

## SPI-B: Sustaining behaviours to reduce SARS-CoV-2 transmission

30 April 2021

### Key Points

SAGE has concluded that, as legal restrictions are eased, maintaining low levels of transmission will require continuing policies that promote Covid-protective behaviours<sup>1,2,3-7</sup>. These are everyday behaviours that involve spaces that we normally inhabit, including our homes, public spaces, educational facilities, businesses, and hospitality and leisure facilities. Evidence collected to date strongly suggests that as restrictions are eased, **Covid-protective behaviours will not be sustained without multiple co-ordinated interventions (high confidence).**

- The direct evidence base on how to effect the long-term behaviour change needed to sustain lower transmission of SARS-CoV-2 is relatively sparse (though improving). **Further research is needed** to understand people's levels of understanding and mental models of Covid-protective behaviours, the barriers to change and the most effective approaches to overcoming them. Nevertheless, the extensive literature on broader public health and behavioural science is relevant and useful in developing strategies for achieving the desired behaviour change.
- Interventions aiming to achieve long-term behaviour **need to consider how people understand new phenomena and the risks associated with them**, including the differences in understanding and perception between communities, the role of anchoring to previous similar phenomena, and how the use of concrete metaphors can foster understanding (**medium confidence**).
- **Successful risk management involves: multiple layers of protection; a combination of physical, social and psychological measures; effective communication of risk and uncertainty; inclusion of the targeted groups in its development; continued monitoring and feedback (high confidence).**
- **Tracking of adaptation to change should be used to guide decision-making in an ongoing, iterative manner** before, during and after implementation, on potential negative as well as positive outcomes. Methods for gathering data include qualitative research, direct observation, routinely collected organisational metrics, randomised trials, natural experiments (with non-random comparators), and time series studies (**medium confidence**).
- The wider evidence base underscores the need for people to have ongoing capability, opportunity and motivation if they are to engage in desired behaviours in a sustained way. **Strategies that promote these will make such behaviours normal, easy, attractive and routine (NEAR) (high confidence).**
- **Co-production and extensive stakeholder engagement** will be critical to the success of interventions and research and monitoring (**high confidence**).
- Minority and socio-economically deprived groups face major barriers in applying risk-mitigating practices in their workplaces, communities, transport and domestic spaces. **Additional measures aimed at overcoming these barriers are required but need to avoid stigmatising the groups concerned.** This is best achieved by interventions that create environments to avoid or overcome barriers, complemented where necessary with targeted, co-produced communication interventions (**high confidence**).
- The need for a multi-layered, multifaceted approach to long-term behaviour change requires the **co-ordinated participation of an array of public and private sector organisations rather than a series of separate interventions.** Governance of the design and implementation of policies is important in achieving this: each would benefit from being supported by technical expertise, a logic model, co-production between internal and external stakeholders and a scientific evaluation plan (**medium confidence**).

## Background and aims

This report provides advice, based on public health and behavioural science theory and evidence, on strategies to sustain the everyday behaviours required to reduce Covid-19 transmission as the current restrictions are eased and beyond. It provides a framework for considering the maintenance of behaviours to reduce SARS-CoV-2 transmission, with a particular focus on: 1) maintaining physical distance, 2) wearing face coverings, 3) ensuring adequate ventilation, and 4) working from home.

This report does not directly address other crucial parts of the Covid protection strategy, particularly getting tested appropriately, self-isolating when infected or likely to be infected and accepting a vaccination when offered. SPI-B has already provided advice on these, including ensuring adequate financial and practical support to enable self-isolation<sup>8,9</sup>.

### 1. People's understanding of, and response to, risk

The ways in which people understand new phenomena and the risks associated with them are governed by a number of principles. Achieving sustained behaviour change requires taking these into account:

- I. Individuals rarely come to their understandings alone or through private contemplation and calculation. Rather, they draw on **socially shared understandings that are current in their communities and society**. Consequently, different communities may see a phenomenon in different ways. For example, some ethnic minority groups have been historically exploited or neglected by medical authorities which can lead them to regard vaccination in terms of control rather than public health<sup>10</sup>.
- II. Understanding of new phenomena is usually **anchored by reference to previous phenomena** about which people believe they have a clear understanding<sup>11</sup>. Such anchoring can at times be misleading and lead to dysfunctional responses (e.g., seeing COVID as flu leads to ignoring asymptomatic spread and mixing when one does not have symptoms).
- III. A potentially powerful way of embedding representations of new phenomena is through **objectification**<sup>12</sup>. This involves using a concrete, easily understood metaphor<sup>13</sup>. For instance, the process of aerosol spread can be likened to inhaling someone else's cigarette smoke and hence generate understanding of the contexts where this is likely and the measures necessary to avoid it.
- IV. Social groups have **shared norms** for how one should respond to risks. Establishing the normative character of risk protection measures (and, specifically of the behaviours under consideration in this paper) is key to their sustained enactment<sup>14,15</sup>.

### 2. Risk Management strategies

Achieving successful risk management across a wide range of settings has been found to follow several core principles that align with advice from the SAGE Environmental Modelling Group<sup>16</sup>. Together these constitute what may be termed an **enhanced risk management approach**.

- I. **Employing multiple levels of protection**. In organisational safety, a key principle, characterised by the 'Swiss cheese' metaphor, involves recognising that any one layer of protection will allow failures but if one applies multiple layers, each with its own strengths and weaknesses, one can build a more resilient system that minimises the risk of failure while maximising the ability to operate effectively<sup>17</sup>.
- II. **Combining physical, social and psychological measures**. Maximising safety while preserving effective functioning in risky settings involves a combination of creating and providing safe environments and equipment, constructing implementable rules and norms, and providing people with the knowledge, skills and motivation to make and apply accurate risk assessments alongside the authority and capacity to act in response. Environmental modifications can enable protective behaviours in a way that makes them more likely to happen than relying on people's knowledge, skills and motivation<sup>17</sup>.

- III. **Involving all relevant actors.** Successful risk management involves ensuring that all key actors are involved: those working in shared spaces, those visiting the spaces, employers, managers, regulators and those involved in inspections. Participation ensures that management is locally appropriate and 'owned' by participants. A useful tool to enable the co-creation of an effective and appropriate "COVID-secure" risk management approach is the risk assessment framework (which includes a **hierarchy of control**)<sup>18,19</sup>.
- IV. **Effective communication of risk and uncertainty.** Behaviours in occupational, health and other areas of everyday life are strongly influenced by our understandings of and perceptions of risk<sup>20</sup>. Two-way communications with those most directly affected by risks can help characterise current risks, frame and implement practical safety measures, ensure effective uptake of behavioural measures, and identify remaining gaps in risk-reducing and safety-enhancing measures. In developing risk communications for behavioural measures, it is important to characterise and take account of people's existing beliefs or 'mental models' about the risk, and address misunderstandings or key gaps in knowledge<sup>21</sup>. Communications also need to be fully pre-tested for understanding and acceptability before implementation<sup>22</sup>.
- V. **Continued monitoring of risk levels and adjustment of protective measures according to those levels.** This involves setting expectations about the implementation of measures, monitoring whether these expectations are achieved and if not, amending practice to improve implementation of measures. Research has shown that, if risks are complex and changing or information is in part uncertain, staying safe involves proactive reflection on risks, ongoing evaluation of existing safety measures and adjustments where necessary<sup>23</sup>. This will in turn require action by multiple types of actors, including both individuals and organisations.

### 3. Literature on sustained behaviour change and social practices

The research literature on sustained behaviour change (see Annexes) points to the need for people to have the necessary **capability, opportunity, and motivation** to engage in the desired behaviours. Examples of how this has been achieved in other domains is provided in Annex 3. The capability-opportunity-motivation-behaviour (COM-B) model is a simple and actionable framework for developing behaviour change interventions by national government and other sectors<sup>24</sup>.

In terms of capability, it is imperative that people understand what they need to do, how to do it, and why it is important so that it is easy for them to do what is required when it is required<sup>25</sup>. Building capability will include teaching people how to negotiate social pressure to enter unsafe settings or to behave unsafely in social settings<sup>25</sup>.

In terms of opportunity, people need an environment that allows them to do what is needed when it is needed<sup>25</sup>. This includes both the physical environment of the spaces they use and the 'social environment' of expectations and norms. Developing norms supportive of safer behaviours that substitute for more risky ones will be important. While some changes to the physical environment entail large-scale redesign of public and private spaces that will take place over the medium to long term, some alterations to the ways in which people use space can be made very rapidly.

And in terms of motivation, people must find it more attractive for whatever reason to do what is needed than not do it, and have it built into their habits and routines<sup>25</sup>. This includes generating or tapping into core self-identities and values that make the behaviours important to people. Self-identity has been found to be important in how people respond in disaster and emergency situations<sup>26</sup> and in helping people to stop smoking<sup>27</sup>. Fostering self-identities that value one's own safety and the safety of one's community could support lasting enactment of Covid protection behaviours.

Table 1. Implementation of behaviour change principles for infection control

Target	Examples of strategies
Capability	<p>Build and sustain an understanding of infection risks and how to mitigate these through:</p> <ul style="list-style-type: none"> <li>• Multichannel information and comms campaigns, including in schools, workplaces, venues to explain why e.g. outdoors vs indoors or face coverings can reduce transmission. <ul style="list-style-type: none"> <li>○ E.g. education and training in self-management has proved effective in achieving lasting improvements in diabetes self-management<sup>28</sup>.</li> <li>○ E.g. informational campaigns have been found to be an important part of cost-effective interventions to a range of improve health-related behaviours<sup>25,29</sup>.</li> </ul> </li> <li>• Education on infection risk management right across educational settings from schools to HE and professional training. <ul style="list-style-type: none"> <li>○ E.g., training in use of resources as has proved effective in sustained improvement in hygiene behaviours in low income countries<sup>30</sup>.</li> <li>○ E.g., continued education and training has been found to support sustained changes in GP prescribing patterns<sup>31</sup>.</li> </ul> </li> <li>• Providing resources that are easily accessible and usable by all members of the community, taking into account the principles outlined in section 1, above. <ul style="list-style-type: none"> <li>○ E.g., simple post-it type pad for GPs to keep on their desks led to an increase in delivery of advice on smoking<sup>32</sup>.</li> <li>○ E.g., checklists and templates developed to promote safe practice in surgery<sup>33</sup>.</li> </ul> </li> </ul>
Opportunity	<p>Ensure that all sectors of society and organisations work together to maximise opportunities for successful risk management by:</p> <ul style="list-style-type: none"> <li>• Providing practical, regulatory, and financial support for the creation of home, work, leisure and transport environments that enable adequate physical distancing, ventilation and wearing of face coverings when the need arises. <ul style="list-style-type: none"> <li>○ E.g., website with accessible information about ventilation status and opportunities as implemented by New York City Department of Education<sup>34</sup>.</li> <li>○ E.g., MHCLG providing guidance for tenants, landlords and local authorities to reduce in-household transmission. Local authorities may be able to use their enforcement powers in relation to landlords to deal with a serious overcrowding hazard<sup>35</sup>.</li> </ul> </li> <li>• Ensure people have sufficient and sustained financial and other resources, including employment protection, to be able to behave in ways that mitigate risks. <ul style="list-style-type: none"> <li>○ E.g., ensuring that there is adequate financial and material support during a period of self-isolation or quarantine<sup>36</sup>.</li> </ul> </li> <li>• Building strong norms in the ways expressed in section 1.IV around infection control behaviours such as physical distancing and mask wearing of the kind seen in some other countries. <ul style="list-style-type: none"> <li>○ E.g., effect of shaping social norms on a range of Covid-protective behaviours and environmental sustainability<sup>14,37,38</sup>.</li> <li>○ E.g., formally engaging community leaders in a programme to achieve lasting changes in health-related behaviours<sup>39</sup>.</li> </ul> </li> </ul>
Motivation	<p>Ensure that people and organisations attach high value to infection control and how this is embedded into daily lives by:</p> <ul style="list-style-type: none"> <li>• Using all available communication channels to strengthen self-identities, values, and emotional responses around infection prevention and mitigation, and a sense of personal control. <ul style="list-style-type: none"> <li>○ E.g., large effect of a programme targeting emotional drivers of hand-washing with soap<sup>40</sup></li> </ul> </li> <li>• Specific community engagement initiatives with minorities and marginalised social groups <ul style="list-style-type: none"> <li>○ E.g., Scottish NHS co-production initiative for community health and MHCLG community champions scheme<sup>41,42</sup></li> </ul> </li> <li>• Providing training and resources to build habits and routines into people’s lives, for example taking a face covering with you when leaving the home or opening a window when someone visits. <ul style="list-style-type: none"> <li>○ E.g., regular prime-time TV segment based on behavioural science principles<sup>43</sup></li> <li>○ E.g., habit building has proved effective across a range of health-related behaviours<sup>25,29</sup>.</li> </ul> </li> </ul>

Table 1 gives examples of how the principles can be applied in relation to the behaviours that are the focus of this report. The strategies are all directed at making the desired behaviour **Normal, Easy, Attractive, and Routine (NEAR)**<sup>24</sup> by increasing multiple levels of capability, opportunity and motivation. The level of support and changes required to achieve this will differ depending on the cost or burden associated with particular behaviours; some behaviours (e.g., engaging with surge testing to stamp out outbreaks) may take more to make them NEAR than other behaviours (e.g., hand washing).

There is evidence<sup>44</sup> that a participative approach to identifying physical environmental and behavioural changes needed is more effective because: a) those within a setting are best placed to make sensible decisions about it and b) people are more likely to support changes if they have been involved in shaping them.

An important lesson from past large-scale behaviour change programmes is that interventions and infrastructure to sustain behaviours require sustained investment<sup>45</sup>. It is also crucial to monitor the impact of programmes because, as contexts change, policies and interventions often need to be adjusted. New behavioural routines can easily revert if not supported in the long-term. It is also evident from past large-scale behaviour change programmes, such as England's tobacco control strategy, that individual components can operate synergistically if they are conceived as part of an organised system<sup>46</sup>.

#### 4. Inequalities and Capacity to Follow Risk-Mitigations

There is evidence that minority and socio-economically deprived groups face several barriers in applying risk-mitigating practices in their workplaces, communities, transport, and domestic spaces<sup>47</sup>. These barriers have contributed to a higher age-standardised mortality rate in the first and second wave<sup>48</sup>. Examples of barriers are:

- *In workplaces*, less capacity to negotiate workplace safety due to precariousness of work, less ability to counteract instructions from managers or inherently poor quality of the environment<sup>49,50</sup> (SPI-B report, 9 March 2021, available from SPI-B Secretariat).
- *In communities*, greater reliance on informal social support networks for care for children, the elderly and unwell, means that community members, particularly women, may face greater exposure. These are moral relationships and intimate situations where it may be difficult to enforce protective behaviours unless targeted advice is given on negotiating these<sup>51</sup>.
- *In domestic spaces*, multigenerational households or houses of multiple occupation are environments where due to poor housing stock and density it is very difficult to self-isolate or maintain physical distancing<sup>52</sup>.

Tackling these barriers may require additional, targeted measures, although there is limited evidence as to what works. Organisational-level and settings-based interventions are less likely to generate inequalities than individual-based interventions because they apply to all and are not dependent on individual choices or actions. e.g. covid-safe workplace practices; targeted communications for people providing care and domestic work on how to stay safe and negotiate this. There is past advice from the ethnicity subgroup and SPI-B on recommendations and examples that explores the complexity of this area and the potential for unintended stigmatisation of particular groups<sup>53,9,54</sup>.

Any risk mitigation interventions or communications should avoid stigmatising particular communities, regions or groups<sup>55</sup>. Stigma contributes to disengagement from health-protective behaviours and can directly contribute to perverse, negative health-effects<sup>56</sup>. Stigma is likely to be mitigated by adequate co-production and pilot testing with affected communities. Greater social cohesion has been shown to generate more trust in Covid-19 government measures, which leads to greater adherence to health measures and therefore would increase engagement with risk mitigation<sup>57</sup>.

#### 4. Research and Monitoring

Foundational research is needed to establish baseline levels of understanding, people's mental models, and practical facilitators and barriers to adoption of Covid protective behaviours. There is a need for appropriate research methodologies to identify predictors of behaviours in this pandemic given the paucity of rigorous past data and the challenges posed by the dynamic nature of the situation. Such data should be used to guide decision-making in an ongoing, iterative manner before, during and after implementation, gathering evidence on potential negative as well as positive outcomes. Methods for gathering data to monitor behaviour and evaluate behavioural interventions include surveys, direct observation, qualitative research to bring to light experiences of secondary stressors and barriers, routine organisational metrics, experimental studies with randomised control groups, and where this is not feasible or acceptable it is important draw on natural experiments (non-random control groups) or time series studies (internal control group only)<sup>58</sup>; all should involve public engagement in co-production.

As strategies are deployed, it will be vital to monitor the effects of these strategies across a range of settings and populations. This should involve triangulation using a variety of methods including, for example:

- metrics of behaviour from available sources such as mobility and spending patterns, employee records,
- adding items to current surveys which include measures of behaviour<sup>59,60</sup>,
- a range of qualitative and quantitative methods, including ethnographic approaches with under-served communities<sup>61</sup>,
- observation, e.g., using proxies such as soap dispenser use, CCTV in highly-used public spaces or mobile phone mobility measures<sup>62,63</sup>, or experimental tests of potential interventions with behavioural outcomes,
- using randomised experiments where possible and natural (non-random) experiments or time-series where randomisation is unfeasible or unacceptable,
- high-resolution transaction data using sources such as spending patterns and employee records.

The need for rigorous monitoring and evaluation will depend on whether the intervention in question is expensive/controversial/challenging as opposed to cheap/popular/easy. If the former then more investment is needed to ensure a rigorous evaluation. Evaluations should be centrally planned and strategic, involving specialist expertise to address the practical and ethical challenges of effective experimentation in the real world and real time. Monitoring of behaviours designed to reduce Covid-19 restrictions should pay close attention to potential biases. For example, recent analyses of adherence to self-isolation have reported inconsistent results. The most likely explanation is methodological differences leading to different degrees of selection and social desirability bias. In order to be confident in study results it is important to triangulate across studies using different methods<sup>64</sup>.

#### 5. Integrating findings in the context of the Social Distancing Review

Each of the four behaviours considered here has its own issues and challenges. With regard to *distancing*, we have to consider the physical spaces that people inhabit, social norms and rituals, and emotional needs. Some occasions impart a strong imperative to be physically close to people whereas at other times it can be more discretionary. Current evidence shows that people intend to engage in more close contact in a variety of settings as restrictions are eased<sup>58</sup> but that there is a generally high understanding of things that can be done to mitigate risk<sup>58</sup>. There appears to be less understanding of the role of limiting the size or frequency of gatherings or of meeting outdoors<sup>58</sup>.

With *face coverings*, we have seen from other cultures that these can be embedded into social norms. In the UK in December 2020 approximately half of people in national surveys reported that they strongly

supported continuation of measures such as wearing face masks into Autumn 2021 at least<sup>65</sup>. As vaccine rollout continues, risk perceptions will affect norms determining the potential for conflict between those with differing expectations and perceptions of risk.

The scope for achieving adequate *ventilation* varies from setting to setting. In some cases, it will be simple and inexpensive to radically improve ventilation while in others it may require expensive structural changes such as retrofitting new ventilation systems or introduction of air-cleaning technologies. Decision-making will often lie with employers or those in control of premises, but it will be equally important to ensure that people use the available opportunities for ventilation where these exist. For this to be successful it is important that people have access to information on why ventilation is important, what they should do to ensure adequate ventilation and how ventilation works in their building and homes. This is an urgent task: whilst natural ventilation is often possible during the summer, we need to begin making changes now in time for the autumn.

With *working from home* there will be important competing priorities and it is likely that regulation will be needed to ensure that the health of workers is protected whether working in the office or home, extending health and safety legislation where needed<sup>66</sup>. Existing H&S legislation covers working from home: employers are required to assess and manage any risks they create (including home working). It will also be necessary to reverse norms around 'presenteeism' – going to work when sick<sup>67</sup>.

A set of criteria that could help to guide selection and evaluation of particular policies and interventions in a systematic and transparent way is 'APEASE': Acceptability (How far is it acceptable to all key stakeholders?), Practicability (Can it be implemented as designed within the intended context, material and human resources?), Effectiveness (How effective and cost-effective is it in achieving desired objectives in the target population?), Affordability (How far can it be afforded when delivered at the scale intended?), Side-effects (How far does it lead to unintended adverse or beneficial outcomes?) and Equity (How far does it increase or decrease differences between advantaged and disadvantaged sectors of society?)<sup>24,68</sup>.

Several common themes emerged from the existing literature. These can be subsumed under the concept of an **enhanced risk and safety management approach**. It was evident that communications would be an important part of the approach but would not be sufficient to achieve the sustained behaviour change required. The complexity and size of the task points to the need for dedicated co-ordinating function to develop, implement, monitor, and commission independent evaluation of interventions. This kind of strategic approach has proved highly successful in other behavioural domains such as tobacco control<sup>46</sup>.

## **Annex 1: Background and methods**

### *Background*

There is extensive research on how people understand and respond to emerging discoveries<sup>69</sup> and how this influences responses to risk<sup>70</sup>. There is also an extensive research literature on risk and safety management covering transport, healthcare, construction and other sectors where there is risk of damage, injury or infection<sup>71</sup>. Embedding Covid protective behaviours into everyday lives presents very similar challenges to the ones addressed by this literature. The literature points to the importance of building organisational and individual resilience alongside anticipatory risk assessments<sup>72</sup>, processes of continuous learning about incidents and safety<sup>73</sup>, and the importance of social interaction (e.g. work teams supporting each other) in developing an effective safety or high-reliability culture<sup>74,75</sup>. In combining these literatures, we propose an approach which is equally applicable to both the public and the private spheres in which we move.

Cutting across these challenges is the issue of inequalities. We have already seen wide variation in adoption of the behaviours of interest by different groups in society, with marginalised groups and those with greatest financial hardship tending to have lower rates of adoption. Environmental and structural constraints appear to play an important role in this<sup>76,77</sup>. Lack of space within the home for social distancing and poor ventilation are most common in low-income households and workplaces, which is likely to contribute to inequalities in transmission risk. Members of these households are also less likely to work from home. Even where working from home is possible, younger members of a team may have less room at home to set-up a workstation (risking musculoskeletal harm) and may suffer more from loss of interaction with more experienced co-workers. Increasing inequality is both ethically problematic and reduces societal resilience along many dimensions; it is therefore imperative that strategies to sustain infection control behaviours address this issue, taking into account differential agency across social groups<sup>78</sup>.

### *Methods*

We examined the risk and safety management literature for principles that would be relevant to Covid protective behaviours and on which there is broad agreement in the field.

We also reviewed previous SPI-B reports, theoretical approaches to risk management and also theory and evidence on sustained behaviour change.

Our review of evidence on sustaining behaviours used the search terms ‘sustained behaviour change’ and ‘sustained social practice’ in Google Scholar and building a list of behaviour change principles until no new principles were identified using this method. The reason for using this search engine is that it covers reports from think tanks and government agencies as well as the mainstream academic literature and it sorts the results using an algorithm that prioritises relevance and usage.

The principles were reviewed by the authorship team and organised according to whether they primarily targeted people’s capability (e.g., knowledge and skills), opportunity (e.g., provision of resources and shaping of social norms) or motivation (e.g., targeting emotional responses or retraining habits). For each principle, the source in the review was identified together with the behavioural domain to which it had been applied.

We examined evidence on inequalities as they relate to these behaviours in the light of the above and developed a set of principles for addressing these.

Finally, we drew on experience of previous monitoring and evaluation exercises in public health and behaviour change to develop a set of principles for doing this effectively in this context.

The principles were collated and discussed among the authorship team to arrive at a set of proposals.



## **Annex 2: Review of SPI-B reports**

SPI-B emphasised that information needs to be provided at two levels. One is to do with an overall understanding of the pandemic and of the processes of infection transmission (mental models and social representations). The other is to do with the identification of hazards and mitigations where clarity and specificity are critical, and people need both to know what to do and to be able to do it.

When considering strategies for sustaining adherence to infection control behaviours, SPI-B recommends providing positive feedback on behaviours; emphasising that everyone has a role to play; promoting positive alternatives to restricted activities; helping people change their environments and to identify risky situations; focusing on reducing infection risk rather than compliance; and providing targeted information and practical support for adherence<sup>79</sup>.

SPI-B also noted that there are emotional barriers to social distancing and mask wearing that may interfere with personal interactions<sup>51</sup>. Interventions need to be co-designed with families and communities to create acceptable strategies for reducing risk while avoiding excessive burden and maintaining family and community cohesion<sup>80</sup>. There is more likely to be a positive response to interventions if the reasons behind changes are fully explained and understood. Clear communications are required to avoid interventions being seen as arbitrary or discriminatory. Communications should emphasise care rather than punishment and be culturally appropriate. They should be co-created and delivered with trusted community voices to maximise engagement and make it clear that interventions are for the benefit of, and endorsed by, the community, rather than the result of external enforcement<sup>81</sup>.

When considering workplace infection control, SPI-B emphasised the importance of co-creation in designing layers of protection (as opposed to single solutions). Co-creation requires full consultation with all key stakeholders<sup>82</sup>. It also noted the importance of clear risk communication to empower individuals to protect themselves and colleagues and to be vigilant at all times, including during breaks in work (risks from social interaction in staff rooms were noted) and commuting. Engagement and education will be needed for both relevant occupations and the general public<sup>83</sup>.

SAGE noted the benefits of the Community Champions programmes in identifying and facilitating context-specific solutions and in reaching isolated or marginalised groups to communicate health messages and offer support<sup>79,84</sup>. They are likely to be effective in contexts where trust in government is low and where community engagement is required to build trust, address disinformation, and ensure interventions are appropriate to local contexts. To achieve this, Community Champions need autonomy to secure participation and identify activities that meet the needs of the community, and sustained resourcing and financial and practical support (,e.g. access to settings, equipment).

### Annex 3: Table of behaviour change approaches

This table sets out examples and evidence of how behaviour has been changed in other settings, many of which could be relevant to embedding COVID-protective behaviours (see also Table 1).

Candidate behaviour change approaches for achieving sustained behaviour change	Behaviour change domain
<b>Capability</b>	
Maintain education to maximise knowledge	Hygiene <sup>85</sup> , Diet <sup>86</sup> , Diabetes self management <sup>28</sup> , GP prescribing <sup>31</sup> , Water conservation <sup>37</sup>
Attempt to build and maintain psychological resources	General <sup>87</sup> , Impulsive behaviour <sup>88</sup>
Maintain instruction in action planning	Diabetes self management <sup>28</sup> , Weight management <sup>89</sup>
Maintain instruction in goal setting	Diabetes self management <sup>28</sup>
Maintain education in how to perform the behaviour	Diabetes self management <sup>28</sup> , Neonatal care <sup>90</sup> , Weight management <sup>89</sup>
Promote sustained self-monitoring of behaviour	Diabetes self management <sup>28</sup> , General <sup>87</sup> , GP prescribing <sup>31</sup>
Maintain education on how to overcome barriers	Diabetes self management <sup>28</sup> , General <sup>87</sup>
Promote rehearsal of the behaviour	Diabetes self management <sup>28</sup>
Maintain demonstrations of the behaviour	Diabetes self management <sup>28</sup>
Educate in experimenting to solve problems	Diabetes self management <sup>28</sup>
Promote pro-active coping with challenges	Weight management <sup>91</sup> , Impulsive behaviour <sup>88</sup>
Train in use of tools or resources	Hygiene <sup>85</sup>
<b>Opportunity</b>	
Provide tools and resources	Hygiene <sup>85</sup> , Physical activity <sup>92,93</sup> , Medication adherence <sup>94</sup> , Smoking cessation <sup>94</sup>
Maximise usability of tools or resources	Hygiene <sup>85</sup> , Product use <sup>95</sup> , General <sup>87</sup> ,
Ensure maintainability of tools and resources	Hygiene <sup>85</sup>
Change living, working and travel spaces	Hygiene <sup>85</sup>
Change built environment	Hygiene <sup>85</sup>
Provide continuing leadership	Hygiene <sup>85</sup>
Develop ongoing social support	General <sup>87</sup> , Child rearing <sup>96</sup> , Weight management <sup>89</sup>
Attempt to change behavioural norms	Hygiene <sup>85</sup> , General <sup>87</sup> , Environmental sustainability <sup>38</sup> , Child rearing <sup>96</sup> , Water conservation <sup>37</sup>
Attempt to change social roles	Hygiene <sup>85</sup>
<b>Motivation</b>	
Attempt to shape cultural identity	Hygiene <sup>85</sup>
Attempt to change cultural values	Hygiene <sup>85</sup> , Covid transmission <sup>97</sup>
Promote behavioural goal setting	Weight management <sup>89</sup>
Attempt to create sustained emotional responses	
Desirability	General <sup>87</sup> , Neonatal care <sup>90</sup> , Child rearing <sup>96</sup> , Health behaviours <sup>98</sup>
Enjoyment	General <sup>87</sup>
Anxiety	Hygiene <sup>85</sup> , Covid transmission <sup>97</sup>
Disgust	Hygiene <sup>85</sup>
Attempt to create sustained sense of personal control	General <sup>87</sup> , Hygiene <sup>85</sup>
Maintain financial incentives	Physical activity <sup>92,93,99</sup> , Water conservation <sup>37</sup>
Shape or harness identity or values	General <sup>87</sup> , Neonatal care <sup>90</sup>
Attempt to promote co-ownership of practices	Hygiene <sup>85</sup>
Attempt to change habits	Hygiene <sup>85</sup> , Diabetes self-management <sup>28</sup> , General <sup>87</sup> , Active transport <sup>100</sup>

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