

Principles for the design of behavioural and social interventions

The purpose of this note is to highlight scientific principles that should be considered when designing future Behavioural and Social Interventions (BSIs). To note, this is a live document and will be iterated as our understanding develops.

The current set of behavioural and social interventions implemented by HMG have had an impact in reducing transmission and R. Current estimates suggest that $R < 1$ in the community. If $R > 1$, we will return to exponential growth of cases and deaths. Reducing R from around 3 to below 1 requires a drop in contacts of 60-80%. Even if R is as low as 0.6 (at the lower end of SAGE's estimates), changes in BSIs leading to an increase in transmission by only 10-15% of its original level would return R above 1.

At its simplest, R can be thought of as influenced by of four numbers. Interventions to reduce R require at least one of these to be reduced:

1. Number of contacts people make per day
2. X probability of infection in a contact between an infectious person and a susceptible one
3. X duration of infectiousness
4. X number of susceptible people

Objective	Purpose	Principles	Examples (current or illustrative)
Reduce number of contacts per day.	Reduce opportunities for transmission and limit or break chains of transmission.	<ul style="list-style-type: none"> • The largest number of contacts happen in home, work and schools. • It is critical to prevent spread between different households, workplaces and schools. • When prevalence is high and widespread, stopping transmission between regions (e.g. border controls or travel restrictions within the UK) has very little impact. When incidence is very low, this will be more important. • People's contacts vary greatly, those with many contacts (such as hairdressers) have a much bigger role in transmission than those with fewer (such as pensioners) • It is important to consider how frequently people make a certain type of contact as well as the nature of the contact <p>Assumed impact: Reduction in R value</p>	<ul style="list-style-type: none"> • Close leisure venues, schools etc or close contact services (such as hairdressing) • Distancing/ one- way systems in essential shops, reducing frequency of trips to shops • Make non-essential shops collection points, • Redesigning workplaces or running cells in shift • Staggered school drop off • Smaller class sizes if social distancing can be maintained • Remote and office working/schooling • Reducing shopping opportunities <p>Cohorting:</p> <ul style="list-style-type: none"> • Partial reopening of workplaces or schools would be more effective if households are cohorted, i.e. pupils living in houses with even numbers go to school in the morning, those with odd numbers in the afternoon. • Cellular structures e.g. of work teams, classes; staggered team working from home and office- 7 day working week, move to shift pattern in all areas of work
Reduce exposure of vulnerable groups	Reduce probability of transmission resulting in severe illness or death	<ul style="list-style-type: none"> • The more clinically vulnerable the group, the more effectively they should be protected. • Vulnerable individuals may or may not be more susceptible to infection but the consequences (in terms of likelihood of serious illness and death, but possibly not QALYs) are greater. <p>Assumed impact: Reduced risk to vulnerable groups/individuals</p>	<ul style="list-style-type: none"> • Shielding • Minimising visitors to care homes, preventing staff from working in multiple care homes (to stop transmission between them) • Daily mass testing of care staff, even without symptoms; daily mass testing of hospital staff; mass testing of other key workers coming into contact with vulnerable people i.e. Prison staff
Reduce probability of infection per contact	Reduce probability of infection from direct and indirect contacts including objects/surfaces	<ul style="list-style-type: none"> • Individuals are more likely to transmit with intimate contacts, so are most likely to be infected by a family or household member, and are more likely to infect / be infected by someone how you interact with more closely for a longer periods such as a hairdresser than someone who they are only briefly in contact with such as a supermarket worker. • Not all people are equally likely to transmit when infected. Children are more likely to transmit the flu virus, but it is not known how likely they are to be infected or their infectiousness if they have been. • Reducing proximity of contacts, such as maintaining a 2m distance whenever possible, including within workplaces and shops is important. • Contaminated surfaces provide links between individuals/households without direct contact. After 5 days, PHE has judged that this risk would be almost negligible or absent. After 48 hours, the amount of virus is likely to be significantly reduced to the point of acceptable risk. • Based on current evidence, the risk of transmission outdoors is significantly lower than indoors. In most cases virus will be diluted over distance, particularly outdoors. <p>Assumed Impact: Reduction in R value</p>	<p>Direct contacts:</p> <ul style="list-style-type: none"> • 2m distancing rule indoors and outside • control entry to essential shops • increasing self-service • reduction in contact with key workers • staggered drop off/arrival at work and school • limit numbers on public transport <p>Indirect contacts:</p> <ul style="list-style-type: none"> • Hand washing, cleaning and decontamination of shared surfaces indoors and outdoors • Ventilation to reduce deposition, reduction on furniture to only to essential items, removing shared items. • Rolling closing and opening office spaces; unlock key doors/ remove obstacles, reduce number of exit/entry ways to increase cleanliness • Closing children's playgrounds
Isolate symptomatic/diagnosed individuals	Reduce duration of infectiousness	<ul style="list-style-type: none"> • In mildly ill patients, only a very small proportion of individuals are likely to be infectious after 7 days from illness onset. Moderately or severely ill, hospitalised patients are likely to have higher viral loads and may be infectious for longer periods. Little can be done without pharmaceuticals to reduce the duration of the infectious period, but home isolation of those who are or may be infected, will reduce the time during which people are infected and in contact with other people • Limiting transmission between and from asymptomatic and pre-symptomatic individuals is important. 	<ul style="list-style-type: none"> • Isolation of anyone with COVID-like symptoms for 7 days • Quarantine of household contacts of infected people for 14 days • Contact tracing and mass testing to identify people who may be infected but are asymptomatic, or who have been infected but are not yet symptomatic • If there is a benefit to wearing facemasks, it would be to prevent asymptomatic or pre-symptomatic people from infecting other people when coming into contact with them (those with symptoms should be isolating)

		Assumed Impact: Reduction in R value.	
Reduce number of susceptible people	<p>Reduce probability of an infected individual coming into contact with a susceptible individual</p> <p>Reduce probability of transmission to vulnerable groups/individuals (e.g. as with vaccination)</p>	<ul style="list-style-type: none"> The higher the proportion of people who are immune, the lower the intensity of social distancing that will be required to keep R below 1. If at some point population level antibody testing shows significant levels of population immunity, measures could be relaxed to some extent Neither mixing nor immunity are uniform. If, for example, policy changes were to increase population level immunity in the under 40s such that R overall is below 1, it is likely that R for people over 60 could still be above 1. There is currently uncertainty on the duration and strength of any natural immunity and caution should be taken with any assumption of zero risk of reinfection. <p>Assumed Impact: Reduction in R value / reduced risk to vulnerable groups/individuals</p>	<ul style="list-style-type: none"> Little that could be done without a vaccine or other preventative, other than relaxing measures earlier for groups at lower risk, to reduce the number of people in this group who are susceptible.

Behavioural Principles

Overarching behavioural principles should be taken into consideration when designing behavioural and social interventions. The selection of principles outlined below seek to maximise the effectiveness of any updates to current or new guidance. The list below is not an exhaustive list of behavioural principles and may be updated.

<u>Overarching principle</u>	<u>Advice</u>	<u>Rationale</u>	<u>Examples (if applicable)</u>
Provide a credible rationale for guidance and any changes	Communicate the need for sustained, multi-faceted control changes	<ul style="list-style-type: none"> Members of the community need to understand why infection needs to be controlled for a prolonged period and that this will involve complex and changing combinations of many different measures to minimise transmission. It is important to ensure that everyone is aware that changing restrictions on some activities is not a signal that the risk from coronavirus is over and that it is safe to resume other activities or to reduce protective behaviours. 	
	Provide transparent, detailed explanations of why any change to guidance is being made	<ul style="list-style-type: none"> A better understanding of how transmission rates can be controlled will help community members implement the measures that will be required, and enable community members to appreciate how these actions can contribute to reducing both deaths and the need for further activity restriction. Transparent reporting of the evidence and advice on which these judgements are based will increase credibility. 	<ul style="list-style-type: none"> Explain how guidance and changes to guidance are informed by analyses of current behaviour and predicted or observed effects on transmission as well as wider considerations such as social good and feasibility. Explain why selected activities are safer to resume or must be resumed for other important reasons (such as to reduce harm to vulnerable people), compared with other activities. Explain why particular restrictions have been selected (e.g. due to evidence of transmission pathways or infection vulnerabilities), or particular areas targeted (e.g. in the case of localised outbreaks).
	Give feedback about the effects of guidance and any changes	<ul style="list-style-type: none"> Transparent and reliable measures of the effects of changes to activity should be used to inform organisations and members of the community about the impact on behaviour and transmission. Regular feedback of these measurements will reinforce the effectiveness of the changes being made, if they show effectiveness, at minimising transmission or help justify further changes if they do not. The community must be assured that behaviour and infection rates will continue to be monitored by a wide range of measures to detect and quickly address any increase in risky behaviour or infection rates – and also to identify opportunities for further resumption of activity if infection rates remain well controlled. 	
Provide precise and consistent guidance	Provide detailed advice on how individuals and organisations can maximise adherence to key behaviours to reduce transmission	<ul style="list-style-type: none"> Advice should build on, supplement and reinforce existing public health advice, campaigns and interventions promoting key behaviours that reduce transmission. Guidance should be reformulated to be behaviourally specific: who needs to do what (precisely) and why (explain the rationale) and communicated through channels that provide personalised advice and account for individual circumstances. Advice should be tailored to groups that are likely to be least adherent, so that they feel that the guidance speaks to them. See SPI-B communications group guidance for further principles on how to provide detailed guidance. 	<ul style="list-style-type: none"> Examples for building and reinforcing existing advice about key behaviours include handwashing, use and disposal of tissues, avoiding touching face, cleaning or avoiding potentially contaminated surfaces, ventilating shared spaces, using face masks/coverings (as appropriate).
	Avoid inconsistent messaging and enforcement	<ul style="list-style-type: none"> Perceived inconsistencies in messaging and enforcement will erode credibility and support for government policies and guidance. 	

		<ul style="list-style-type: none"> It is important that all individuals and organisations implement the guidance appropriately but do not go beyond the guidance (for example, by suggesting or enforcing measures that are not part of the official guidance). 	
Engage all sectors of society	Co-create solutions for resuming activity safely	<ul style="list-style-type: none"> Members of different sectors and the community can help identify opportunities, challenges, and solutions to resuming activity safely and should be involved from an early stage. Engaging with a wide range of stakeholders who will be affected by changes will help government understand their diverse perspectives and address their concerns prior to making changes. Engaging with these groups will provide the reassurance needed to encourage resumption of appropriate activities. 	<ul style="list-style-type: none"> Enable community stakeholders and representatives (e.g. workplace, school and religious communities, councils, and charities) to play an active role in anticipating, reporting, and managing potential barriers to implementing activity changes or transmission control. Wherever possible this should draw on existing networks particularly those already constructed through the Local Resilience Forums, Strategic Coordination Groups and Civil Contingency Units who have already established good links to a range of community based groups (e.g. Voluntary Sector organisations, Faith organisations, Schools and Universities, etc).
	Allow time for sector planning	<ul style="list-style-type: none"> Members of the community need to know which activity restrictions are likely to be removed or to be maintained long-term so that they can plan for this. Abrupt alterations in activity restrictions can be disruptive and difficult for groups to implement and could lead to perceptions of poor management of the pandemic. Providing advance notice and time to plan enables people and organisations to implement them effectively and safely, rather than simply resuming activity in habitual ways that do not minimise transmission. 	<ul style="list-style-type: none"> Where possible, plan and communicate the timing of updates to guidance. If it is not possible, then explain why decisions cannot be made and when it will be possible to make and communicate decisions about updates to guidance.
Enable changes and provide support	Harness organisational structures and processes	<ul style="list-style-type: none"> Minimising transmission when resuming activity outside the home must be supported by organisational structures, policies and processes. Existing Health and Safety regulations and enforcement processes can be harnessed to achieve better transmission control across the wide variety of workplaces settings. These procedures could be used as the basis for evaluating which workplaces could safely reopen. 	<ul style="list-style-type: none"> Use personal and workplace risk assessments to evaluate transmission risks in the workplaces and then identify, implement and monitor appropriate methods of reducing these (e.g. better provision of PPE; staggered shifts/alternating work days to avoid overcrowding at work and when travelling to work; maximising protection and distancing in communal areas). Could be implemented through employers and trade unions, reinforced by helplines to enable employers and employees to report any problems and seek advice and help for better implementation. Use existing organisational structures and processes in a similar way for other settings, for example by using Local Resilience Forums to assess infection control in public spaces.
	Redesign shared indoor and outdoor spaces	<ul style="list-style-type: none"> It will be necessary to re-design shared spaces outside of the home to enable key behaviours to minimise transmission including physical distancing, minimal touching of surfaces and frequent handwashing. If the majority of transmission occurs indoors, public transport and buildings should be a particular focus for such re-design. Indoor spaces that may require re-design include schools, workplaces (factories and offices), public transport (buses, trains, coaches, trams, taxis), shops, places of worship, cafes, restaurants and bars. Outdoor spaces include streets (pavements and roads) and parks. 	<ul style="list-style-type: none"> Physical distancing: removing seats from use; floor markings of suitable distances; reducing density of use with one-way systems and temporal management; use of screens. Minimising touch of surfaces: operating systems for moving around spaces or accessing services using contactless methods or body parts other than fingers e.g. doors handles operated by arms; gates that are fixed open; cues to use touch screens with finger knuckles. Frequent handwashing: widespread availability of contactless handwashing or sanitising facilities e.g. at entrances and exits to buildings including stations.