEL) (11 high quality reviews). Three reviews showed positive small to moderate effects overall with ES of 0.15 to 0.37. Two of these reviews found that well-implemented SEL interventions had a mean ES of 0.24 to 0.35 and one calculated a grand study level mean ES of 0.28 for 207 SEL interventions. Three other reviews showed impacts on social and emotional skills and competences to be moderate to strong (ES of 0.5 to 1.49). Five further reviews found that impacts on self-esteem and self-confidence were consistently moderate (ES of 0.34 to 0.69);</p> <p>Externalizing disorders: violence, bullying, conflict and anger (15 reviews). Overall there was a small positive impact (ES averaging 0.1) and generally markedly stronger for high risk children (ES of 0.21 to 0.35 on average). Cognitive behavioural interventions consistently showed a larger effect than average with an ES of 0.5. It is important to note that two studies found that carrying out peer-based work with children with violent or bullying behaviour generally had an adverse effect, resulting in more bullying and victimisation.</p> <p>Impact on attitudes to school and academic achievements (four reviews). A child's commitment to</p>

	<p>schooling had a small to moderate impact on their mental health (ES of 0.14 to 0.6) and a similar impact on test scores and school grades.</p> <p>e. Impact on classrooms and families (one review, 73 controlled after-school programmes): addressed the impact of various SEL interventions on surrounding environments and found positive results (ES of 0.34 for family environments; 0.78 for classroom environments).</p> <p>Review 2 was a narrative review which found good evidence to support implementation of multi-component programmes which included significant teacher training and development, and support for parenting (six RCTs and two CCTs of moderate to good quality). Applicability of these studies developed in the USA would need to be established. Further work is needed to establish optimum length and content. Review 2 included:</p> <p>Some evidence that short-term stress and coping programmes delivered by psychologists are effective in the short term (two RCTs of moderate quality; two CCTs, one of moderate quality and the other with weaknesses). Further work is needed on sustainability and the effectiveness of teachers delivering the interventions.</p> <p>Short-term conflict resolution programmes delivered by teachers and involving peer mediation are effective in the short term. One moderate quality RCT and one CCT with methodological weaknesses.</p> <p>Reasonable quality evidence that the long-term programmes covering social problem-solving and social awareness and emotional literacy, in which teachers reinforce the classroom curriculum in all interactions with children, are effective in the long-term even when delivered alone (one RCT of good quality; one CCT of moderate quality).</p> <p>There is some evidence that the Good Behaviour Game is effective over one year in reducing problem behaviour, based on two RCTs (one moderate quality and one weak), and on outcomes in the short-term related to violence or bullying.</p> <p>Review 3 found evidence from three out of four moderate quality RCTs and two good quality CCTs of the effectiveness of multi-component programmes typically combining social skills development, teacher training in management of behaviour, and parenting education in</p>
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	<p>outcomes relevant to bullying, violence and mental health.</p> <p>There is evidence from two RCTs on the effectiveness of the <i>PeaceBuilders</i> programme which works to incorporate prosocial values and behaviour into school life in improving outcomes relating to violence and mental health at two years post-implementation. Curriculum-only programmes to develop prosocial values demonstrate only short-term effectiveness (two RCTs (of good and moderate quality) and two CCTs (both of weak quality).</p> <p>Review 4 considered much of the same evidence as 2 and 3 and concluded that there was strong evidence from six good quality papers (five RCTs and one CBA) of effective interventions to support curriculum approaches to whole school interventions which aim to promote prosocial behaviours and skills, conducted largely in North America and Australia.</p> <p>Mixed evidence emerged from seven RCT studies regarding curriculum approaches to whole-school interventions which aim to prevent bullying and disruptive behaviours.</p>
Adoption	The intervention would need to be adopted in all schools in Wales, possibly as part of the Welsh Network of Healthy School Schemes (WNHSS). Some interventions would require support from other agencies.
Implementation	<p>Implementation would require:</p> <ul style="list-style-type: none"> • adoption at the level of both local authority education departments and individual schools • training and information for staff • advocacy for the delivery of the intervention • appropriate resources • liaison with local public health teams (LPHTs)
Maintenance	The systematic review reported a recurrent problem of diminution of effects in the longer term. To counteract this, the authors recommend that once an effective intervention has run, regular booster sessions with older students should be held.
Potential impact	All children in education settings

Evidence summary and grading	Grade A: This intervention is supported by good evidence of its effectiveness and is recommended for use in the UK.
Expert Advisory Group conclusion	The EAG concluded that there is evidence to support this intervention potentially as a component of the WNHSS. Further work would be needed to identify which of the approaches identified by the review would have greatest applicability in Wales.

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MENTAL HEALTH**INTERVENTION SUMMARY
FOR CONSIDERATION FOR IMPLEMENTATION****Multi-component workplace mental health programme
including supportive policy; staff counselling and assistance
programmes; active management of sickness absence**

EAG outcome	Outcome 1: Increase in reported mental health (wellbeing) of adults and older people.
Rationale for inclusion	Three studies examining the impact of workplace mental health promotion interventions including: NICE guidance (Review 1); a meta-analysis (Review 2); and a systematic review of work and depression/anxiety disorders (Review 3). All found some evidence of positive impact on employee wellbeing.
Intervention description	There is a wide range of approaches to mental health promotion in the workplace, ideally embedded within a broader strategic and co-ordinated approach to promoting employees' mental wellbeing. These may include organisation-wide approaches to support general wellbeing such as: flexible working arrangements; career progression opportunities; ergonomics and environment; and access to gyms, exercise and sports opportunities. More specific approaches include stress audits; improved recognition and management of risk factors for poor mental health by line managers; and cognitive behavioural therapy (CBT) approaches.
Population	Employed working age adults.
Setting(s)	Workplaces in North America and Europe with most participants being white- or pink-collar workers, employed in government, health or community services (Review 2). Review 3 was conducted in Australia.
Study design and quality	Review 1 followed NICE methodology and included 245 documents in the development of the guidance. The meta analysis (Review 2) included 22 studies: 16 randomised controlled trials (RCTs); three quasi-experimental randomised groups or matched controls; and three pre- and post-studies with no controls that included a total of 3,409 employees. The pooled results

	<p>indicated small but positive overall effects of the interventions with respect to symptoms of depression and anxiety, but no effect on composite mental health measures. The interventions that included a direct focus on mental health had a comparable effect on depression and anxiety symptoms, as did the interventions with an indirect focus on risk factors.</p> <p>The systematic review (Review 3) included 144 reviews comprising: 46 systematic reviews; 21 meta-analysis; and 77 non-systematic reviews. Of these, only 31 were deemed to be of at least moderate quality. Overall the majority of studies examining workplace interventions for employees with depression or anxiety disorders were focussed on reducing the symptoms of the condition, with few studies specifically examining the potential additional organisational outcomes, such as improved work functioning and reduced absenteeism.</p>
Reach	Employed working age adults.
Efficacy/ effectiveness	<p>NICE guidance (Review 1) has five recommendations promoting wellbeing through productive and healthy working conditions: a strategic and co-ordinated approach to promoting employees' wellbeing; assessing opportunities for promoting employees' wellbeing and managing risks; flexible working; the role of line managers; and supporting micro, small and medium-sized businesses.</p> <p>Review 2: 17 studies in the meta-analysis, representing 20 intervention-control comparisons. The pooled results indicated small but positive overall effects of the interventions with respect to symptoms of depression (Standardised Mean Difference [SMD] of 0.28, 95% confidence interval [CI] 0.12 to 0.44), and anxiety (SMD 0.29, 95% CI 0.06-0.51), but no effect on composite mental health measures (SMD 0.05, 95% CI -0.03 to 0.13).</p> <p>The conclusions of the systematic review of reviews (Review 3) is that the available research evidence, although limited, suggests the following interventions may be effective in promoting mental health in the workplace: increasing employee control; promoting physical activity; stress management approaches which utilise CBT techniques; support and 'watchful waiting' (not routine psychological debriefing) following a potentially traumatic event in the workplace; workplace</p>

	counselling which uses evidence-based therapeutic techniques; medication and psychological therapies for those diagnosed with a mental health condition; modified CBT delivered as part of a return to work programme; gradual re-exposure to the workplace as part of a structured treatment programme for those with anxiety or post-traumatic stress disorder (PTSD).
Adoption	Interventions could be integrated into the Healthy Working Wales programme.
Implementation	Implementation requires: <ul style="list-style-type: none"> • engagement with employers to promote the benefits of the intervention • facilitation and support in introducing the intervention into workplaces • ensuring appropriate resources
Maintenance	Monitoring, review and evaluation.
Potential impact	The mental health and wellbeing of the population is improved which may result in reduced sickness absence rates.
Evidence summary and grading	Grade A: This intervention is supported by good evidence of its effectiveness and is recommended for use in the UK.
Expert Advisory Group conclusion	The EAG recommended a comprehensive approach to healthy working environments. This would include supportive environments, wellbeing policies, stress audit and control measures, and approaches such as flexible working and work life balance measures, as a package of interventions to achieve maximum impact. Interventions could be integrated into the Healthy Working Wales programme.

References

1. **National Institute for Health and Clinical Excellence.** *Promoting mental wellbeing at work PH22.* London: NICE; 2009.
2. **Martin A, Sanderson K, Cocker F.** *Meta-analysis of the effects of health promotion intervention in the workplace on depression and anxiety symptoms.* Helsinki: Scandinavian Journal of Work, Environment and Health; 2009.
3. **Harvey SB, Joyce S, Modini M, Christensen H, Bryant R, Mykletun A, et al.** *Work and depression/anxiety disorders – a systematic review of reviews.* Sydney: University of New South Wales; 2012.

MENTAL HEALTH**INTERVENTION SUMMARY
FOR CONSIDERATION FOR RESEARCH AND DEVELOPMENT****Community interventions to embed the
*Five Ways to Wellbeing***

EAG outcome	Outcome 1: Increase in reported mental health (wellbeing) of adults and older people.
Rationale for inclusion	The Expert Advisory Group (EAG) requested that the <i>Five Ways to Wellbeing</i> be included for consideration.
Intervention description	<p>The <i>Five Ways to Wellbeing</i> is a set of evidence-based actions which promote people's wellbeing. They were developed by NEF (New Economics Foundation) (1) from evidence gathered in the UK government's Foresight Project on Mental Capital and Wellbeing (2). The Project, published in 2008, drew on state-of-the-art research about mental capital and mental wellbeing through life. NEF was commissioned to develop the <i>Five Ways to Wellbeing</i> and communicate its key findings.</p> <p>The concept of wellbeing comprises two main elements: feeling good and functioning well.</p> <p>From a review of the most up-to-date evidence, five key messages emerged in the evidence: social relationships; physical activity; awareness; learning; and giving. These were organised into five actions that are considered important for wellbeing and should be built into day-to-day lives.</p> <p>The five ways to wellbeing have had an impact and appear to resonate with individuals and professionals in a range of settings. However, while there is some evidence to suggest that the actions highlighted are associated with improved mental health and wellbeing, there is little evidence of the interventions and actions which might be effective in increasing the adoption of these behaviours among the population as a whole.</p>
Population	Whole population of Wales.
Setting(s)	Every setting in Wales.
Study design	The aim of the project was to create a generic set of

and quality	<p>actions that are evidence-based.</p> <p>Reflecting academic and policy interest, a large-scale governmental review, the Foresight Project on Mental Capital and Wellbeing (2) explored the evidence of knowledge on promoting and maintaining mental capital and wellbeing both now and in the future.</p> <p>Research for this report took place over a period of three months and consisted of three elements:</p> <ol style="list-style-type: none"> 1. A survey of <i>Five Ways to Wellbeing</i> activity across the UK. 2. Development of a conceptual framework with which to analyse the findings. 3. Selection and research of several case studies that highlighted particularly interesting applications of the <i>Five Ways to Wellbeing</i>.
Reach	Whole population of Wales.
Evidence summary and grading	Grade E: There is good evidence to suggest that this intervention has a sound theoretical basis or that work in this area is likely to have an impact but this has not been demonstrated in trials.
Expert Advisory Group conclusion	<p>As evidence-based public mental health messages aimed at improving the mental wellbeing of the population, some local approaches based on the <i>Five Ways to Wellbeing</i> have been developed in health boards and other organisations in Wales. There are opportunities to enhance these developments.</p> <p>Working in collaboration with partners, <i>Five Ways to Wellbeing</i> could also be incorporated into the programmes within the remit of Public Health Wales e.g. Healthy Working Wales and the Welsh Network of Healthy School Schemes (WNHSS).</p> <p>The EAG concluded that <i>Five Ways to Wellbeing</i> should receive further consideration but that this would be on a developmental basis and is likely to require work from first principles supported by rigorous academic evaluation.</p>

References

1. **Aked J, Marks N, Cordon C, Thompson S.** *Five ways to wellbeing.* London: New Economics Foundation; 2008.
2. **Cooper C, Field J, Goswami U, Jenkins R, Sahakian B.** *Foresight mental capital and wellbeing project: final report.* London: The Government Office for Science; 2008.