Intervention	**Stay at home order ("lockdown").** Closure of leisure and hospitality sectors as well as non-essential retail. Only essential workers permitted to attend workplace. Schools (except for key workers and vulnerable children), colleges and universities shut. Places of worship shut. Contact within other households banned.
Impact on COVID transmission	**Very high impact.** Reduction of Rt from around 2.7 to around 0.6 post "lockdown" in most of the UK (i.e. roughly 75% reduction). High confidence.
Direct impact on COVID deaths and severe disease	**Very high.** Deaths and severe disease were reduced by stay-at-home orders, through reduction in transmission. High confidence.
Non-COVID impact (incl. social and psychological; excl. economic)	**Large impact on health and wellbeing**[i].High confidence. Impacts of lockdown on social isolation and mental health, worse for those with existing conditions, older people and BAME communities. Future lockdowns could occur in colder weather which could lead to more isolation and more mental health problems[ii]. School closures[iii] associated with possible increases in school drop out, child injury, domestic violence, child abuse but reductions in referrals. Reductions in social interaction erode social development and harm general wellbeing, and mental health of children and parents. Risk of division and anger in community if education of children suffers, without convincing explanation of the need. Equity issues: Economic impact of national lockdown would impact most on the poorest given employment in jobs least amenable to home working with consequences for health inequalities. Increased risk of isolation and mental health impact for BAME groups who rely on places of worship and extended social support networks.
Implementation issues	Substantial support (financial, social, informational, emotional) needed for people with limited support networks, low financial resources/precarious employment and other needs to ensure adherence[iv]. High levels of compliance with stay at home orders in March/April although trust in government communication, perceived risk and levels of worry have declined since early April. However, perceived risk may increase in line with urgency and magnitude of policy change and may be rising already. Messaging is critical. "Stay at home" is a simple, clear message, which will boost adherence. Positively frame adherence to these behaviours, e.g. recognising the sacrifice and challenge. Community-level co-production of support measures, messaging and guidance should follow national standards. This may improve trust and adherence. To clearly define community (e.g. based on ethnicity, culture, age, gender, intersection) and recognise within group differences to ensure measures and messages are relevant for target community[v]. Harsh enforcement could exacerbate social divisions and lead to disorder. Note that allowing people outside the home for exercise was very important for mental health in the previous lockdown and not doing so would be hard to justify as the public now aware that this is low risk. Encourage vulnerable children to attend school e.g. by improving messaging to avoid stigmatisation. Substantial challenges for schools, further education and higher education with online teaching, including disparities between well-off and less well-off areas. Disruption of lab-based and medical courses (e.g. dentistry) will impact the graduate pipeline into health roles.

Intervention	**Planned, short, stay-at- home order ("circuit breakers")** General stay-at-home order of short duration (e.g. 2-3 weeks). Could be timed around planned school holidays to help mitigate the impact, but not necessarily.
Impact on COVID transmission	**Moderate impact** (high confidence)**.** Likely to have similar levels of effectiveness as national lockdown in Spring, reducing Rt to below 1. However, would only apply for a short period and so have limited effect. Modelling suggests that 14 days of significant reduction in transmission in October could put the epidemic back 28 days and could significantly reduce the prevalence of infection in December. As with all interventions the earlier it is implemented (in the face of growing incidence) the higher the impact.
Direct impact on COVID deaths and severe disease	**Moderate impact** (high confidence). Limited time period would limit the impact on deaths and hospitalisations, but reduction in these compared to the counterfactual would be maintained for several months and could be very substantial. Time lag from infection to deaths means reduction in deaths is likely to start after the circuit breaker ends. Lags also mean that impact on deaths likely to ~~be~~ appear as a flattening rather than decline.
Non-COVID impact (incl. social and psychological; excl. economic)	**Moderate negative impact** Moderate negative impact on health due to mental health impacts on adults and children; domestic abuse prevalence. Impacts as for immediate stay at home order (above), but impact can be planned for by services and members of the public and so could be mitigated to some extent, though challenging e.g. provisions for education. Risk of division and anger in community if education of children suffers, without explanation of the need[vi]. Low confidence. Equity issues: as for "lockdown", above. Stay at home is easier for those who can work from home, have sufficient space at home. Key workers, low income groups (which are disproportionately BAME) groups have to continue to go to work so their workplaces have to be ensured to be Covid-secure. Important not to allow travel abroad for holidays for equity and to avoid people engaging in high exposure activities abroad during the lockdown period. Mental health impact may begin prior to implementation, knowing there are upcoming periods of isolation.
Implementation issues	Substantial support (financial, social, informational, emotional) needed for people with limited support networks, low financial resources/precarious employment and other needs e.g. home schooling IT equipment to minimise exacerbation of educational inequality. Adherence, health and trust will suffer if people are not given the resources they need to adhere safely. Again, community-level co-production of support measures can support adherence and financial support for mutual aid organisations from central government is necessary. Provision of mental health support is required – increased risk of mental health problems in BAME groups where service provision requires further cultural adaptations to maximise effectiveness. Ability to plan will reduce impact, but debate about necessity (e.g. "why plan this, if rates are currently low?") may increase social divisions. This should include how time gained by a circuit break is to be used eg to increase capacity for NHS T&T to cope with increased demand. Risk that people will try to see one another and engage in 'allowed activities' in significantly higher numbers if they know that restrictions are coming, causing increased transmission. This will require a targeted messaging campaign. If these activities are to prepare for restrictions by making arrangements for vulnerable or isolated friends and family then they should be presented in communications in a positive light.

Intervention	Reducing contacts between members of different households within the home
Impact on COVID transmission	**Moderate impact** (medium confidence). High risk of transmission within households from droplets, aerosols and transmission from shared surfaces. While options are limited to control transmission in households, an epidemic can only be sustained if there are transmission chains between households. PHE data show high secondary attack rates (up to 40%) between members of the same household. SPI-M modelling of relaxing lockdown concluded that allowing any one household to make contact with more than one other household would substantially increase R. Stopping all contacts between different households in the home might reduce Rt by ~0.1-0.2. Bubbling of single occupancy households has little effect (SPI-M result).
Direct impact on COVID deaths and severe disease	Moderate (medium confidence). Impact is through reduction in transmission, though some impact through reduced intergenerational close contact.
Non-COVID impact (incl. social and psychological; excl. economic)	Loss of social networks increases risk of deepening economic disadvantage (e.g. shared childcare and eldercare between homes) on which low income and BAME groups particularly rely. Provision for care arrangements would be important. People with pre-existing mental health disorder are particularly likely to suffer as a result of increased isolation and loneliness. Allowing existing bubbles to continue would mitigate some impact, but clear communication about what and who those bubbles might consist of under this NPI is essential[vii]. BAME and low-income households would suffer disproportionately if bubbles were reduced to a household joining with a lone individual or only two other individuals. May reduce social alcohol and drug use/misuse.
Implementation issues	Behaviour in homes difficult to enforce and may not be supported by existing housing stock[viii]. Policies may appear inconsistent (e.g. compared to work, schooling and hospitality if remain open), degrading trust, lowering perceived risk and impacting adherence. A clearly explained rationale, informed by likely effects on transmission as well as wider considerations such as social benefits and feasibility, may help to mitigate perceived inconsistencies to a degree. This should include allowing families to meet outside, as the public is aware that this is lower risk and where it is feasible it is highly valued. Where key workers benefit from extended kin networks and family support, especially intergenerationally, reducing household contact could preclude these key workers fulfilling essential roles[ix]. Differences between nations (number of households, inclusion of children) risk confusion and undermining the logic of the measure. It is important to be clear about why both numbers and networks (households) matter. Considerations of different types of households when specifying number of households. Houses of multiple occupation may limit ability to reduce contact due to shared communal areas and no social script/obligation towards one another. Language is key when communicating this as 'bubbles' was not well understood and did not translate well into a different language having no cultural context or sufficient meaning when translated for some BAME groups.

Intervention	Restrictions on outdoor gatherings, including prohibiting large events
Impact on COVID transmission	**Low impact**. Small reduction in transmission (reduction in R likely to be <0.05). SARS-CoV2 does not persist in well-ventilated outdoor areas for long. High confidence. Virus survival on surfaces is reduced under UV light, however this effect may be less in winter. Large events/gatherings can have a role in seeding infections in and between communities, and are associated with outbreaks, but are less important for transmission as fewer people attend these events and the risk of transmission outdoors is reduced. ~2% of cases due to gatherings of over 50 people[x] . Transport to/from events and use of pubs and other shared facilities nearby may be more important.
Direct impact on COVID deaths and severe disease	Low impact. High confidence. Risk reduction is through reduction in transmission only, which is likely to be low. High confidence.
Non-COVID impact (incl. social and psychological; excl. economic)	Low / moderate. Gatherings at licenced and regulated cultural and sporting events are currently prohibited as are unregulated public assembly under the rule of six. Short-term social and psychological impacts should be moderate to minimal, although there will be higher long term harms particularly at the level of communities and social networks (e.g. football clubs & theatres will be forced to close, communities will lose important cultural platforms, unemployment & social isolation will increase). Imposing restrictions on public assembly may also create unintended harms by increasing levels of protest, amplifying the numbers of unlicenced music events/house parties and provoking confrontations with police, and have a disproportionate impact on young people. Closing playgrounds may disproportionately impact on families in cities without gardens.
Implementation issues	Need to avoid – and be seen to avoid - discriminating against different social, economic, religious, or ethnic groups. Consistency here may outweigh differential risk of transmission in different events (e.g. allowing hunting but not football, classical concerts but not pop concerts etc.)[xi] Consideration is needed of how to justify a policy of preventing outdoor gatherings and large events but still allowing other forms of social gatherings (e.g. 'organised' sports, pubs, educational classes, work meetings; places of worship). Need to explain the rationale behind closing playgrounds if the risk of transmission is lower between children. Enforcement is a challenge whether this means complete restrictions or limited numbers gathered outdoors. Need to prioritise different kinds of events and their social value in order for measures to make sense to the public. For example, Funerals, Weddings and Religious Festivals have a high importance in the life course of a community, while classical concerts do not. However, different events are valued by different communities, and it will create a sense of inequity if those valued by one section of the community (e.g. people of faith) are allowed but not those valued by another (e.g. young people). Consistency to increase legitimacy of this approach and avoid communities (e.g. BAME, low SES) feeling targeted with closure of activities affordable to them with other activities remaining open.

Measures related to business settings

Intervention	Encouragement to work from home wherever possible
Impact on COVID transmission	**Moderate impact** (high confidence). Typically, over 1/3rd of contacts are made at work, often long duration and highly clustered. Modelling suggests that homeworking would have a significant effect on transmission. Reduction in Rt of 0.2-0.4 if all who can work from home do so. There is evidence from PHE reports on role of workplaces in transmission. Transmission risk in workplace settings will vary significantly with the particular environment, activities and worker behaviours.
Direct impact on COVID deaths and severe disease	**Moderate**. Reduction largely through reduction in transmission, though also protects high risk individuals who are in the workplace. Occupational exposure in certain settings (e.g. bus and taxi drivers) has been linked with the increases in severe disease in BAME communities.[xii]
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate impact: Mild harms associated with poor ergonomics at home, social isolation and increased prevalence of domestic violence.. Positive impact for those who prefer home working. Equity issues: In particular, younger people, those on lower incomes and those from BAME backgrounds are less likely to be able to work from home and will therefore be more at risk. Those with less space at home will find homeworking more difficult. Those with children may find it difficult to work from home, especially if schools are closed. This has the potential to exacerbate gendered workplace inequities. Challenging for those in flat or house shares and properties without appropriate wifi connections
Implementation issues	Creates a consistent message about the importance of avoiding contact with others outside the household. Creates inequities given that more privileged groups are more likely to be able to work at home -- but encouraging those who can work at home to go out to work increases risks to those who have to go out to work by increasing their contacts. Needs clear guidance to employers to encourage working from home and establishing facilities to support this, especially since it involves reversing guidance currently in operation.

Intervention	Alternating week in – week off, return to work
Impact on COVID transmission	Low to moderate impact. Low confidence. Modelling suggests that this might be moderately effective. Potential reduction in Rt of up to 0.1, though precise estimation very difficult. As well as cohorting, would reduce occupancy density enabling easier distancing and less pressure on shared facilities (e.g. kitchens, toilets) - likely to reduce environmental transmission risk. Would also reduce public transport use/crowding.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Impact and equity issues will be similar to those for stay at home, and work from home. Week on / week off is likely to be impossible for particular sections of society and some professions that are high-contact or highly networked (e.g. teachers) increasing their relative risk compared to either 'blanket' work from home or compared to other professions
Implementation issues	Logistically complex for some organisations. Logistically complex for households, especially households with children and low income households. Requires support package to be put in place for staff on the "off" weeks. Potentially confusing message unless rationale and mechanism of mitigation explained clearly.

Intervention	Closure of bars, pubs, cafés and restaurants
Impact on COVID transmission	**Moderate impact** (medium confidence). Potential reduction in Rt of 0.1-0.2, though precise estimation very difficult. Environmental risk in bars, pubs etc is likely to be higher than many other indoor settings due to close proximity of people, long duration of exposure, no wearing of face coverings by customers, loud talking that can generate more aerosols. Some venues are poorly ventilated, especially in winter. Consumption of alcohol impacts on behaviour. Multiple anectodoatal reports of outbreaks linked to bars in the UK, Europe, US. CDC report suggests those who test positive twice as likely to have eaten at a restaurant. PHE case control study also identifies visits to entertainment venues as a risk factor. Curfews likely to have a marginal impact. Low confidence. Allowing customers to sit outside only likely to be much lower risk.
Direct impact on COVID deaths and severe disease	Reduction largely through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	High indirect impacts resulting from loss of income for hospitality employees and low psychological impact through reduced social contact for customers. Loss of confidence and loss of trust, especially for the businesses that opened. Will they have the confidence and ability to open again? Could have positive impact on adherence to other measures as it will reduce perceived inconsistencies between home and non-home restrictions. Small benefits through reduced alcohol (and drug) misuse, and reduced calorie intake.
Implementation issues	Improves consistency of policies, particularly if non-recreational interaction is to be restricted in addition (e.g. seeing family members in their homes). However, high risk of displacement of social gatherings to other locations harder to regulate and maintain low risk behaviour (e.g. homes, illegal outdoor gatherings). Sends clear signal about the social value of interactions that are still enabled, which the public is likely to agree with, when these are schools, universities and kin/friend networks. Increased social support provision, e.g. online support, as pubs, restaurants and bars provide platform for social support for some groups in society.

Intervention	Closure of indoor gyms, leisure centres, fitness etc.
Impact on COVID transmission	**Low to moderate impact** (moderate confidence) Potential reduction in Rt of up to 0.1, though precise estimation very difficult. Some evidence from outbreak data e.g. in Korea associated with fitness class. Environmental risks linked to high touch surfaces in gyms, higher aerosol generation and breathing rates due to aerobic activity.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Limits access to exercise for physical and mental health but high potential for substitution to outdoor physical activity though may be harder in winter months. Risk of increasing mental health problems with closure of gyms. Potentially increasing health inequalities for some BAME groups that do not engage in outdoor physical activity due to safety concerns, and areas with no garden or suitable outdoor space for physical activity.
Implementation issues	As above, requires support package to be put in place for staff who are unable to work and for businesses especially as many gym/leisure centre employees are legally self-employed. Provision of safe community spaces to engage in outdoor physical activity.

Intervention	Closure of places of worship / community centres
Impact on COVID transmission	**Low to moderate impact** (moderate confidence) Potential reduction in Rt of up to 0.1, though precise estimation very difficult. Strong association with places of worship including significant outbreaks linked to religious community in South Korea, cases in churches in Singapore, and Germany (despite social distancing). Environmental risks vary depending on the building. Small venues higher risk than large spaces as the volume mitigates aerosol transmission. Some ceremonies involve touch surfaces and proximity for short duration (e.g. communion). Singing/loud talking can enhance risk.
Direct impact on COVID deaths and severe disease	High risk – vulnerable groups
Non-COVID impact (incl. social and psychological; excl. economic)	Mental health impacts from limiting social and spiritual connections. Risk of social division / anger if places of worship are closed ahead of recreational sectors (e.g. bars). Places of worship and community centres play a variety of roles beyond their core function: food banks, coordination of volunteers, child contact centres, and more Possible increases in domestic abuse without community refuge.
Implementation issues	Need to avoid – and be seen to avoid - discriminating against different social, economic, religious, or ethnic groups. Could be perceived as inequitable for those BAME communities with higher levels of participation in worship / community centres. Needs to be considered alongside restrictions on outdoor gatherings. Need to avoid disabling the work of mutual support networks associated with community centres and places of worship, which could be mitigated by financial and other support for mutual aid networks

Intervention	Closure of non-essential retail
Impact on COVID transmission	**Low impact** (low-moderate confidence) SPI-M commission from 30 March 2020 included opening non-essential retail. Very minimal impact on R values. Some limited evidence of transmission from China. Short duration and ability to distance in most settings + face coverings are likely to mitigate well.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	High direct impacts resulting from loss of income for staff, and low psychological impact through reduced social contact for customers. Economic impact would most affect the poorest given employment in non-essential retail with consequences for health inequalities. Some road traffic accident/air pollution benefits
Implementation issues	Improves consistency of policies, particularly if other interaction is to be restricted in addition (e.g. seeing family members in their homes). Requires support package to be put in place for staff who are unable to work and for businesses. If kept open, the rationale for doing so should be communicated clearly in terms of the lower risk of transmission. Behaviour to reduce transmission risk should be strictly regulated (e.g. good ventilation, low density, regular cleaning, mask wearing).

Intervention	Closure of close-contact personal services (hairdressing, beauty therapy etc.)
Impact on COVID transmission	**Low impact** (low confidence). Each event is likely to be high risk as it involves prolonged, close, face-to-face contact. However, use of these services is relatively infrequent, so the overall impact on R is more limited. Potential reduction in Rt of up to 0.05, though precise estimation very difficult. Appropriate PPE can mitigate risk - CDC evidence suggests masks were effective at stopping transmission in a hair dressing salon but some evidence of infection transmission among hairdressers in the UK. Contact tracing generally easy (if complied with). Many places are already careful with hygiene.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	High direct impacts resulting from loss of income for staff, and low psychological impact through reduced social contact for customers. Likely to disproportionately affect poorest (and women) given employment in personal services with consequences for health inequalities
Implementation issues	Improves consistency of policies, particularly if other interaction is to be restricted in addition (e.g. seeing family members in their homes). May need to evaluate whether wearing face shields (as currently recommended in the UK) as effective in reducing transmission as wearing masks. Requires support package to be put in place for staff who are unable to work and for businesses.

Measures aimed at educational settings

Intervention	Mass school closure to prevent community transmission
Impact on COVID transmission	**Moderate impact**. Closing all schools associated with a reduction in R of 0.2-~0.5 . Moderate confidence. Closure of secondary schools may be more effective (reduction in R of ~0.35) as link more households, higher numbers of contacts within schools and transmission to/from younger children may be more limited. Overall, low confidence, as unclear how much schools may contribute to community transmission.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	High. Disruption of education, wellbeing of children and parents. School closures associated with possible increases in school drop-out, child injury, domestic violence, child abuse but reductions in referrals. Reductions in social interaction erode social development and harm general wellbeing, and mental health of children and parents. Equity issues: Likely to have a higher adverse impact (education, physical and mental well-being) on vulnerable children and low income and BAME communities (e.g. less access to on-line learning / less space at home to study).
Implementation issues	Equity considerations in terms of impact on most vulnerable and BAME groups. Schools which are more likely to be sites of transmission (high poverty, low resource), may be those with the least capacity to take up additional interventions due to background stressors and resource constraints. Affected areas would suffer in terms of adequate preparation for public exams and therefore perceived fairness of the system. Might need to be weighed in moderation of exam grading.

Intervention	Reactive school closure
Impact on COVID transmission	**Moderate impact** (low confidence). Impact depends on whether schools (especially secondary, FE) are found to sustain transmission in local outbreaks. Modelling suggests that in such cases, reactive closure might reduce local R by 0.12-0.45. Modelling of this intervention in the influenza context suggests that impact is sensitive to the choice of incidence threshold for school closure (lower threshold, higher impact).
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate. Disruption of education, impact on wellbeing of affected children. Issues as for mass closure.
Implementation issues	As above, for mass closure although reactive closures add an additional stretch on these resources through need for preparation. Decision on whether to close school or merely class or year depends on adequate outbreak investigation including testing for asymptomatic infection of a) contacts of cases and b) if evidence of infection among contacts of other students in school. Currently PHE are not conducting outbreak investigation in all cases.

Intervention	Reactive closure of class/year group when outbreak detected
Impact on COVID transmission	**Low to moderate impact** (low confidence). Not clear the role that children play in transmission, nor how quickly outbreaks are detected and acted on.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Low. Disruption of education, impact on wellbeing of affected children and parents. Issues as for mass closure.
Implementation issues	Adequate guidance required on threshold for and extent of reactive closures required and communication between TTI system and schools for schools being notified of cases. Schools will need to have several teaching modalities (online v in-person) prepared in advance to support reactive year group closures, which may stretch resources and school capacities especially when multiple modalities are used simultaneously. IT provision may be required for pupils, especially from poorer families, for studying at home.

Intervention	Alternating week-on, week-off school closure with half class sizes
Impact on COVID transmission	Moderate to low impact. Modelling for SAGE Schools subgroup suggests this could reduce average R by 0.1-0.2, depending on how much transmission occurs in schools. Low confidence, as remains unclear how infectious children may be. Many classroom environments are poorly ventilated and space makes it hard to maintain social distancing. Action would reduce occupancy density enabling better social distancing and partially mitigating ventilation issues.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate. Disruption of education, impact on wellbeing of affected children and parents. Issues as for mass closure. Impacts may be able to be partially mitigated given planned nature of intervention, but with mitigations themselves being subject to equity issues (see above).
Implementation issues	Logistically complex for schools to implement (teachers would be obliged to provide face-to-face alongside remote provision at the same time) and knock-on effects on parental coordination of childcare responsibilities/employment. Complexity likely to be most felt by schools that are high deprivation/low resource/BAME. Guidance and support must be given to businesses in order to enable parents and carers to do this where possible. Additional thought must be given to enable parents/students where this pattern is not possible due to parental/care giver work

Intervention	Closure of Further Education
Impact on COVID transmission	**Moderate impact** (moderate confidence). Less data than from schools, though students are older and thus more likely to be infectious. Cryptic transmission from asymptomatic individuals likely. FE is highly networked linking households, FE setting and workplaces, but this tends to be local.
Direct impact on COVID deaths and severe disease	Impact primarily through reduction in transmission. However, FE workforce somewhat older and more high risk, and a greater fraction of students are BAME and live at home. Therefore there is the potential for transmission in FE to lead to infection of higher risk individuals.
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate impact. Disruption of education, wellbeing of students. Knock-on impacts lower than for schools due to lower childcare needs.[xiii]
Implementation issues	Significant equity issues because FE students are of lower SES/higher BAME representation than school 6th form or HE students. Expanding online teaching provision including resources required, e.g. laptops, wifi could mimise disruption to education which could otherwise widen existing inequalities.

Intervention	Closure of Higher Education
Impact on COVID transmission	**Moderate impact** (high confidence). Outbreaks are very likely in universities, given their size and the degree of close contact typical through shared living arrangements and while socialising and during lectures and practicals. Universities associated with outbreaks of other diseases (e.g. mumps and meningitis) and clear evidence from the US of transmission of COVID in this setting. Closing universities associated with a ~0.3 (0.2-0.5) reduction in the R number. Mitigations short of closure should include strong steer towards online learning for all but essential practical activities.
Direct impact on COVID deaths and severe disease	Risk within the HE workforce more than the student body – as FE.
Non-COVID impact (incl. social and psychological; excl. economic)	Less impact on broader health and wellbeing, equity than closing schools or FE.
Implementation issues	Students may remain in term accommodation even if campus activities are closed, so social events could continue regardless. Consider need to keep essential courses running (e.g. medical).[xiv] Universities will need to manage and address student welfare needs for students living in university and private housing. Disruption of lab-based and medical courses (e.g. dentistry) will impact the graduate pipeline into health roles. Highly feasible for HE institutions to offer remote learning for many courses. Likely fewer issues with equity of access for students, though these remain problematic. A clear statement about online teaching for FE and HE could avoid institutions believing that they have to maintain in-person tuition to avoid being at a competitive disadvantage.

Intervention	**Quarantine for new students in HE to prevent seeding into University (or testing of all new university admissions and isolation of positives)**
Impact on COVID transmission	**Low impact** (moderate confidence). Could help prevent the seeding of outbreaks in HE and spill-over to local communities. One-off screening (or quarantine) has time-limited effect. May be more effective in campus universities in areas of low community transmission.
Direct impact on COVID deaths and severe disease	Impact primarily through impact on transmission
Non-COVID impact (incl. social and psychological; excl. economic)	Low impact. Disruption of education for affected students. Loneliness is a likely impact and possible mental health problems arising from homesickness and isolation.
Implementation issues	Students in quarantine (or self-isolation if tested positive or contact traced) require substantial support from their institution during the period. Failing to provide support will lead to distress, poor adherence and loss of trust. Support must therefore include (a) practical needs (food etc.), (b). study needs (IT) and (c). emotional needs (e.g. a 'buddy' system) Enforcement is an issue within universities, and between universities and the police. Could be implemented in a simpler way by requiring online learning for the first two to three weeks of term to reduce number of contacts among students and staff and less seeding of infection. Followed by combination of online and face to face teaching alternated between weeks.

Intervention	Closure of childcare
Impact on COVID transmission	**Low to moderate impact**. Low confidence. Modelling suggests that resuming early years provision has a smaller relative impact than primary school, which in turn has a smaller relative impact than resuming secondary schooling. However, this analysis does not incorporate potential for indirect impacts on contacts outside of school – which may differ by age of child. Specific consideration could be given to limiting children to attending one setting.
Direct impact on COVID deaths and severe disease	Impact through reduction in transmission
Non-COVID impact (incl. social and psychological; excl. economic)	High impact on families reliant on childcare due to inability to attend work. Increased risk of grandparents assuming child care roles. Developmental, educational, and well-being impacts on children. Missed opportunities to spot child injury, domestic violence, child abuse but reductions in referrals. Reductions in social interaction erode social development and harm general wellbeing, and mental health of children and parents. Mental health impacts may be stronger for lower SES and BAME communities and those with pre-existing mental health problems
Implementation issues	Support will be needed for affected staff and families who are unable to work. Failure to provide support may result in families having to use informal childcare, reconnecting households and posing additional risks especially where this childcare is provided by vulnerable older adults.

Measures aimed at high-risk settings e.g. hospitals and care homes

Intervention	Prohibition of visitors to hospitals and care homes
Impact on COVID transmission	Low impact on transmission (high confidence)
Direct impact on COVID deaths and severe disease	Low impact on deaths and severe infections., as most introduction of care homes is probably via staff. Nevertheless, if infection does get into care homes the impact can be devastating. Moderate confidence. Testing of visitors is a potential mitigation option
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate to high. Substantial social and emotional impact on residents and, for end of life patients in particular, relatives. Could be mitigated by allowing very limited number of visits.
Implementation issues	Consider differentiated implementation by type of care and ability to support safe visiting, e.g. maternity vs A&E vs ICU. Clinical contexts differ in their preparedness/capacity to support infection control with respect to visitors.

Measures aimed at high-risk individuals

Intervention	Shielding of high-risk individuals in their homes
Impact on COVID transmission	Low impact on transmission (high confidence)
Direct impact on COVID deaths and severe disease	**Moderate impact** on deaths and hospitalisations. Low confidence. Impact of shielding from Spring wave difficult to assess.
Non-COVID impact (incl. social and psychological; excl. economic)	Moderate to high. Substantial social and emotional impact on affected individuals. Significant equity issue re. age, BAME, disability; this includes extended kin networks and intergenerational households.
Implementation issues	Substantial support (financial, social, informational, emotional) needed for people with limited support networks, low financial resources, other needs. Adherence, health and trust will suffer if people are not given the resources they need to adhere safely. Equally, support is needed for those supporting. the shielders in terms of avoiding exposure and getting tested. Consider the role of language around vulnerability to avoid experiencing shame or stigma due to need to shield

Environmental measures

Intervention	Increasing "COVID security" in workplaces and other settings
Impact on COVID transmission	Low Impact. From the "ready reckoners", "COVID security" more impactful when social distancing is not in place. 25% covid security (25% reduction in transmission for non-household contacts of people over 11 years old) < ~0.2 when R is around 1. Increasing this further is unlikely as actions already taken around hand/surface hygiene, face coverings and social distancing, and many settings have added barriers/screens, restricted occupancy and introduced one-way systems. Further action on ventilation may be beneficial to limit aerosol transmission – direct evidence on impact is lacking, although several outbreaks have been associated with poor ventilation.
Direct impact on COVID deaths and severe disease	Low impact – additional measures are not likely to have a substantial impact (low confidence).
Non-COVID impact (incl. social and psychological; excl. economic)	Low impact. There is evidence of anger between members of the community relating to face covering use / non-use that may be exacerbated if rationale is not accepted.
Implementation issues	Adherence to many behaviours will be improved by easy access to facilities (e.g. hand gel); redesign of spaces; promoting social norms around behaviour; monitoring behaviour. Adherence may be improved by co-production of measures to improve use of ventilation, redesign spaces, promote social norms and monitor behaviour. More robust procedures to ensure that workplaces are safe, that they are regularly inspected and that employees who report breaches are encouraged and protected will increase confidence. If feasible, certification that public spaces (e.g. retail, bars, restaurants) are 'COVID compliant' will increase consumer confidence Mandating wearing of face coverings by employees in public facing roles - eg bars and restaurants - would increase public confidence.

Intervention	Requirement for use of face covering outdoors
Impact on COVID transmission	Very Low impact on community transmission. High confidence. Low transmission rates outdoors and most risky contacts are made indoors. May have a small impact for those people who have to come into close contact with others.
Direct impact on COVID deaths and severe disease	Impact only through (very low) impact on transmission.
Non-COVID impact (incl. social and psychological; excl. economic)	Low impact. There is evidence of anger between members of the community relating to face covering use / non-use that may be exacerbated if rationale is not accepted. Equity issue: availability of face coverings for those with lowest resources. Credibility/ trust in guidance will be an issue. Many in the public didn't understand why the guidance changed on masks indoors and attributed this to the other inconsistency and incompetence in the government.
Implementation issues	Wearing facemasks outside of the house could complement existing government messaging of social responsibility if communicated alongside the effectiveness of masks in protecting others who are not infected. However, there are also a number of issues, risks and potentially harmful behaviours associated with recommending or mandating use of facemasks which could reduce their effectiveness (e.g. misuse, use of ineffective homemade masks). Moreover, it is critical that recommendations are seen to be based on the science and proportionate otherwise the legitimacy of. mask wearing overall will be compromised. Given that the evidence suggests outdoor spread to be very limited this may be seen. as an excessive measure.

Intervention	Extend requirement for use of face covering indoors (e.g. shared offices, schools)
Impact on COVID transmission	Low-moderate impact overall but may be beneficial where distancing is harder or where ventilation is poor. Reduction in risk due to source control likely to outweigh any risks of transmission from soiled face coverings when worn for long durations. Evidence from healthcare suggests universal masking helped to bring hospital outbreaks under control. No evidence of effectiveness in children.
Direct impact on COVID deaths and severe disease	Some suggestion that the face covering may reduce viral exposure, leading to less severe symptoms.
Non-COVID impact (incl. social and psychological; excl. economic)	Low impact. There is evidence of anger between members of the community relating to face covering use / non-use that may be exacerbated if rationale is not accepted. Probable harms if implemented in primary schools given their role in promoting spoken language and social skills. Additional difficulties for children with speech or hearing difficulties. Equity issue: availability of face coverings for those with lowest resources.
Implementation issues	See 'Requirement for use of face covering outdoors' (above).[xv] Implementation in school classrooms likely feasible (at least in secondary schools) given experience in some UK schools and all schools in other countries e.g. France. Implementation in FE and Universities likely to be feasible. Given low tolerance of wearing face coverings for extended periods of time (EMG paper SAGE 57) implementation would require consideration of many factors including the type of face covering that is suitable and effective as well as making these available to those regardless of financial resources.

Travel measures (internal to the UK)

Intervention	Restrict use of public transport to key workers
Impact on COVID transmission	Low impact. This is whilst levels of crowding on public transport remain low, and accounts for mandated mask- wearing. In addition, there was inconclusive evidence of the risk of public transport for influenza-like-illness transmission. Further restricting use is unlikely to reduce overall transmission. Moderate confidence.
Direct impact on COVID deaths and severe disease	Impact would be through reduction in transmission which would be very low. High confidence.
Non-COVID impact (incl. social and psychological; excl. economic)	Equity issue: travel among lower socio-economic and BAME groups may be most heavily affected.
Implementation issues	Proof of key worker status and checking thereof at entry points would be required.

Intervention	Impose local travel restrictions (e.g. 5-mile limit for non-essential travel)
Impact on COVID transmission	**Low to moderate impact** (low confidence). Reduces seeding to low risk areas. Impact depends on the level of seeding of the epidemic. If the epidemic is already widespread, then internal travel restrictions will have little benefit.
Direct impact on COVID deaths and severe disease	Impact would be through reduction in transmission (reduced seeding to low incidence areas).
Non-COVID impact (incl. social and psychological; excl. economic)	Potentially major difficulties for care home and hospital visits.
Implementation issues	Definition of local restrictions will differ between rural and urban areas – in rural areas the minimum distance needed to travel to essential services may be much further. Exemptions and enforcement likely to be very complicated.

Intervention	Restrict travel between UK nations or between subnational regions
Impact on COVID transmission	Prevent seeding from one region to another. Needs an understanding of travel patterns and existing levels of seeding. May be more important around holidays and movement of FE/HE students at term time/ when sick. Low impact, moderate confidence.
Direct impact on COVID deaths and severe disease	Impact would be through reduction in transmission (reduced seeding to low incidence areas).
Non-COVID impact (incl. social and psychological; excl. economic)	
Implementation issues	Exemptions and enforcement likely to be very complicated.

[i] https://www.gov.uk/government/publications/dhsconsgadho-direct-and-indirect-impacts-of-covid-19-on-excess-deaths-and-morbidity-15-july-2020
[ii] https://www.gov.uk/government/publications/covid-19-preparing-for-a-challenging-winter-202021-7-july-2020
[iii] https://www.gov.uk/government/publications/tfc-risks-associated-with-the-reopening-of-education-settings-in-september-8-july-2020
[iv] To be published: The impact of financial and other targeted support on rates of self-isolation or quarantins (SPI-B 16 September)
[v] https://www.gov.uk/government/publications/spi-b-consensus-on-bame-communication-22-july-2020
[vi] https://www.gov.uk/government/publications/spi-b-consensus-on-reintroduction-of-measures-and-their-impact-on-rate-of-infection-22-june-2020
[vii] https://www.gov.uk/government/publications/spi-b-well-being-and-household-connection-the-behavioural-considerations-of-bubbles-14-may-2020
[viii] To be published: SPI-B/EMG: MHCLG Housing Impacts Paper

[ix] https://www.gov.uk/government/publications/spi-b-well-being-and-household-connection-the-behavioural-considerations-of-bubbles-14-may-2020
[x] https://doi.org/10.1101/2020.03.20.20039537
[xi] https://www.gov.uk/government/publications/spi-b-extended-paper-on-behavioural-evidence-on-the-reopening-of-large-events-and-venues-21-august-2020

[xii] https://www.gov.uk/government/publications/managing-infection-risk-in-high-contact-occupations-11-june-2020
[xiii] https://www.gov.uk/government/publications/principles-for-managing-sars-cov-2-transmission-associated-with-further-education-3-september-2020
[xiv] https://www.gov.uk/government/publications/principles-for-managing-sars-cov-2-transmission-associated-with-higher-education-3-september-2020
[xv] To be published – Duration of wearing face coverings