Interventions: overview

Advice from the **Scientific Advisory Group for Emergencies (SAGE)** is that our response will soon need to move from **contain to delay**.

SAGE **have considered six possible social and behavioural interventions** to delay the outbreak based on the clinical evidence. The impacts have been modelled. **They advised three for implementation** in the coming 3-4 weeks: (i) self-isolation by symptomatic individuals; (ii) whole household isolation when an individual is symptomatic; and (iii) significant reduction of social contact by the over 70s and at risk groups. **DHSC is producing policies on these interventions for communication to the public.**

Individual and household isolation principally reduces pressure on the NHS and other services by delaying and flattening the epidemic's peak. The measure for the elderly and vulnerable should reduce deaths. **Implementing all three measures at the right times in the outbreak has the greatest combined impact: 50-70% reduction in peak hospital bed demand**; **35-50% reduction in deaths.** Assumptions have been made about how far the public will comply: but all produce some impact at all levels of compliance.

Based on SAGE's current understanding of the outbreak, **to maximise the effectiveness of individual and household isolation we would need to begin implementation by the end of this week**. A decision will be needed by Ministers on implementation of these measures on **Wednesday 11 March**. The third measure (social distancing for over 70s and the most at risk) can be introduced later.

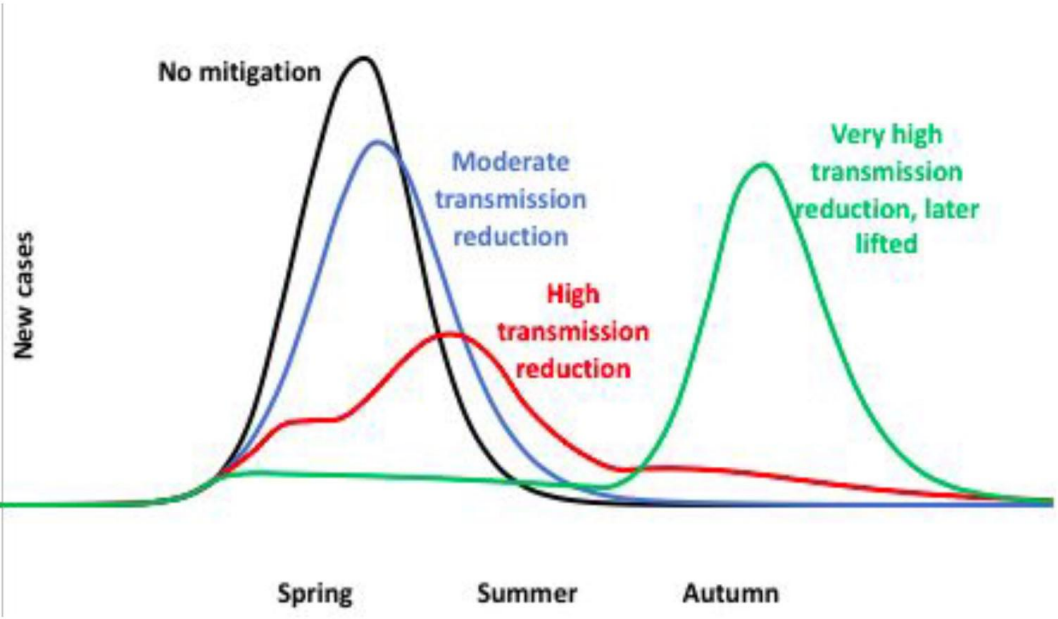
Objectives of social and behavioural interventions

SAGE has considered **potential interventions** against the following objectives:

1. **contain the outbreak** so that it does not become an epidemic (this is now unlikely to be achievable);
2. **delaying the peak** so it occurs when the NHS in each nation is out of Winter pressures;
3. **reducing the size of and/or extending ("flattening") the peak** so that the response by the NHS and other sectors can be maintained more sustainably;
4. **reducing the total number of deaths** by limiting the number of cases in vulnerable groups.

Profile of the epidemic under different approaches

Illustrative impact of social and behavioural interventions lasting several months on a Reasonable Worst Case epidemic



Under the RWCS, cases are expected to peak during April-May, with a very high peak incidence (black line in graph).

Social and behavioural interventions may flatten the peak of the epidemic and increase its duration with the aims of relieving pressure on the NHS, reducing deaths and ensuring they are managed with dignity (red line).

Very stringent social and behavioural interventions (such as those in China) have the potential to prevent a major epidemic establishing, but risks a large epidemic re-establishing when lifted (green line). The advised approach seeks to avoid this possibility.

Vaccines are unlikely to be available until early 2021.

Interventions considered by SAGE

Measure and/ or combination of measure	SAGE advice	Degree of confidence in the effectiveness of the measure	Potential effectiveness in delaying the peak of an outbreak	Potential effectiveness in reducing the peak of an outbreak	Potential effectiveness in reducing total number of cases and deaths (excluding excess deaths caused by lack of NHS capacity)
(1) Home isolation of symptomatic cases	Advised for consideration now	Low confidence	2-3 weeks delay to peak	Reduction in peak incidence of maybe 20% (uncertainty range at least 15-25%)	Modest impact (<5%)
(2) Whole household isolation	Advised for consideration now	Medium confidence	2-3 weeks delay to peak	Reduction in peak incidence of maybe 25% (uncertainty range at least 20-30%)	Modest impact (<10%)
(3) Social distancing for 70+ (modelling to be validated by SAGE on Tuesday, already validated for 65+)	Advised for consideration now	High confidence	Negligible impact	Reduction in peak total number of cases, but c.25-35% reduction in deaths and demand for hospital beds and critical care beds	15-35% of deaths. In the 80+ this drops to 5-15%.
(1) and (3) Home isolation and social distancing	Advised for consideration now	n/a	2-3 weeks delay to peak	45-55% reduction in peak hospital bed demand	30-45% reduction in deaths
(1), (2) and (3)	Advised for consideration now	n/a	2-3 weeks delay to peak	50-70% reduction in peak hospital bed demand. Greater when started early.	30-50% reduction in deaths. Smaller impact on total cases.
(4) Closing schools	Maybe appropriate at a later stage	High confidence	No more than 3 weeks delay to peak and possibly much less	c.10%-20% reduction in peak hospital demand with closures of 8-12 weeks (if children have similar role in transmission as in pan flu)	Modest (<5%)
(5) Social distancing for all	Maybe appropriate at a later stage in some circumstances	Medium confidence	3-5 week delay to peak	Substantial reduction in peak, may be up to 50–60%	Around 20-25% of deaths
(6) Stopping large events	Not advised	Very low confidence	Very little on own	Very little on own	Very little on own

Intervention 1: home isolation of symptomatic cases

Delay the Peak

Who: Individuals who are 'symptomatic' (exhibiting mild respiratory symptoms) would be advised to stay at home, or "isolate" (regardless of travel history). This would include individuals who have a high temperature, dry cough, sore throat, or muscle aches, and other symptoms associated both with COVID-19 and other conditions. This would be a shift from current advice, to capture milder symptoms.

Policy description: To the fullest extent possible, individuals should follow current PHE guidance on how to home isolate for suspected/infected cases. To avoid putting themselves at risk, individuals may need to break self-isolation for urgent food shopping or medical prescriptions where they have no alternative.

Time an individual isolates for: 7 days (the length of time an individual who has been infected needs to ensure they are virus free)

Duration of policy: notionally 12-13 weeks from triggering

Effect: potential to delay the outbreak peak for 2-3 weeks; reduce peak incidence by 20%; modest potential to reduce cases and deaths (<5%).

Assumed compliance: 70%. There is considerable uncertainty about this figure but modelling suggests the effects of the measures vary in proportion to the compliance rate. Low compliance reduces effectiveness.

Intervention 2: whole household isolation

Delay the Peak

Who: All individuals living in the same household as someone who is 'symptomatic' would be advised to home isolate.

Policy description: Households self-isolating should follow the same guidance as the current PHE guidance for suspected/infected cases who are self-isolating. Unlike individuals currently self-isolating, they would not necessarily be able to ask household members to help with tasks such as shopping.

Time a household isolates for: at least 14 days (longer than the 7 days for an individual because of the time other residents need to wait to see if they develop symptoms). If a second member of the household becomes symptomatic then the 14-day period should restart on the day the second or subsequent individual gets symptoms in order to achieve the necessary effect. A person who previously had symptoms and has already isolated for 7 days could leave the house for essential tasks such as food shopping or collecting prescriptions.

Duration of policy: notionally 12-13 weeks from triggering

Effect: This measure has the potential to delay outbreak for 2-3 weeks to peak; reduce peak incidence by 25%; and modest potential to reduce cases and deaths (<10%).

Assumed compliance: 50%. There is considerable uncertainty about this figure but modelling suggests the effects of the measures vary in proportion to the compliance rate. Low compliance reduces effectiveness.

Intervention 3: social distancing for the elderly and vulnerable

Who: People over 70 years old and vulnerable groups would be advised to reduce their social contacts or self-isolate.

Save Lives

Policy description: For those "distancing", advice would be to reduce their exposure to environments where transmission could occur, for example avoiding socialising in crowded places, such as bars and restaurants, or any work environment. Essential contacts such as minimal and infrequent food shopping and collecting prescriptions could continue but only when the individual could not easily make alternative arrangements for food and essentials to be delivered. Unlike self-isolation of cases, this is not entirely about withdrawing to the home. For example, an elderly person could and should take a walk in the garden or along the street, walk the dog etc. but should keep 2 metres away from other people.

Time an individual socially distances for: 13 weeks

Duration of policy: 13 - 16 weeks (or until case numbers are significantly reduced)

Effect for this measure: Negligible effectiveness in delaying outbreak; 15–35% reduction in deaths and demand for hospital beds and critical care beds.

Assumed compliance: 75%. There is considerable uncertainty about this figure but modelling suggests the effects of the measures vary in proportion to the compliance rate. Low compliance reduces effectiveness.

3. Social distancing for the elderly and vulnerable - cohort options

Clinical experts are currently considering whether there is a case for a tiered approach involving the following groups:

Group 1: very high risk people who may be immunosuppressed or have other very specialist conditions (approx. 1-2 million people across the population). Individuals in this group would be asked to follow something close to the current PHE advice for those self-isolating for a period of up to 13 weeks. Individuals would be identified and given guidance.

Group 2: Individuals who are over 70 years old (9.2 million); and working age people with chronic health conditions (approx. 8 million). This combined group would be advised to reduce unnecessary contacts, but would follow a pragmatic approach. For example, we would recommend home working for this group. Where this is not possible for particular occupations including health and care workers, we would need to consider this further as part of risk based discussions.

Care home setting: DHSC is considering whether to adopt a specific policy in respect of care homes as a setting to support social distancing. We estimate that approaching two thirds of the population of care homes are over 85 years old (roughly 300,000 people) and are highly likely to have comorbidities, making them particularly susceptible to COVID-19. Those in residential settings who are below 85 years old are more likely to have comorbidities.

What would the effect of these three measures be?

- **Measures 1 and 2 (home and whole household isolation):** implementing now would delay the peak by 2-3 weeks, relieving pressure placed at peak on beds and capacity. The measures would have a limited impact on number of deaths.
- **Measure 3 (social distancing for the elderly and vulnerable):** would have a significant effect on the number of lives saved (with 20-35% reduction in cases and deaths), but negligible impact on delaying the outbreak.
- Combining measures 2 and 3 (home isolation for individuals and social distancing for the elderly and vulnerable) could mean a 45-55% reduction in peak hospital bed demand, and 30-45% reduction in cases and deaths.
- **Implementing all three measures at the right time in the outbreak has the greatest impact: 50-70% reduction in peak hospital bed demand; 35-50% reduction in deaths.**
- **The health benefits of these measures have an approximately linear relationship with compliance rates. The higher the compliance rates that can be achieved, the bigger the impact, but even low levels of compliance rates would have a meaningful benefit. It is critical that compliance rates for social distancing of vulnerable groups remain high until overall case numbers are low.**

Case studies

Mike, 34; **Ellie**, 33; and **Annie**, 2 and in receipt of free school meals

If Mike and Ellie were **isolating at home** and their childcare provider had to close because of staff illness, they may have to stay at home to look after Annie. If the **whole household** then had to isolate, Mike and Ellie may struggle to afford food for Annie as he would not be getting meals at school, especially if Mike was not receiving statutory sick pay as he is on a zero hours contract. If the Government then advised that elderly and vulnerable groups **social distance**, this would prevent the couple from asking their parents (both over 70) to help with looking after Annie, placing further strain on them for the 13-16 weeks.

Hassan, 65 and with a vulnerable condition; and **Janet**, 71

If Janet had to **isolate at home**, Hassan would still be able to go out to get shopping but he may find it hard to get to a supermarket if bus services are disrupted by a lack of drivers. They could have shopping delivered but this would be hard if supermarket delivery capacity is strained and could require them to go online to arrange an order, which they may not have the digital skills to do. If we then asked elderly and vulnerable groups to **distance themselves socially**, Janet and Hassan would both be expected to do so for 13-16 weeks because they are both either over 70 or vulnerable. This could put pressure on their mental health and relationship.

Social and economic impacts of COVID-19 and proposed interventions

- The COVID-19 outbreak will lead to significant economic, social and public service delivery impacts, primarily because of large numbers of people infected and not able to work.

- This will happen with or without the additional social and behavioural interventions, but there are some social and practical effects that the interventions themselves would have. They might also amplify other effects.

Economic impacts of COVID-19 and of interventions

- The **overall economic effect of COVID-19** will be significant but largely temporary – both on production (supply) and demand for goods/services. A simple mapping of the DH/SAGE RWCS implies **a reduction in the level of GDP of 2.5%-3.0% in 2020.**
- This is highly partial – not capturing other supply or demand effects, which are highly uncertain. Illustratively, based on academic literature, there could be a further 1-2% reduction in the level of GDP in 2020 from demand effects.

- **The proposed interventions would likely worsen both the supply and demand effects**. On labour supply (which is only one part of the overall supply effect), the difference is set out below:
  - No intervention: c. 190m person days lost; c. 5.9m people at peak.
  - Case isolation 14 days: c. 214m person days lost; c. 6.2m people at peak. 7 days = c. 107m days; c. 3.1m peak.
  - Household quarantine: c. 210m person days lost; c. 4.9m people at peak.
  - [NOTE School closures would result in 468m person days lost; c. 9.1m people at peak]

The interventions would mean a significant curtailing of people's daily lives, affecting demand in the economy. There will also likely be a fall in overall economic confidence. Services spending (including non-essential spending) is 60% of total household consumption.

NB – workforce figures do not include factors such as: 'the worried well' (behavioural effects); or cumulative effects in households (i.e. a household where a person becomes ill on day 1, followed by others later, which would reset the 14 day period.

Impacts on different sectors of the economy

There are some important differences in sectoral impact between the measures:

- **Measures 1 and 2 (home and whole household isolation):** most likely to affect those sectors where home working is not possible (customer and service-oriented as well as labour-intensive sectors). This could mean material reduction in economic activity, temporary closures and potential temporary lay-offs in sectors such as construction, manufacturing and social care. For whole household isolation the level of disruption would be most significant for smaller businesses.

- **Measure 3 (social distancing for the elderly and vulnerable):** Those employing an older workforce *may* be more affected, depending on the profile of groups advised to socially distance. This includes the farming/agricultural sector (over 55% are over 50s), manufacturing sectors such as textiles, chemicals, electric motors and generators (40% over 50s) and the accommodation sector (54% over 50s in the holiday and other accommodation sector).

There will be impacts for public services in any scenario (1/2)

Welfare and employment

- Increase in Statutory Sick Pay (SSP) claims and additional or increased benefit claims for short periods, with DWP capacity to deal with these reduced. DWP will adjust usual processes to deliver mitigations, e.g. not requiring face-to-face contact in jobcentres.

Health and Social Care

- Workforce shortages would mean reduced Adult Social Care provision (e.g. fewer visits), and a need to prioritise cases at peak. Risk of providers' (home care) financial collapse, as paid for workload drops.

Children and education

- Closure of early years provision would require healthy parents to stay home to provide childcare and risks provider collapse in a fragile market.
- 10-15% could miss spring/summer exams in England. Exams in Scotland begin 2 weeks before England. Potential school closures or increased class sizes due to absences.
- Safeguarding risks for vulnerable cohorts with pressure on children's social care and alternative provision.

There will be impacts for public services in any scenario (2/2)

Criminal justice

- Risk of widespread prisoner violence due to extended isolation of prisoners and reduced staffing. Risks extend to loss of prison through disorder.
- Probation understaffing may lead to reduction in levels of supervision. For England and Wales, MoJ would adjust to a progressive focus on higher risk offenders (e.g. terrorists, sex offenders), but with heavy dependency on police.
- Significant delays to court cases likely. Staff will be deployed to priority cases.

Police and Fire

- Critical response would continue, but less critical work likely to be deprioritised (e.g. vehicle crime, burglary; fire prevention visits). The police's ability to support other sectors will be limited.

Local Government

- Significant disruption to core business and services, with pressure on LA finances and resources - LAs may need to prioritise services. LAs also need to manage excess deaths and emergency response via LRFs.

Transport

- Reduced service levels and cancellations across bus and rail with disruption at ports and airports.

Additional impacts of advised interventions (1/2)

There are some social and practical effects that these interventions would have or amplify for individuals who choose to comply:

Health and social care

- Mental health and loneliness: significant impact for high risk social distancing cohort in particular from very limited social contact for up to 13-16 weeks.
- Primary care, community and pharmacy services: risk of reduced access. Mitigations: reducing need for face-to-face contact through technology; and home deliveries of medicines.
- Dementia: patients may experience permanent loss of skills from reduced contact and care.
- Household transmission: asymptomatic vulnerable individuals at risk under household isolation. Mitigation: guidance to reduce risk of infection within isolated households.

Access to food

- Limited capacity for retailers to scale-up from current 7% of groceries that are home delivered. Most powerful mitigation likely to be mobilising support from friends, family and civil society to deliver groceries. Households would need to visit shops if there was no alternative.

Additional impacts of our interventions (2/2)

Welfare and employment

- Low income households: loss of earnings for self-employed and zero-hours workers in particular. Further additional costs relating to children (specifically Free School Meals) under whole household isolation.
- Delivery of benefits for those not eligible for SSP. Mitigations: changing UC requirements (e.g. Job Centre visits) and SSP, New-Style Employment Support Allowance payable from first day of sickness.
- Pensioners: DWP identifying c 2,000 who use Payment Exception Service (PES) to collect pension in person.
- Volunteering: reduced provision, in particular from older volunteers.

Criminal justice

- Work needed to establish how these interventions would operate for custodial settings. Some prisons have high concentrations of older prisoners (e.g. sex offenders). It is unlikely that transmission risk to these prisoners could be managed over an extended period.

Further urgent work is required across UKG, Scottish Government, Welsh Government and NI Executive to test impacts and develop robust plans for mitigations and reassurance to the public.

Behavioural insights: communicating with the public (1/2)

Implementation approach to measures 1 and 2 (home and household isolation)

- As with our current approach to containment, implementation of measures 1 & 2 will take place via DHSC's public information campaign, informed by behavioural insight (SPI-B) and communications testing to ensure that the public take necessary actions.
- The campaign needs to achieve good compliance rates amongst those covered by the measures to maximise their effectiveness (adherence of ~50% to 90% to measure 1 among those actively contacted by health services has been observed in previous outbreaks, tending more to the higher end).
- We should harness the considerable public support for home isolation of symptomatic cases: 84% in UK currently support mandatory quarantine; 71% would call 111 if they were showing symptoms; 61% would self-isolate.
- Messaging must:
  - **reinforce a sense of collective responsibility/civic duty** - 'protect yourself and others';
  - **communicate the rationale for isolation as slowing the spread and protecting the vulnerable**
  - **address questions around practicalities**, e.g. self-isolating when co-located with others, pay for self-employed workers or those on zero hours contracts.

Behavioural insights: communicating with the public (2/2)

Implementation approach to measure 3 (social distancing for elderly and vulnerable)

- This measure would also be implemented via DHSC's public information campaign. We are at an early stage of development.
- Timing of implementation is crucial: the aim of the measure is to protect these groups at the peak of the curve, when they are most likely to be infected and the pressure on the NHS is at its worst. Implementing this measure for a long period may be challenging, because compliance is likely to drop off and risks low compliance during the critical peak period.
- Research done on a general social distancing measure for the elderly suggests it is likely to be supported: 73% of over 65s and 69% of those with long-term medical conditions agree that "keeping away from crowded places generally" is effective and the wider public recognise and are motivated by the need to protect the vulnerable.
- Older adults and those with chronic illness currently feel more worried and at risk, although there are concerns around impact of isolation on the vulnerable and food distribution. Our implementation plan needs to address these concerns.
- Social distancing messaging must motivate the vulnerable and those that need to protect them. The social care sector friends/family/society are crucial enablers of success on this measure.

Next steps

Based on SAGE's current understanding of the progress of the outbreak, to maximise the effectiveness of measures 1 and 2 we should begin implementation by the end of this week (though they do not necessarily have to be made together):

- the implementation decision will be needed by Ministers on measures 1 and 2 is likely to be needed on **Wednesday 11 March**;

- the implementation decision on measure 3 can be taken in 2-3 weeks' time.

As the epidemic develops, the peak number of cases in each country and region will occur at different times. Ministers might consider implementing locally or regionally. Reliable subnational monitoring data would need to be developed to support this.

Ministers are asked to note (a) these timeframes and the need for urgent work to develop implementation plans to mitigate the effects of the measures; and (b) confirm they would like officials to continue to develop all three measures.