

Safety during home care of household members with fever, cough, or mild symptoms of coronavirus

What do you need to know about COVID-19 and respiratory diseases?

The virus causing COVID-19 and other respiratory infections can travel from one person to another through droplets from the mouth and nose. There are easy steps that we can all take to protect ourselves and others: washing hands frequently with soap, covering your cough or sneeze with your bent elbow, wearing a cloth face mask to prevent droplets from leaving your own mouth, and not allowing visitors. These recommendations will not keep you 100% safe but will help reduce the risk that you, your family members, and your neighbors develop COVID-19.

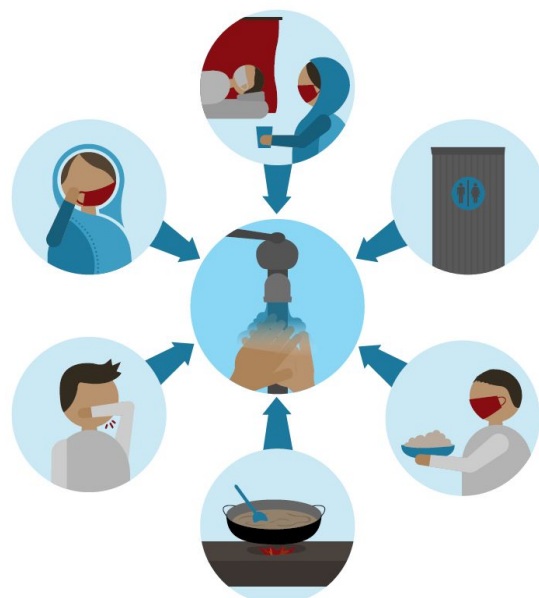


What should you do if someone in your household has fever, cough, or COVID-19 symptoms?

1. Select only one person to take care of the person who is sick. This caregiver should be <50 years old and not have diseases like diabetes, high blood pressure, heart disease, or asthma.
2. The caregiver should wear a cloth face mask when caring for the person who is sick. The caregiver should also wear a cloth mask when around other people (for example, using the kitchen, tubewell, or latrine, or visiting the market). Even if the caregiver is not sick, the virus may be in their nose or mouth and can be spread to other people. Do not touch the outside of the mask. Wash your hands after you remove the mask and clean the mask with soap and water daily and dry it under the sun to kill any viruses on it.



3. The caregiver should always wash hands with soap:
 - a. After touching the sick person or anything the sick person has touched (i.e. utensils, clothes, phone used by the sick person)
 - b. After using the latrine,
 - c. Before preparing food, eating or feeding others.



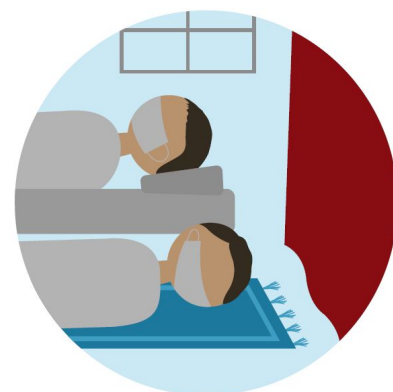
What should the person who has fever, cough, or COVID-19 symptoms do?

4. The person who is sick should wear a cloth face mask as much as possible, except if he/she is alone in his/her own room. If the room is shared with other people, the person who is sick should always wear a mask. A mask helps prevent the virus from coming out of the nose and mouth of someone who is sick. clean the mask with soap and water daily and dry it under the sun to kill any viruses on it.



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5. If possible, the person who is sick should stay in their own room as much as possible and only the caregiver should go into this room when necessary. If there isn't a separate room in the house, hang a cloth/plastic sheet as close to the ceiling and down to the floor to separate the patient from other household members. If there is a window, place the patient near the window and keep the windows open for proper ventilation.
6. The person who is sick should sleep on his/her own bed or on a mat on the floor. If there is no room for a mat on the floor and a bed must be shared, then sleep with the feet of the sick person at the head of the other people in the bed.



When should someone sick be taken to the hospital?

7. Take the person who is sick to a hospital if they develop shortness of breath or difficulty in breathing, extreme lethargy/tiredness or persistent high fever.

How long should someone who is sick stay home and stay separate from others?

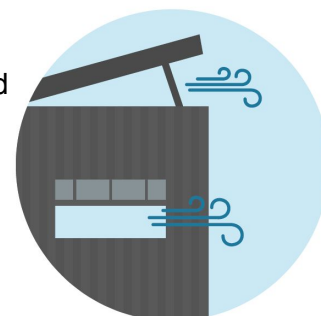
8. If the person who was sick has not had any symptoms for 72 hours, they can go outside the home if wearing a mask.

What else can you do to protect yourself from COVID-19 and other respiratory diseases?

9. Set up a place for washing hands near the latrine, kitchen, and entrance to your home. Place [soapy water](#) at the handwashing station so all family members can frequently wash their hands with soap.



10. Increase ventilation in the home by keeping windows open during the day and night. If you are concerned about privacy or thieves, you can prop up a panel in your roof to make a window.



REFERENCES for COVID-19 Home Care Recommendations

All recommendations: Recommendations should be low-cost and minimize inconvenience and personal discomfort

Rimi NA, Sultana R, Ishtiaq-Ahmed K, Rahman MZ, Hasin M, Islam MS, Azziz-Baumgartner E, Nahar N, Gurley ES, Luby SP. Understanding the failure of behavior change intervention to reduce risk behaviors for avian influenza transmission among backyard poultry raisers in rural Bangladesh. *BMC Public Health*, 2016 Aug; 16(1): 858.

- Rural participants did not follow recommended behaviors to reduce the spread of avian flu because they perceived avian influenza was not present and a low risk, the practices were too costly, inconvenient, or caused personal discomfort, or they feared being rebuked or ridiculed, or doubted the necessity of the intervention. Recommendations should be low-cost approaches and minimize personal discomfort.

Preamble: Explanation of virus transmission and preventative behaviors everyone can take

Parveen S, Islam MS, Begum M, Alam MU, Sazzad HMS, Sultana R, Rahman M, Gurley ES, Hossain MJ, Luby SP. It's not what you say, it's how you say it: Communicating Nipah virus prevention messages during and outbreak in Bangladesh. *BMC Public Health*, 2016 Aug; 16(1): 726.

- "During outbreaks, one-way behaviour change communication without meaningful causal explanations is unlikely to be effective. Based on the cultural context, interactive communication strategies in lay language with supporting evidence can make biomedical prevention messages credible in affected communities, even among those who initially invoke supernatural causal explanations."

Nizame FA, Nasreen, Unicomb L, Southern D, Gurley ES, Arman S, Kadir MA, Winch PJ, Azziz-Baumgartner E, Luby SP. Understanding respiratory infection in Bangladesh during 2009: Community perceptions, social norms and current practice. *BMC Public Health*, 2011; 11(901). doi:10.1186/1471-2458-11-901

- "Many people were aware of measures that could prevent respiratory infection, but did not practice them. Interventions that leverage community understanding of person-to-person transmission and that encourage the practice of their identified 'good behaviors' related to respiratory hygiene may reduce respiratory disease transmission."

Recommendation 1: Select only one healthy person to be the caregiver

Li, Wei, Bo Zhang, Jianhua Lu, Shihua Liu, Zhiqiang Chang, Peng Cao, Xinhua Liu, et al. "The Characteristics of Household Transmission of COVID-19." *Clinical Infectious Diseases*, April 17, 2020, ciaa450. <https://doi.org/10.1093/cid/ciaa450>.

- 27.8% of spouses who lived in the same household as infected individuals became infected, compared to 17.3% of other adult household members. This indicates that a caregiver, who spend more time with the infected person than other household members, may be more likely to be infected, but this may reduce the risk of infection for other household members.

Guan, Wei-jie, Wen-hua Liang, Yi Zhao, Heng-rui Liang, Zi-sheng Chen, Yi-min Li, Xiao-qing Liu, et al. "Comorbidity and Its Impact on 1590 Patients with Covid-19 in China: A Nationwide Analysis." *European Respiratory Journal*, March 26, 2020, 2000547. <https://doi.org/10.1183/13993003.00547-2020>.

- COVID-19 patients with any co-morbidity were at significantly higher risk of death. Patients with two co-morbidities were a greater risk than patients with one co-morbidity. Mean age of patients with no co-morbidities was 44.8 years old.

Zhou, Fei, Ting Yu, Ronghui Du, Guohui Fan, Ying Liu, Zhibo Liu, Jie Xiang, et al. "Clinical Course and Risk Factors for Mortality of Adult Inpatients with COVID-19 in Wuhan, China: A Retrospective Cohort Study." *The Lancet* 395, no. 10229 (March 2020): 1054–62. [https://doi.org/10.1016/S0140-6736\(20\)30566-3](https://doi.org/10.1016/S0140-6736(20)30566-3).

- COVID-19 patients with co-morbidities were at significantly higher risk of death. Mean age of survivors was 52.0 years old while mean age of non-survivors was 69.0 years old.

Recommendation 2: The caregiver should wear a mask

* We recommend cloth masks to preserve N95, surgical, and medical masks for health care workers. Additionally, cloth masks are more affordable for low-income populations.

- Due to their relatively close contact with infected individuals, caregivers may be infected with COVID-19 and demonstrate symptoms or be asymptomatic.

Arons, Melissa M., Kelly M. Hatfield, Sujan C. Reddy, Anne Kimball, Allison James, Jessica R. Jacobs, Joanne Taylor, et al. "Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility." *New England Journal of Medicine*, April 24, 2020, NEJMoa2008457. <https://doi.org/10.1056/NEJMoa2008457>.

- SARS-CoV-2 can be transmitted before symptoms develop, if they develop at all. Including asymptomatic individuals in infection control is crucial for reducing the spread of COVID-19.

Greenhalgh, Trisha, Manuel B Schmid, Thomas Cypionka, Dirk Bassler, and Laurence Gruer. "Face Masks for the Public during the Covid-19 Crisis." *BMJ*, April 9, 2020, m1435. <https://doi.org/10.1136/bmj.m1435>.

- There is more evidence to support the marginal benefit of face masks than there is evidence to support claims that they could pose a risk, so according to the precautionary principle, use of face masks by the general public should be recommended.

Nasreen S, Azziz-Baumgartner E, Gurley ES, Winch P, Unicomb L, Sharker MAY, Southern D, Luby SP. Prevalent high risk respiratory hygiene practices in Bangladesh. *Tropical Medicine and International Health*. 2010 Jun; 15(6): 762-771.

- "There is an urgent need to develop culturally appropriate, cost-effective and scalable interventions to improve respiratory hygiene practices and to assess their effectiveness in reducing respiratory pathogen transmission."

Recommendation 3: The caregiver should frequently wash hands with soap

Najnin, Nusrat, Karin Leder, Andrew Forbes, Leanne Unicomb, Peter J. Winch, Pavani K. Ram, Fosiul A. Nizame, et al. "Impact of a Large-Scale Handwashing Intervention on Reported Respiratory Illness: Findings from a Cluster-Randomized Controlled Trial." *The American Journal of Tropical Medicine and Hygiene* 100, no. 3 (March 6, 2019): 742–49. <https://doi.org/10.4269/ajtmh.18-0644>.

- In a randomized-controlled trial involving more than 60,000 low-income households, there was low uptake of the handwashing intervention. However, respiratory illness was lower among people who had soap and water present at a handwashing station compared to those who did not.

Luby, Stephen P, Mubina Agboatwalla, Daniel R Feikin, John Painter, Ward Billhimer, Arshad Altaf, and Robert M Hoekstra. "Effect of Handwashing on Child Health: A Randomised Controlled Trial" 366 (2005): 9.

- In households that received soap and handwashing promotion, children <5 years old had a 50% lower incidence of pneumonia than control households.

McGuinness, Sarah L., S. Fiona Barker, Joanne O'Toole, Allen C. Cheng, Andrew B. Forbes, Martha Sinclair, and Karin Leder. "Effect of Hygiene Interventions on Acute Respiratory Infections in Childcare, School and Domestic Settings in Low- and Middle-Income Countries: A Systematic Review." *Tropical Medicine & International Health* 23, no. 8 (August 2018): 816–33. <https://doi.org/10.1111/tmi.13080>.

- Handwashing promotion in urban settings reduced the prevalence of acute respiratory infections and pneumonia; no effect was found in rural settings.

Recommendation 4: The sick person should wear a mask

* We recommend cloth masks to preserve N95, surgical, and medical masks for health care workers

Rengasamy, Samy, Benjamin Eimer, and Ronald E. Shaffer. "Simple Respiratory Protection—Evaluation of the Filtration Performance of Cloth Masks and Common Fabric Materials Against 20–1000 Nm Size Particles." *The Annals of Occupational Hygiene* 54, no. 7 (June 28, 2010): 789–98. <https://doi.org/10.1093/annhyg/meq044>.

- Cloth face masks provide marginal protection against particles the size of viruses and droplets.

Leung, Nancy H L, Daniel K W Chu, Eunice Y C Shiu, Kwok-Hung Chan, James J McDevitt, P Hau, Hui-Ling Yen, et al. "Respiratory Virus Shedding in Exhaled Breath and Efficacy of Face Masks." *Nature Medicine* xx, no. xx (April 3, 2020): 19.

- Surgical face masks reduced detection of coronavirus RNA in respiratory droplets and aerosols that escaped the mask.

Nasreen S, Azziz-Baumgartner E, Gurley ES, Winch P, Unicomb L, Sharker MAY, Southern D, Luby SP. Prevalent high risk respiratory hygiene practices in Bangladesh. *Tropical Medicine and International Health*. 2010 Jun; 15(6): 762-771.

- "There is an urgent need to develop culturally appropriate, cost-effective and scalable interventions to improve respiratory hygiene practices and to assess their effectiveness in reducing respiratory pathogen transmission."

Recommendation 5: The sick person should stay in their own room

Li, Wei, Bo Zhang, Jianhua Lu, Shihua Liu, Zhiqiang Chang, Peng Cao, Xinhua Liu, et al. "The Characteristics of Household Transmission of COVID-19." *Clinical Infectious Diseases*, April 17, 2020, ciaa450. <https://doi.org/10.1093/cid/ciaa450>.

- In households where index patients quarantined him/herself, the secondary attack rate was 0%. In households where the index patient did not quarantine him/herself, the secondary attack rate was 16.9%.

Tang, J.W., Y. Li, I. Eames, P.K.S. Chan, and G.L. Ridgway. "Factors Involved in the Aerosol Transmission of Infection and Control of Ventilation in Healthcare Premises." *Journal of Hospital Infection* 64, no. 2 (October 2006): 100–114. <https://doi.org/10.1016/j.jhin.2006.05.022>.

- Infectious particles in droplets and aerosols can be confined to within a room [reducing the risk of infection of people in other rooms], or ventilated to the outdoors.

Recommendation 6: The sick person should sleep separately from other household members

Gurley ES, Montgomery JM, Hossain MJ, Bell M, Azad AK, Islam MR, Molla MAR, Carroll DS, Ksiazek TG, Rota PA, Lowe L, Comer JA, Rollin P, Czub M, Grolla A, Feldmann H, Luby SP, Woodward JL, Breiman RF. Person-to-person transmission of Nipah virus in a Bangladeshi community. *Emerging Infectious Diseases*. 2007 Jul; 13(7):1031-37.

- Person-to-person transmission of Nipah virus (which is spread through oral and nasal secretions) was facilitated by people traveling in and out of affected areas and, in at least one case, sharing a bed with an infected individual.

Recommendation 7: Take the person who is sick to the hospital if they develop difficulty breathing

Zhou, Fei, Ting Yu, Ronghui Du, Guohui Fan, Ying Liu, Zhibo Liu, Jie Xiang, et al. "Clinical Course and Risk Factors for Mortality of Adult Inpatients with COVID-19 in Wuhan, China: A Retrospective Cohort Study." *The Lancet* 395, no. 10229 (March 2020): 1054–62. [https://doi.org/10.1016/S0140-6736\(20\)30566-3](https://doi.org/10.1016/S0140-6736(20)30566-3).

- Rapid breathing was significantly associated with death due to COVID-19. Difficulty breathing is a serious symptom that requires attention at a health care facility.

Recommendation 8: The patient can go outside the home while wearing a mask after they have not had any symptoms for 72 hours

Byrne, Andrew W., David McEvoy, Aine Collins, Kevin Hunt, Miriam Casey, Ann Barber, Francis Butler, et al. "Inferred Duration of Infectious Period of SARS-CoV-2: Rapid Scoping Review and Analysis of Available Evidence for Asymptomatic and Symptomatic COVID-19 Cases," April 30, 2020. <https://doi.org/10.1101/2020.04.25.20079889>.

- Duration from symptom onset to death or recovery is approximately 13 days. SARS-CoV-2 viral loads drop below the limit to detection approximately 13 days after onset. [A person who was sick with COVID-19 may not be at risk of spreading the virus by the time he/she has recovered from symptoms. An additional 72 hour duration of quarantine is a conservative measure that may provide added protection in some cases.]

Recommendation 9: Set up handwashing stations with soapy water near the latrine and kitchen

Amin, Nuhu, Amy J. Pickering, Pavani K. Ram, Leanne Unicomb, Nusrat Najnin, Nusrat Homaira, Sania Ashraf, Jaynal Abedin, M. Sirajul Islam, and Stephen P. Luby. "Microbiological Evaluation of the Efficacy of Soapy Water to Clean Hands: A Randomized, Non-Inferiority Field Trial." *The American Journal of Tropical Medicine and Hygiene* 91, no. 2 (August 6, 2014): 415–23. <https://doi.org/10.4269/ajtmh.13-0475>.

- Soapy water was as effective as bar soap for handwashing and approximately one-tenth of the cost.

Nizame, Fosiul A., Leanne Unicomb, Tina Sanghvi, Sumitro Roy, Md. Nuruzzaman, Probir K. Ghosh, Peter J. Winch, and Stephen P. Luby. "Handwashing before Food Preparation and Child Feeding: A Missed Opportunity for Hygiene Promotion." *The American Journal of Tropical Medicine and Hygiene* 89, no. 6 (December 4, 2013): 1179–85. <https://doi.org/10.4269/ajtmh.13-0434>.

- Unavailability of a soap and water near the kitchen was a major barrier for handwashing before food preparation, eating, and feeding.

Recommendation 10: Increase ventilation as much as possible

Haque F, Hossain MJ, Khan AKMD, Hasan SKM, Chowdhury S, Sarkar S, Gurley ES, Sturm-Ramirez K, Homaira N, Rahman M, Rahman M, Luby SP. Influenza B Virus Outbreak at a Boys'

Residential School in Northern Bangladesh, 2011. *Influenza and Other Respiratory Viruses*, 2016 Oct; DOI: 10.1111/irv.12430.

- Transmission of Influenza B was linked to dormitory crowding, poor ventilation, staying inside (due to Ramadan and rainfall) .

Escombe, A. Roderick, Clarissa C Oeser, Robert H Gilman, Marcos Navincopa, Eduardo Ticona, William Pan, Carlos Martínez, et al. "Natural Ventilation for the Prevention of Airborne Contagion." Edited by Peter Wilson. *PLoS Medicine* 4, no. 2 (February 27, 2007): e68.
<https://doi.org/10.1371/journal.pmed.0040068>.

- Opening windows and doors provides is more effective at increasing air exchange than mechanical ventilation.