A guide to positive behaviours, their barriers, and facilitating factors to fight COVID-19 in Sri Lanka for new normalcy
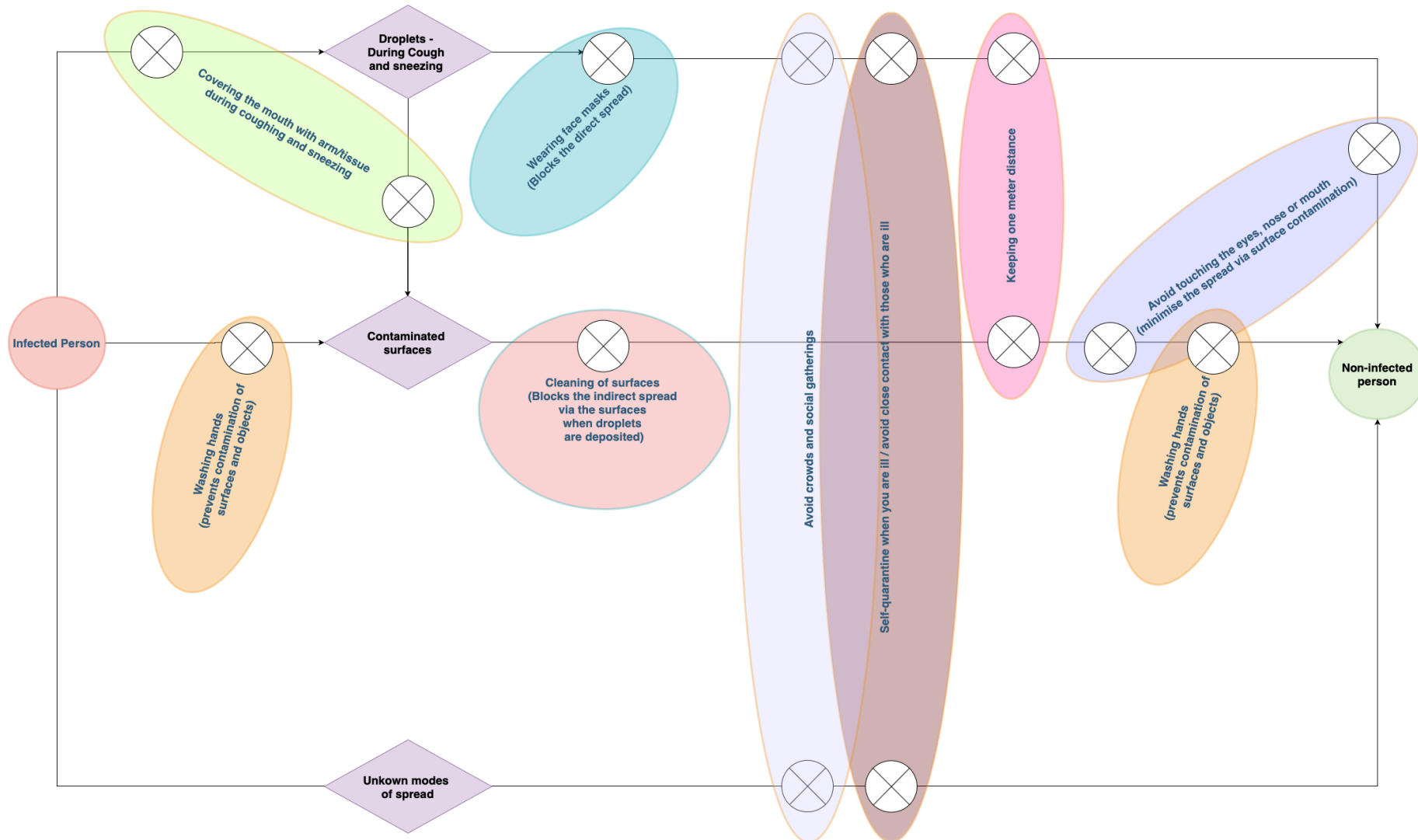
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Identified positive behaviours

1. Wash your hands frequently and properly
2. Cover your mouth with your arm when coughing and sneezing
3. Avoid touching your eyes, nose or mouth
4. Always keep a one-meter distance
5. Avoid crowds and social gatherings
6. Use a face mask when you are going out
7. Cleaning the surfaces regularly
8. Avoid close contact with those who are ill
9. Self-quarantine when you are ill

Pathways that the identified behaviours block the transmission of COVID-19 from an infected person

Infected Person

Droplets - During Cough and sneezing

Covering the mouth with arm/tissue during coughing and sneezing

Wearing face masks (Blocks the direct spread)

Contaminated surfaces

Washing hands (prevents contamination of surfaces and objects)

Cleaning of surfaces (Blocks the indirect spread via the surfaces when droplets are deposited)

Avoid crowds and social gatherings

Self-quarantine when you are ill / avoid close contact with those who are ill

Keeping one meter distance

Avoid touching the eyes, nose or mouth (minimise the spread via surface contamination)

Washing hands (prevents contamination of surfaces and objects)

Non-infected person

Unkown modes of spread

1. Wash your hands frequently and properly

A. **Key behaviour attribute**
   Wash hands frequently, each washing time should at least last 20 seconds

B. **Evidence for the effectiveness of the behaviour**
   1. Hand disinfection reduced the number of episodes of illness for the majority of the registered symptoms. This effect became statistically significant for common cold (OR = 0.35 [0.17 - 0.71], p = 0.003), fever (OR = 0.38 [0.14-0.99], p = 0.035) and coughing (OR = 0.45 [0.22 - 0.91], p = 0.02). **Participants in the intervention group reported less days ill for most symptoms assessed, e.g. colds (2.07 vs. 2.78%, p = 0.008), fever (0.25 vs. 0.31%, p = 0.037) and cough (1.85 vs. 2.00%, p = 0.024).** For diarrhoea, the odds ratio for being absent became statistically significant too (0.11 (CI 0.01 - 0.93).
   Reference: Hubner et al., 2010

   2. Improvements in hand hygiene resulted in reductions in gastrointestinal illness of 31% (95% confidence intervals [CI]=19%, 42%) and reductions in respiratory illness of 21% (95% CI=5%, 34%). The **most beneficial intervention was hand-hygiene education with use of nonantibacterial soap**. Use of antibacterial soap showed little added benefit compared with use of nonantibacterial soap.
   Reference: Aiello et al., 2008

   3. Handwashing lowered risks of respiratory infection, with risk reductions ranging from 6 to 44% .
   Reference: Rabie, T., & Curtis, V. (2006).

   4. **No significant decrease in ARI rates among adults with increased daily hand-washing frequency: Compared to 2–4 times/day, 5–9 times was** associated with an adjusted ARI rate ratio (RR) of 1.08 (95% confidence interval [CI] 0.87-1.33), 10–19 times with RR = 1.22 (CI 0.97-1.53), and ≥20 times with RR = 1.03 (CI 0.81-1.32).
   Reference: Merk et al., 2014

   5. Proposed benchmarks for the number of times hand washing should occur by each employee for each sector of food service during each phase of operation are seven times per hour for assisted living, nine times per hour for childcare, 29 times per hour for restaurants, and 11 times per hour for schools.
   Reference: Strohbehn et al.,

   6. From a hygiene viewpoint, paper towels are superior to electric air dryers for hand drying
   Reference: Huang C, Ma W, Stack S. (2012).

   7. **Significantly higher adherence to recommended handwashing between patients after a hand washing intervention** (85% vs 71% vs 31%, p < 0.01 and p < 0.05, respectively).

Reference: Dorsey et al., 1996

8. In a study among first and fourth graders, **a significant increase occurred in the proportion of handwashing frequency from preintervention to postintervention for each intervention group. Education combined with accessible convenient hand hygiene may result in a sustainable increase in the frequency of handwashing among elementary school children.**
Reference: Eve Early et al., 1998

C. Behaviour aims
Increase the percentage of the population practising frequent handwashing
Increase the percentage of the population practising proper handwashing
People must feel a need to do it in all the situations where it is required and must prioritise it at the time required. For certain situations, for example, entering the home, the behaviour needs to be self-trained so that it becomes habitual.

D. Barriers
Poor awareness about the benefits of handwashing
No facilities to wash hands regularly (water, sink, soap)

E. Facilitating factors
Availability of soap and washing facilities or effective hand sanitiser at all times when required. availability of moisturiser to protect hands from increased exposure to soap. Stronger norms could be important to support behaviour.

F. How to enforce the behaviour practically

Education and training delivered through mass media and grass root level workers to ensure understanding of when it is necessary and how it should be done, using what cleaning agents. Environmental restructuring to ensure that hand sanitisers or washing facilities are available for people entering settings such as shops, workplaces and educational facilities where they touch objects. Enabling is provided through social media to support the public. Modelling using celebrities.

2. Cover your mouth with your arm when coughing and sneezing

A. Key behaviour attribute
Cover the mouth with the arm when coughing and sneezing

B. Secondary behaviour attribute
Use a tissue when coughing and sneezing and safely dispose of the tissue into a closed bin

C. Evidence for the effectiveness of the behaviour
1. A qualitative high-speed video footage of volunteers **coughing into their sleeves demonstrates that although this method rarely completely blocks the cough airflow, it decelerates, splits and redirects the airflow, eventually reducing its propagation.**
   Reference: Tang et al., 2012

2. Students reported that coughing/sneezing into upper sleeves was simple and protected them and their classmates from germs. This school-based intervention was acceptable and feasible, and resulted in short-term reductions in coughing/sneezing into open air, but these habits of comparatively new behavior were not sustained as teachers ceased behavior change session delivery. Strategies to support longer-term adoption of habits should be considered.
   Refernce: Sultana et al., 2017

3. **The majority (57.7%) of the respondents sneeze or cough into air without a cover on the nose or mouth. Only 1.3% of the respondents sneezes or coughs into sleeve or crook of the elbow** which is the most acceptable form of hygiene etiquette. Education has no comparative advantage over illiteracy in the uptake of treatment of runny nose. It is therefore, recommended that the public must be educated on the best sneeze, cough and respiratory hygiene etiquettes irrespective of their educational attainment.
   Reference: Olajuyin et al., 2019

4. All the assessed cough etiquette maneuvers, as recommended, do not fully interrupt the chain of transmission of Infectious Respiratory Disease (IRD). This knowledge urges us all to critically review recommended Cough Etiquette (CE) and to search for new evidence-based procedures that effectively disrupt the transmission of respiratory pathogens. Zayas et al., 2013
   Reference: Zayas et al., 2013

D. Behaviour aims
Increase the percentage of the population practising covering the mouth with the arm when coughing and sneezing

People must feel a need to do it, and self-train the behaviour so that it becomes habitual.

Ability to hold a cough or sneeze until the tissue has been brought out. Knowledge of how to handle tissues and dispose of them safely and quickly. Could prove extremely difficult to contain droplets within the tissue without leakage and involvement of the hand.

E. Barriers

Poor awareness about the spread of COVID-19 with poor cough etiquette

There must be tissues readily available when needed. This will require preparatory actions, including remembering to carry tissues at all times. There also needs to be facilities for disposing of tissues safely. Stronger norms and organisational rules could be important to support behaviour.

F. Facilitating factors

Fear of spreading the disease to the family members

Peer pressure in the workplace

Peer pressure in public transport systems

G. How to enforce the behaviour practically

Education and training to improve capability, delivered through mass media, social media and online videos to show how to do this effectively and build habits, including ensuring that people always carry tissues with them. Modelling will also helpful to inculcate the behaviour in public.

3. Avoid touching your eyes, nose or mouth

A. Key behaviour attribute
Not to touch the eyes, nose or mouth frequently

B. Evidence for the effectiveness of the behaviour
1. Clinicians and staff touched their eyes, nose and mouth a **mean of 19 times in 2 hours (range, 0–105 times);** clinicians did so significantly less often than staff ($P <$ 0.001).
Reference: Elder et al.,2014

2. On average, each of the 26 observed medical **students touched their face 23 times per hour.** Of all face touches, **44% (1,024/2,346) involved contact with a <u>mucous membrane</u>, whereas 56% (1,322/2,346) of contacts involved non-mucosal areas. Of mucous membrane touches observed, 36% (372) involved the mouth, 31% (318) involved the nose, 27% (273) involved the eyes, and 6% (61) were a combination of these regions.** Increasing medical students' awareness of their habituated face-touching behav Elder et al., 2014ior and improving their understanding of self-inoculation as a route of transmission may help to improve hand hygiene compliance.
Reference: Kwok et al., 2015

3. **Left-hand face touching was superior to right- hand touching.**
Reference: Dimond and Harries, 1984

4. **British people did more frequent face touching than Japanese people and left hand usage was more prominent.**
Reference: Hatta and Dimond, 1984

C. Behaviour aims
Increase the percentage of the population practising not touching their eyes, nose or mouth frequently
Understanding the importance of this and developing methods for stopping oneself doing it (for example, focusing on keeping hands below shoulder level).
People must feel a need to do it, and self-train the behaviour so that it becomes habitual.

D. Barriers
Poor awareness about the spread of COVID-19 with frequent touching of the eyes, nose or mouth

E. Facilitating factors

Nothing special is required. It is important to develop norms around not to touch face in public.
Peer pressure in the workplace
Peer pressure in public transport systems

F. How to enforce the behaviour practically

Education and persuasion using mass media and social media to ensure that people understand the importance of not touching parts of their face if there is any chance they have touched a contaminated surface or object. Training and enablement using online platforms and in-person support (using community platforms) to help people extinguish the habit and build conflicting habits, and to cope with facial itches without touching with a hand or part of the hand that may be contaminated.

4. Always keep a one-meter distance

A. Key behaviour attribute

Keep a one-meter distance during shopping, banking or attending the day to day chores outside.

B. Evidence for the effectiveness of the behaviour

1. Person-to-person transmission of respiratory viruses occurs when virus-laden droplets (>5µm)expelled from infected persons during coughing and sneezing are propelled a short distance (1 m) and come into contact with another person's conjunctiva, mouth and nasal mucosa. The most effective way to reduce the spread of the virus is with good infection control practices and social distancing. Reference: Collignon, P. J., & Carnie, J. A., 2006

C. Behaviour aims

Increase the percentage of the population practising keeping a one-meter distance during their day to day chores in the outside world.

People must feel a need to do it at all times, even when it comes into conflict with other motives such as wanting to socialise or during panic buying.

D. Barriers

Poor awareness about the spread of COVID-19 with close contact

Spatial layouts of some places in areas such as shops, supermarkets (Arpico, Cargils, Keells, Laughs) and banks where contact is likely and it is difficult to change the layout.

Panic buying (where personal need overcomes the social need)

E. Facilitating factors

Stronger norms could be important to support the behaviour including social rules about contactless greeting.

Peer pressure of the other buyers.

F. How to enforce the behaviour practically

Education, persuasion and modelling delivered through mass media and social media, to motivate people to keep a specified distance where possible, and to encourage people to use social incentives to motivate other people they interact with to do the same. Rules and procedures that allow physical distance to be maintained (for example, the maximum number of people in a shop). Environmental restructuring and marking of one-meter distance in queues. Enforcement by the police and public health inspectors.

Supportive social coercion to discourage unnecessary proximity. Stronger norm-setting using social media. Local restrictions regarding access to areas such as shops and parts of shops.

5. Avoid crowds and social gatherings

A. **Key behaviour attribute**
Social distancing (staying at home), avoiding crowds and gatherings

B. **Evidence for the effectiveness of the behaviour**
1. 4.9% (n=49) had carried out any avoidance behaviour "over the past four days (inclusive of avoiding larger crowds or public transport) because of swine flu". The strongest predictor of behaviour change was ethnicity, with participants from ethnic minority groups being more likely to make recommended changes (odds ratio 3.2, 95% confidence interval 2.0 to 5.3) and carry out avoidance behaviours (4.1, 2.0 to 8.4).
Reference: Rubin et al., 2009

2. Limited evidence suggested that avoidance of mass gatherings may be beneficial, but there was considerable uncertainty on the size of the crowd that would constitute a gathering. One study reported that a ban on public gatherings, in combination with other interventions, for a median of 4 weeks, could reduce the weekly death rate. There was some evidence of a positive correlation between the duration of the ban and a reduced death rate.
Reference: Fong et al., 2020

3. Mass gatherings shortly before an epidemic peak could increase the peak height by about 10%, but at other times the impact would be small.
There is no universal consensus from modelling studies on the impact of restrictions on movement. One study showed that "moderate delays (1–1.5 weeks) could be achieved by strict internal mobility restrictions (>50% reduction in mean travel frequency) applied in the early stages of the pandemic for a period of 2-4 weeks." However, another modelling study showed that "weak travel restrictions (10% travel restrictions) might actually increase attack rates due to preventing travelers transmitting more infections within their local area".
Reference: rashid et al., 2015

C. **Behaviour aims**
Increase the percentage of the population practising social distancing.
People must feel a very strong need to stay at home and obey social distancing rules, and this must be stronger at all times than their want or need to socialise, earn money or pursue usual activities.

D. **Barriers**
Poor awareness about the spread of COVID-19 with close contact
Spatial layouts of some places in areas such as shops, supermarkets (Arpico, Cargils, Keells, Laughs) and banks where contact is likely and it is difficult to change the layout.
Panic buying (where personal need overcomes the social need)

E. Facilitating factors

Stronger norms could be important to support the behaviour including social rules about contactless greeting.

Peer pressure of the family members

F. How to enforce the behaviour practically

Education, persuasion and modelling delivered through mass media and social media, to motivate people to keep a specified distance where possible, and to encourage people to use social incentives to motivate other people they interact with to do the same. Rules and procedures that allow physical distance to be maintained (for example, the maximum number of people in a shop). Environmental restructuring and marking of one-meter distance in queues. Enforcement by the police and public health inspectors.

Supportive social coercion to discourage unnecessary proximity. Stronger norm-setting using social media. Local restrictions regarding access to areas such as shops and parts of shops.

6. Use a face mask when you are going out

A. Key behaviour attribute
Use a face mask during shopping, banking or attending the day to day chores outside.

B. Evidence for the effectiveness of the behaviour
1. A 2020 systematic review comparing standard surgical masks and respirator masks, which included a single small trial from 2009 of respirator masks, standard masks, and no masks among the general public during an influenza epidemic in Australia. That trial, **which was considered robust, showed a benefit of masks over no masks, but no benefit of respirator masks over standard ones, and also showed that masks were worn less than 50% of the time.**
2. With the exception of some evidence from SARS, there was no published data that directly support the use of masks by the public. Randomized controlled trials of face masks did not support a substantial effect on transmission of laboratory-confirmed influenza.
3. Randomized controlled trials of face masks did not support a substantial effect on transmission of laboratory-confirmed influenza.
4. A preprint of a systematic review published on 6 April 2020 the authors concluded that "The evidence is not sufficiently strong to support the widespread use of facemasks as a protective measure against covid-19" and **recommended further high quality randomized controlled trials.**
Reference: E. Toomey, 2020 (from 5 systematic reviews)

C. Behaviour aims
Increase the percentage of the population practising using a face mask during their day to day chores outside
People must feel a need to do it at all times

D. Barriers
Poor awareness about the spread of COVID-19
Availability of suitable masks or facilities for making them
Facilities for safe disposal or decontamination of masks

E. Facilitating factors
Stronger norms could be important to support the behaviour including social rules about wearing masks
Peer pressure from the community
Enforcement by the Police and other legal requirements

F. How to enforce the behaviour practically
Understanding what kinds of masks to use, when to use them, how to use them and how to safely dispose of them or disinfect them. Developing techniques for taking them off without causing contamination.

Education and persuasion to improve capability. Messaging delivered through mass media and social media to help people wear face masks correctly in appropriate settings and ensure that they use them and dispose of them or disinfect them effectively. Training using online videos or delivered in person where practicable. Role modelling by using celebrities.

7. Cleaning the surfaces regularly

A. **Key behaviour attribute**
   Cleaning the regularly used surfaces (door handles, doorknobs, mobile phone screens, tabletops, public transport utilities) frequently

B. **Evidence for the effectiveness of the behaviour**
   1. **37.8% of participants (n=377) reported performing any recommended behaviour change, inclusive of surface cleaning "over the past four days because of swine flu."** The strongest predictor of behaviour change was ethnicity, with participants from ethnic minority groups being more likely to make recommended changes (odds ratio 3.2, 95% confidence interval 2.0 to 5.3) and carry out avoidance behaviours (4.1, 2.0 to 8.4).
   Reference: Rubin et al., 2009

C. **Behaviour aims**
   Increase the percentage of population practising cleaning the surfaces that could be contaminated regularly
   People must feel a need to do it whenever required, even when it gets in the way of other activities
   Understand the concept of surface cleaning will minimize the risk of contamination

D. **Barriers**
   Poor awareness about the spread of COVID-19 via contaminated surfaces
   Poor knowledge of specific situations when this must be done
   Availability of suitable and effective disinfectants
   Enough time to be able to do it whenever required

E. **Facilitating factors**
   Stronger norms could be important to support the behaviour including social rules about the concept of surface cleaning
   Peer pressure from the workplaces
   Enforcement by the public health inspectors

F. **How to enforce the behaviour practically**
   Education and training through online platforms to promote effective routines for cleaning surfaces and objects, especially in public spaces. Environmental restructuring to ensure ready access to appropriate cleaning agents. Stronger norm-setting using social media.

8. Avoid close contact with those who are ill

A. Key behaviour attribute
Avoiding close contact with those who are ill from respiratory diseases

B. Evidence for the effectiveness of the behaviour
1. **Close contacts had the highest knowledge score (71.7%, p = 0.004) while cases had the highest practice scores (58.8%, p < 0.001).** There was a strong correlation between knowledge and practice scores (r = 0.27, p < 0.01) and knowledge and attitudes scores (r = 0.21, p < 0.01). The significant predictors of higher practice scores were higher knowledge scores (p < 0.001), Malay ethnicity (p < 0.001), exposure group (p < 0.05) and lower education level (p < 0.05). The significant predictor for higher knowledge score was being a contact (p = 0.007).

C. Behaviour aims
Increase the percentage of the population practising avoiding close contact with those who are ill from respiratory diseases
People must feel a need to do it whenever required, even when it gets in the way of other activities

D. Barriers
Poor awareness about the spread of COVID-19 from those who are ill
Limited access to space and physical domestic arrangement in households

E. Facilitating factors
Stronger norms could be important to support the behaviour
Peer pressure from community members

F. How to enforce the behaviour practically
People must feel a need to maintain isolation when they are ill in the face of practical and emotional barriers, develop new habits to sustain the behaviour and be motivated to find ways to overcome specific challenges. Education to ensure understanding of how and why to implement the behaviour. Ensure continued access to financial and material resources. Stronger norm-setting using social media.

9. Self-quarantine when you are ill

A. **Key behaviour attribute**
Stay at home and avoid travelling when you are ill

B. **Evidence for the effectiveness of the behaviour**
1. Case isolation may delay the peak of the epidemic, reduce the attack rate. Case isolation of 40% of cases could delay the epidemic by 83 days, compared with no intervention. However, overall there is an uncertainty about the duration of self-isolation (some recommend isolation until fever has abated, while others recommend waiting 5-7 days after the onset of illness)
Reference: Fong et al., 2020

2. From 10 modelling studies on Covid-19 and 15 on SARS and MERS, quarantine of exposed or **confirmed suspects averted 44% - 81% of incident cases and 31% - 63% of deaths, compared to no measures.** Very low certainty evidence on how earlier the qurantine measures should be implemented.
Reference: Nussbaumer-Streit et al, 2020 Cochrane Review

C. **Behaviour aims**
Increase the percentage of the population practising staying at home and avoiding travelling when they are ill from respiratory diseases
People must feel a need to do it whenever required, even when it gets in the way of other activities

D. **Barriers**
Poor awareness about the spread of COVID-19 when you are ill
Workplace attendance rules and restrictions
Those who are living alone
Daily wage earners

E. **Facilitating factors**
Stronger norms could be important to support the behaviour
Peer pressure from community members
Peer pressure from workplaces

F. **How to enforce the behaviour practically**
Education to ensure understanding of how and why to implement and sustain isolation and how to achieve it in challenging domestic settings. Ensure continued access to financial and material resources. Enablement provided by key workers/health workers to provide tailored support to people in maintaining daily functioning. Stronger norm-setting using social media.