

Methods:

First, I searched the National Library of Medicine's database at www.PubMed.gov, using search terms "mask efficacy" "facemask efficacy", and "medical mask efficacy". I excluded articles about masks for pollution or industrial uses. I didn't include many articles from more than 20 years ago. I also excluded a bunch of articles I felt were irrelevant for whatever reason. I looked at the reference lists at the end of every included article, as well as the "cited by" feature on PubMed that lets you look for papers that used the one you're reading in their reference list.

In total, I read or skimmed 81 articles and any published comments on those articles. If you would like access to the full text of any of them, I have posted them [here](#).

1. Abdin, E. Z., et al. (2005). Effect of face mask use on hajj related acute respiratory infection among hajjis from Riyadh - a health promotion intervention study. *Saudi epidemiology bulletin*. 12(4). 27-28.

No differences noted, but compliance was imperfect among all groups.

2. Aiello, A. E., et al. (2010). Mask use, hand hygiene, and seasonal influenza-like illness among young adults: a randomized intervention trial. *J infect dis*. 201(4). 491-498.

a. mask + hand hygiene > mask only (not statistically significant) > nothing

3. Aiello, A. E., et al. (2012). Facemasks, hand hygiene, and influenza among young adults: a randomized intervention trial. *PLoS one*. 7(1). E29744.

a. equivocal

4. Ang, B., et al. (2010). Surgical masks for protection of healthcare personnel against pandemic novel swine-origin influenza A (H1N1)-2009: results from an observational study. *Clinical infectious diseases*. 50. 1011-1014.

HCWs wore masks from march to august. 1st case identified 26 may, local transmission 18 june, first HCW case 22 june. HCWs were strictly wearing masks from entry to clinical setting. N95s in high risk areas, no changed between patients but discarded at the end of the day. In July, stopped N95 except for aerosolizing procedures. This describes an excellent and comprehensive protocol for hospitals in a pandemic. No HCW cases had taken care of confirmed patients, suggesting community acquisition. There were less HCW cases during the surgical only phase rather than the N95 phase.

5. Association for Professionals in Infection Control and Epidemiology. (Rebmann, T). (2009). APIC Position paper: extending the use and/or reusing respiratory protection in healthcare settings during disasters. Washington DC.

Extending/reusing is preferred over prioritizing allocation. Extended use is preferred over reuse. DO NOT TOUCH. Cover with procedure mask or face shield. Discard when soiled or integrity compromised. Procedure masks “can provide benefit against droplet exposure”

6. Balazy, A., et al. (2006). Do N95 respirators provide 95% protection level against airborne viruses, and how adequate are surgical masks? *Am j infect control.* 34(2). 51-57.

- a. abstract only: N95 > surgical mask

7. Barasheed, S., et al. (2016). Uptake and effectiveness of facemask against respiratory infections at mass gatherings: a systematic review. *International journal of infectious diseases.* 47. 105-111.

[reviewed only section 3.3 Effectiveness of facemask]
pooled results showed a significant protective factor of mask wearing at Hajj. 20% risk reduction.

8. Barasheed, O., et al. (2014). Pilot randomized controlled trial to test effectiveness of facemasks in preventing influenza-like illness transmission among Australian hajj pilgrims in 2011. *Infectious disorders - drug targets.* 14. 110-116.

contacts of cases were less likely to be symptomatic. 31% v 53%

9. Bessesen, M. T., et al. (2013). N95 respirators or surgical masks to protect healthcare workers against respiratory infections: are we there yet? *American journal of respiratory and critical care medicine.* 187. 904-905.

This is a review of other papers listed here.

10. bin-Reza, F., et al. (2011). The use of masks and respirators to prevent transmission of influenza: a systematic review of the scientific evidence. *Influenza and other respiratory viruses.* 6(4). 257-267.

This is a review of other papers on this bibliography. Findings support mask use for prevention of wearer infection. "mask use is best undertaken as part of a package of personal protection especially hand hygiene.

11. Bruinen dr Bruin, Y., et al. (2020). Initial impacts of global risk mitigation measures taken during the combatting of the COVID-19 pandemic. *Safety.* doi:
<https://doi.org/10.1016/j.ssci.2020.104773>



Fascinating paper, masks discussed p11. This paper came out before recommendations for the public to wear masks were implemented. They come out on the probably better than nothing side.

12. Canini, L., et al. (2010). Surgical mask to prevent influenza transmission in households: a cluster randomized trial. *PLoS one*. 5(11). e13998.

- a. equivocal

13. Cassanova, L., et al. (2010). Coronavirus survival on healthcare personal protective equipment. *Infection control and hospital epidemiology*. 31(5). 560-561.

Virus detectable on N95 up to 24h. Scrubs t least 4h.

14. Chughtai, A. A., et al. (2013). Use of cloth masks in the practice of infection control - evidence and policy gaps. *Int j infect control* 9(3). doi: 0.3396/IJIC.v9i3.020.13

- a. This is a review of other papers on this bibliography

15. Chughtai, A. A., et al. (2015). Examining the policies and guidelines around the use of masks and respirators by healthcare workers in china, Pakistan, and Vietnam. *J infect prev* 16(2). 68-74.

- a. This paper reviews policy, not efficacy.

16. Chung, J., et al. (2014). Debate on MERS-CoV respiratory precautions: surgical mask or N95 respirators? *Singapore med j*. 55(6). 294-297.

This is a report of a debate that occurred in real life. WHO rec N95 for aerosolizing and surgical for everything else, CDC and UK rec N95 for all. In support of using N95s, "especially when ... readily available" "Healthcare workers need to have the confidence that they are protected, and even if their requests are irrational, these concerns should be considered." No consensus was reached, but the evidence presented points to droplet precautions very likely being effective except for aerosolizing procedures.

17. Cowling, B. J., et al. (2009). Facemasks and hand hygiene to prevent influenza transmission in households. *Ann intern med*. 151(7). 437-446.

- a. hand hygiene+mask > mask alone > nothing (not statistically significant)

18. Cowling, B. J., et al. (2008). Preliminary findings of a randomized trial of non-pharmaceutical interventions to prevent influenza transmission in households. *PLoS one* 3(5). e2101.

- a. This is the pilot for Cowling 2009.

19. Davies, A., et al. (2013). Testing the efficacy of homemade masks: would they protect in an influenza pandemic? *Disaster medicine and health preparedness*. 7. 413-418.

This is a trial of source control comparing surgical masks, homemade masks, and nothing. Transmission reduced by 79% homemade t-shirt mask and 85% surgical. Healthy subjects used. Best filtration from vacuum bag and tea towel, but air resistance too high. Best material t-shirt and pillowcase.

20. Dharmadhikari, A. S., et al. (2015). Surgical face masks worn by patients with multidrug-resistant tuberculosis. *American journal of respiratory and critical care medicine*. 185. 1104-1109.

[Tuberculosis bacteria is 2-4um, roughly 20x size of coronavirus]
Guinea pig groups swapped out every other day exposed to air from a TB unit where patients wore surgical masks every other day. 56% reduction in infected guinea pigs.

21. Fisher, E. M., et al. (2014). Considerations for recommending extended use and limited reuse of filtering facepiece respirators in health care settings. *Journal of occupational and environmental hygiene*. 11. D115-D128.

Extended use means using the same mask for different patients throughout the shift. Reuse means doffing and donning multiple times. "limiting FFR reuse to no more than 5 donnings or reuses would provide an adequate safety margin."

TABLE II. Qualitative Assessment of Increased Risks of FFR Extended Use and Limited Reuse Compared with Single Use

Issue	FFR Extended Use	Limited FFR Reuse
FFR Protection	<ul style="list-style-type: none"> • Negligible risk of decreased protection 	<ul style="list-style-type: none"> • Minimal risk of decreased protection, but can be mitigated through limiting the number of reuses.
Human Factors	<ul style="list-style-type: none"> • Increased discomfort, but no additional health risk to a medically cleared respirator user 	<ul style="list-style-type: none"> • No additional health risk to a medically cleared respirator user
Self-inoculation	<ul style="list-style-type: none"> • Minimal risk for typical patient interactions, but can be mitigated through training and education • Risks can increase during/after AGP but can be reduced by limiting contamination 	<ul style="list-style-type: none"> • Moderate risk for typical patient interactions but can be mitigated through training and education and limiting the number of reuses • Risks can increase during/after AGP but can be reduced by limiting contamination
Secondary Exposures	<ul style="list-style-type: none"> • Negligible for typical patient interactions • Minimal following AGP but can be reduced by limiting contamination 	<ul style="list-style-type: none"> • Negligible for typical patient interactions • Minimal following AGP but can be reduced by limiting contamination

22. Foo, C. C., Goon, A. T., Leow, Y. H., & Goh, C. L. (2006). Adverse skin reactions to personal protective equipment against severe acute respiratory syndrome--a descriptive study in Singapore. *Contact dermatitis*, 55(5), 291–294. <https://doi.org/10.1111/j.1600-0536.2006.00953.x>

HCWs report: acne 59.6%, itching 51.4%, rash 35.8%.



23. Goh, D., Mun, M. W., Lee, W., Teoh, O. H., & Rajgor, D. D. (2019). A randomised clinical trial to evaluate the safety, fit, comfort of a novel N95 mask in children. *Scientific reports*, 9(1), 18952. <https://doi.org/10.1038/s41598-019-55451-w>

New children's mask performed well on children 7-14yo.

24. Gralton, J., et al. (2010). Protecting healthcare workers from pandemic influenza: N95 or surgical masks? *Critical care medicine*. 38(2). 657-667.

This is a review of other papers listed here, and only cites other guidelines in its conclusions.

25. Gupta, S. (2010). Surgical mask vs. N95 respirator masks for protecting health care professionals. *Indian j pediatr* 78. 242-243.

This is a 1/2 page review of other papers cited here.

26. He, X., et al. (2013). Effect of particle size on the performance of an N95 filtering facepiece respirator and a surgical mask at various breathing conditions. *Aerosol sci technol*. 47(11). 1180-1187.

- a. N95 > procedure mask

27. Health and safety laboratory. (2015). *The effect of wearer stubble on the protection given by filtering facepieces class 3 (FFP3) and half masks*. <https://www.hse.gov.uk/research/rrpdf/rr1052.pdf>

Hair growth of 24 hours impedes seal. Recommends to shave no more than 8h before starting work.

28. Institute of Medicine. (2006). *Reusability of facemasks during an influenza pandemic: facing the flu*. <https://www.nap.edu/catalog/11637/reusability-of-facemasks-during-an-influenza-pandemic-facing-the-flu>

Per committee, to reuse disposable N95: Cover with medical mask or faceshield, store safely, wash hands before don/doff. Manufacturers and FDA say no way. Per manufacturers, medical masks can be reused until they become: damaged, moist, difficult to breathe through, or visibly soiled. FDA says no way. Cloth masks probably don't work as well and "...may give users a false sense of protection that will encourage risk taking..."

29. Jacobs, J. L., et al. (2009). Use of surgical face masks to reduce the incidence of the common cold among health care workers in japan: a randomized controlled trial. *American journal of infection control*. 37(5). 417-419.



No benefit shown, but n=32 and 1 URI in each group. headache reported in mask group.

30. Janssen, L., et al. (2013). The use of respirators to reduce inhalation of airborne biological agents. *J occup environ hyg.* 10(8). D97-D103.

This is a review of other papers listed here. N95>surgical mask, but compliance remains an issue.

31. Jefferson, T., et al. (2011). Physical interventions to interrupt or reduce the spread of respiratory viruses: systematic review. *Cochrane database syst rev.* 7. doi:10.1002/14651858.CD006207.pub4

This is a review of other papers listed here. Masks are beneficial.

32. Johnson, D. F., Druce, J. D., Birch, C., & Grayson, M. L. (2009). A quantitative assessment of the efficacy of surgical and N95 masks to filter influenza virus in patients with acute influenza infection. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*, 49(2), 275–277. <https://doi.org/10.1086/600041>

N=11 N95 effective source control for lab confirmed flu patients.

33. Lai, A. C., et al. (2012). Effectiveness of facemasks to reduce exposure hazards for airborne infections among general populations. *J r soc interface.* 9(70). 938-948.

a. procedure mask 45% effective > nothing

34. Larson, E. L., et al. (2010). Impact of non-pharmaceutical interventions on URIs and influenza in crowded, urban households. *Public health reports.* 125. 178-191.

Masks do not protect you, but they do reduce transmission.

35. Lee, S., et al. (2008). Respiratory performance offered by N95 respirators and surgical masks: human subject evaluation with NaCl aerosol representing bacterial and viral particle size range. *Ann occup hyg.* 52(3). 177-185.

a. N95 > procedure mask by 8-12x

36. Lee, S., et al. (2016). Particle size-selective assessment of protection of European standard FFP respirators and surgical masks against particles-tested with human subjects. *Journal of healthcare engineering.* 2016. doi: 10.1155/2016/8572493.

Not terribly useful. Masks are not quite as good as they claim apparently.



37. Li, Y., et al. (2006). In vivo protective performance of N95 respirator and surgical facemask. *Am J Ind Med.* 49(12). 1056-1065.
- a. nano masks > N95 > procedure mask. Procedure masks more breathable, less moisture retained.
38. Li, Y., et al. (2008). Transmission of communicable respiratory infections and facemasks. *J multidiscip healthc.* 1. 17-27.
- a. This is a study of a novel facemask design, which performed better than traditional procedure mask.
39. Loeb, M., Dafoe, N., Mahony, J., John, M., Sarabia, A., Glavin, V., Webby, R., Smieja, M., Earn, D. J., Chong, S., Webb, A., & Walter, S. D. (2009). Surgical mask vs N95 respirator for preventing influenza among health care workers: a randomized trial. *JAMA*, 302(17), 1865–1871. <https://doi.org/10.1001/jama.2009.1466>
- N95 22.9% infection rate, surgical mask 23.6% infection rate. Equivocal.
40. Macintyre, C. R., et al. (2009). Face mask use and control of respiratory virus transmission in households. *Emerg infect dis.* 15(2). 233-241.
- a. 60-80% reduction compared to nothing in ILI for adults living with a child with confirmed illness.
41. Macintyre, C. R., et al. (2011). A cluster randomized clinical trial comparing fit-tested and non-fit-tested N95 respirators to medical masks to prevent respiratory virus infection in healthcare workers. *Influenza other respir viruses.* 5(3). 170-179.
- a. N95 > procedure mask (50%) > nothing
42. MacIntyre, C. R., Wang, Q., Seale, H., Yang, P., Shi, W., Gao, Z., Rahman, B., Zhang, Y., Wang, X., Newall, A. T., Heywood, A., & Dwyer, D. E. (2013). A randomized clinical trial of three options for N95 respirators and medical masks in health workers. *American journal of respiratory and critical care medicine*, 187(9), 960–966. <https://doi.org/10.1164/rccm.201207-1164OC>
- N95>targeted N95 (aerosolizing procedures)>medical masks only constant use of N95 was significant after adjustment for confounders.
43. MacIntyre, C. R., Wang, Q., Rahman, B., Seale, H., Ridda, I., Gao, Z., Yang, P., Shi, W., Pang, X., Zhang, Y., Moa, A., & Dwyer, D. E. (2014). Efficacy of face masks and respirators in preventing upper respiratory tract bacterial colonization and co-infection in hospital healthcare workers. *Preventive medicine*, 62, 1–7. <https://doi.org/10.1016/j.ypmed.2014.01.015>

This is a study of bacterial infection. N95 2.8%, medical mask 5.3%, control 7.5%

44. Macintyre, C. R., et al. (2015). A cluster randomized trial of cloth masks compared with medical masks in healthcare workers. *BMJ open*. 5(4). e006577.
- a. Particle penetration of cloth masks =97% medical mask = 44%. 3.2% v 5.5% infection rates.
45. Macintyre, C. R. & Chughtai, A. A. (2015). Facemasks for the prevention of infection in healthcare and community settings. *BMJ*. 350. doi: 10.1136/bmj.h694.
- a. Review citing Jacobs 2009, Larson, 2010, Loeb 2009, Macintyre 2009, Macintyre 2011, Macintyre 2013, Macintyre 2014, Simmerman 2011, Suess 2012. Results: community-mask>nothing HCP- N95>procedure mask.
46. Macintyre, C. R., et al. (2016). Cluster randomized controlled trial to examine medical mask use as source control for people with respiratory illness. *BMJ open*. 2016(6). doi:10.1136/bmjopen-2016-012330.
- Household members of sick people who wore masks got less infections, but not statistically significant.
47. Macintyre, C. R., et al. (2017). The efficacy of medical masks and respirators against respiratory infection in healthcare workers. *Influenza other respir viruses*. 11(6). 511-517.
- a. continuous N95 > procedure mask/nothing > targeted N95
48. Mansour, M. M., & Smaldone, G. C. (2013). Respiratory source control versus receiver protection: impact of facemask fit. *Journal of aerosol medicine and pulmonary drug delivery*, 26(3), 131–137. <https://doi.org/10.1089/jamp.2012.0998>
- "A Vaseline-sealed N95 respirator on the receiver offered less protection when compared with any mask on the source."
49. Milton, D. K., Fabian, M. P., Cowling, B. J., Grantham, M. L., & McDevitt, J. J. (2013). Influenza virus aerosols in human exhaled breath: particle size, culturability, and effect of surgical masks. *PLoS pathogens*, 9(3), e1003205. <https://doi.org/10.1371/journal.ppat.1003205>
- "Overall, masks produced a 3.4 fold reduction in viral aerosol shedding."
50. Mukerji, S, et al. (2017). Cost-effectiveness analysis of N95 respirators and medical masks to protect healthcare workers in China from respiratory infections. *BMC infect dis*. 17(1). 464.
- a. N95 > procedure mask



51. Neupane, B. B., et al. (2019). Optical microscopic study of surface morphology and filtering efficiency of face masks. *Peer j.* 7. e7142.

- a. new cloth mask efficacy 63-84%. washing x4 decreases efficiency by ~20% Procedure mask efficacy 94%

52. Ng, K., Poon, B. H., Kiat Puar, T. H., Shan Quah, J. L., Loh, W. J., Wong, Y. J., Tan, T. Y., & Raghuram, J. (2020). COVID-19 and the Risk to Health Care Workers: A Case Report. *Annals of internal medicine*, L20-0175. Advance online publication. <https://doi.org/10.7326/L20-0175>

Case report of 41 healthcare workers exposed to a lab confirmed COVID-19 patient during aerosolizing procedures for at least 10minutes at a distance of 2 meters or less. 85% wore surgical mask, 15% wore N95. None were infected, suggesting some protection from surgical masks.

53. NIOSH-CDC. 2020. Recommended guidance for extended use and limited reuse of N95 filtering facepiece respirators in healthcare settings: Washington DC.

Extended use preferred because of less risk of touching. Discard when contaminated, torn, or hard to breathe through. Cover with procedure mask or faceshield. Store for reuse in a breathable container such as a paper bag. Risks involved are related to contamination.

54. Oberg, T. & Brosseau, L. M. (2008). Surgical mask filter and fit performance. *Am j infect control.* 36(4). 276-282.

"None of these surgical masks exhibited adequate filter performance and facial fit characteristics to be considered respiratory protection devices."

55. Offeddu, V., Yung, C. F., Low, M., & Tam, C. C. (2017). Effectiveness of Masks and Respirators Against Respiratory Infections in Healthcare Workers: A Systematic Review and Meta-Analysis. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*, 65(11), 1934–1942. <https://doi.org/10.1093/cid/cix681>

This is a review of other papers listed here. N95>mask>nothing

56. Ong, S., Tan, Y. K., Sutjipto, S., Chia, P. Y., Young, B. E., Gum, M., Lau, S. K., Chan, M., Vasoo, S., Mendis, S., Toh, B. K., Leong, J., Barkham, T., Ang, B., Tan, B. H., Leo, Y. S., Marimuthu, K., Wong, M., & Ng, O. T. (2020). Absence of contamination of personal protective equipment (PPE) by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). *Infection control and hospital epidemiology*, 1–3. Advance online publication. <https://doi.org/10.1017/ice.2020.91>



No aerosolizing procedures performed. Patients were in isolation rooms with 12 air changes per hour. 30 HCWs were swabbed: goggles, N95, and shoes. Only 1 shoe came back positive.

57. Patel, R. B., Skaria, S. D., Mansour, M. M., & Smaldone, G. C. (2016). Respiratory source control using a surgical mask: An in vitro study. *Journal of occupational and environmental hygiene*, 13(7), 569–576. <https://doi.org/10.1080/15459624.2015.1043050>

Source control with surgical mask or N95 superior to any receiver mask except Vaseline sealed N95.

58. Radonovich, L. J., et al. (2019). N95 respirators vs medical masks for preventing influenza among healthcare personnel. *JAMA*. 322(9). 824-833.

No statistically significant difference, although there were 10% less illness events among the N95 group. Both groups had about 90% adherence.

59. Rashid, H., Booy, R., Heron, L., Memish, Z. A., Nguyen-Van-Tam, J., Barasheed, O., & Haworth, E. (2012). Unmasking masks in Makkah: preventing influenza at Hajj. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*, 54(1), 151–153. <https://doi.org/10.1093/cid/cir826>

This is a lit review and description of pilot study.

60. Rengasamy, S., et al. (2010). Simple respiratory protection - evaluation of the filtration performance of cloth masks and common fabric materials against 20-100nm size particles. *Ann occup hyg*. 54(7). 789-798.

a. cloth masks 10-60% effective. Hanes shirt best repurposed fabric.

61. Roberge R. J. (2008). Effect of surgical masks worn concurrently over N95 filtering facepiece respirators: extended service life versus increased user burden. *Journal of public health management and practice : JPHMP*, 14(2), E19–E26. <https://doi.org/10.1097/01.PHH.0000311904.41691.fd>

Work of breathing, hypercapnia and hypoxemia, heat and humidity (decreased with exp valve), Infection risk ("excessive use of PPE when dealing with infectious respiratory pathogens, rather than being additively protective, actually increases infectious risk because of the possibility of autoinoculation and potential dissemination to individuals nearby that is related to doffing of PPE."), communication, and regulatory issues.



62. Roberge, R. J., et al. (2016). Face shields for infection control: a review. *J occup environ hyg.* 14(4). 235-242.

Does not discuss masks, only face shields.

63. Seto, W. H., Tsang, D., Yung, R. W., Ching, T. Y., Ng, T. K., Ho, M., Ho, L. M., Peiris, J. S., & Advisors of Expert SARS group of Hospital Authority (2003). Effectiveness of precautions against droplets and contact in prevention of nosocomial transmission of severe acute respiratory syndrome (SARS). *Lancet (London, England)*, 361(9368), 1519–1520.
[https://doi.org/10.1016/s0140-6736\(03\)13168-6](https://doi.org/10.1016/s0140-6736(03)13168-6)

HCWs recommended to use gown, gloves, mask, and hand washing. All infected HCWs omitted at least one, masks only significant.

64. Shakya, K. M., et al. (2017). Evaluating the efficacy of cloth facemasks in reducing particulate matter exposure. *J expo sci environ epidemiol* 27(3). 352-357.

abstract only: Surgical masks > cloth masks by 10-20%

65. Siu J. Y. (2016). Qualitative study on the shifting sociocultural meanings of the facemask in Hong Kong since the severe acute respiratory syndrome (SARS) outbreak: implications for infection control in the post-SARS era. *International journal for equity in health*, 15, 73.
<https://doi.org/10.1186/s12939-016-0358-0>

Chinese people stopped wearing masks after SARS, not generalizable to US populations.

66. Simmerman, J. M., Suntarattiwong, P., Levy, J., Jarman, R. G., Kaewchana, S., Gibbons, R. V., Cowling, B. J., Sanasuttipun, W., Maloney, S. A., Uyeki, T. M., Kamimoto, L., & Chotipitayasonondh, T. (2011). Findings from a household randomized controlled trial of hand washing and face masks to reduce influenza transmission in Bangkok, Thailand. *Influenza and other respiratory viruses*, 5(4), 256–267. <https://doi.org/10.1111/j.1750-2659.2011.00205.x>

Transmission of flu from kids sleeping in parents rooms were not decreased by daytime mask wearing. duh.

67. Smith, J. D., et al. (2016). Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis. *CMAJ*. 188(8). 567-574.

This is a meta-analysis of other papers cited here. N95 probably > surgical mask.

68. Stockman 2011

This is a book report of Loeb 2009.

69. Suess, T., et al. (2012). The role of facemasks and hand hygiene in the prevention of influenza transmission in households: results from a cluster randomized trial; Berlin, Germany, 2009-2011. *BMC infectious diseases*. 12(26). doi: 10.1186/1471-2334-12-26

Masks+handwashing> masks> nothing in households with flu

70. Tan, K. T., et al. (2004). N95 acne. *International journal of dermatology*. 45. 522-523.

Acne could be caused by tropical environment inside mask or pressure against face.

71. Tong, P. S., Kale, A. S., Ng, K., Loke, A. P., Choolani, M. A., Lim, C. L., Chan, Y. H., Chong, Y. S., Tambyah, P. A., & Yong, E. L. (2015). Respiratory consequences of N95-type Mask usage in pregnant healthcare workers-a controlled clinical study. *Antimicrobial resistance and infection control*, 4, 48. <https://doi.org/10.1186/s13756-015-0086-z>

“Breathing through N95 mask materials have been shown to impede gaseous exchange and impose an additional workload on the metabolic system of pregnant healthcare workers”

72. Van der sande, M., et al. (2008). Professional and home-made face masks reduce exposure to respiratory infections among the general population. *PLoS one*. 3(7). e2618. doi:10.1371/journal.pone.0002618

FFP2> surgical> homemade> nothing

73. Viscusi, D. J., Bergman, M., Sinkule, E., & Shaffer, R. E. (2009). Evaluation of the filtration performance of 21 N95 filtering face piece respirators after prolonged storage. *American journal of infection control*, 37(5), 381–386. <https://doi.org/10.1016/j.ajic.2008.09.021>

Masks stored for up to 10 years work just fine.

74. Wang, M., et al. (2015). A cluster-randomized controlled trial to test the efficacy of facemasks in preventing respiratory viral infection among Hajj pilgrims. *Journal of epidemiology and global health*. 5. 181-189.

This is a study protocol. This study has not yet published results.

75. Wang, Q. & Yu, C. (2020). The role of masks and respirator protection against SARS-CoV-2. *Infection control and hospital epidemiology*. doi: 10.1017/ice.2020.83. [Epub ahead of print]

LTE: This paper is not useful.

76. Wang, X. (2020). Association between 2019-nCoV transmission and N95 respirator use. *Journal of hospital infection*. doi: 10.1016/j.jhin.2020.02.021. [Epub ahead of print]

N95 0%, no mask 5% infection rate among HCP. Same result at 2 different hospitals in/near Wuhan.

77. Weber, D. J., et al. (2010). Lessons learned: protection of healthcare workers from infectious disease risk. *Crit care med* 38(suppl.) s306-s314.

This paper is not useful.

78. Wen, Z., Yu, L., Yang, W., Hu, L., Li, N., Wang, J., Li, J., Lu, J., Dong, X., Yin, Z., & Zhang, K. (2013). Assessment the protection performance of different level personal respiratory protection masks against viral aerosol. *Aerobiologia*, 29(3), 365–372. <https://doi.org/10.1007/s10453-012-9286-7>

N95>surgical mask

79. Wong, S. C-Y., et al. (2020). Risk of nosocomial transmission of coronavirus disease 2019: an experience in a general ward setting in Hong Kong. *Journal of hospital infection*. DOI: <https://doi.org/10.1016/j.jhin.2020.03.036>.

Patient in open ward x35h, 0 infections among contacts.

80. Yang, P., et al. (2011). Mask-wearing and respiratory infection in healthcare workers in Beijing china. *Braz j infect dis* 15(2). 102-108.

Medical mask > cotton mask > nothing

81. Zhou, P., et al. (2020). Protecting Chinese healthcare workers while combating the 2019 novel coronavirus. *Infection control & hospital epidemiology*. DOI: 10.1017/ice.2020.60



Academy of Perinatal
Harm Reduction

“the positive rate of the 2019-nCoV nucleic acid test kit remains relatively low even at present, and many patients were diagnosed after more than four tests”