

Supplementary Material*

Chou R, Dana T, Jungbauer R, et al. Update alert 5: masks for prevention of respiratory virus infections, including SARS-CoV-2, in health care and community settings. *Ann Intern Med*. 9 March 2021. [Epub ahead of print]. doi:10.7326/L21-0116

Supplement Table 1. Characteristics of New Observational Studies of Mask Use—Update Alert 5

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*This supplementary material was provided by the authors to give readers further details on their article. The material was reviewed but not copyedited.

Supplement Table 1. Characteristics of New Observational Studies of Mask Use—Update Alert 5

Author, year Country Study design	Inclusion criteria	Sample size	Age	Female (%)	Definition of infection
<i>Community setting</i>					
van den Broek-Altenburg et al 2021 (2) United States Cross-sectional	Community members from Chittenden (VT) county who had an encounter with their primary care provider in the past 3 years	454	Mean 51 years	60%	SARS-CoV-2 seropositivity
<i>Healthcare setting</i>					
Venugopal et al 2021 (3) United States Cross-sectional	Healthcare workers at a Level 1 trauma center	500	Mean not reported <ul style="list-style-type: none"> • 20-39 years: 48% • 40-59 years: 41% • ≥60 years: 11% 	69%	SARS-CoV-2 seropositivity

Abbreviations: SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2

Supplement Table 2. Quality Assessment of New Observational Studies of Mask Use—Update Alert 5

Author, year	Did the study attempt to enroll all (or a random sample of) patients meeting inclusion criteria (inception cohort)?	Did the study use accurate methods for ascertaining exposures and potential confounders?	Were outcome assessors and/or data analysts blinded to exposure being studied?	Did the article report attrition or missing data?	Is there high attrition or missing data?	Were outcomes pre-specified and defined, and ascertained using accurate methods?	Other sources of potential bias	Quality rating
Community setting								
van den Broek-Altenburg et al 2021 (2)	Yes	No (potential recall bias)	No	No	Unclear	Yes	Potential selection bias; survey participation rate 14% of initial sample; SARS-CoV-2 testing rate 26% of survey participants	Fair
Healthcare setting								
Venugopal et al 2021 (3)	Yes	No (potential recall bias)	Unclear	No	Unclear	Yes	No control for confounders	Fair

Supplement Table 3. Mask Use and Risk for SARS-CoV-2 Infection

Author, Year (Reference)	Mask Use Versus Nonuse	Comparison of Mask Types	Consistency of Mask Use	Multiple Mask Layers Versus Single Layer
Community setting				
Bundgaard et al 2020 (4)	Surgical mask vs. no mask: OR 0.82 (95% CI 0.52 to 1.23)	--	--	--
Doung-Ngern et al, 2020 (5)	Surgical (medical) mask vs. no mask: adjusted OR 0.25 (95% CI 0.12 to 0.53) Cloth (nonmedical) mask vs. no mask: adjusted OR 0.78 (95% CI 0.32 to 1.90) Any mask vs. no mask: adjusted OR 0.46 (95% CI 0.13 to 1.64)	Surgical (medical) mask vs. cloth (nonmedical) mask: OR 1.06 (95% CI 0.63 to 1.79)* Mask type and risk of SARS-CoV-2 infection: p=0.54	Always wearing a mask vs. not wearing a mask: adjusted OR 0.23 (95% CI 0.09 to 0.60) Sometimes wearing a mask vs. not wearing a mask: adjusted OR 0.87 (95% CI 0.41 to 1.84)	--
van den Broek-Altenburg et al 2021 (2) Added for Update Alert #5	Mask use outside of work (yes vs. no): OR 2.35 (0.67-8.25)	--	--	--
Wang Y et al, 2002 (6) China Cohort	Unadjusted OR (95% CI) for household with secondary infection of family member Mask use all the time by: • All family members (including index case) vs. no family members before index case illness onset: 0.20 (0.07 to 0.60) • Some family members vs. no family members: 0.72 (0.30-1.73) • At least one family member (including index case) vs. no family members prior to index case illness onset: 0.22 (0.07-0.69)	-	Unadjusted OR (95% CI) for household with secondary infection of family member Primary case or family members wore mask (N95, surgical, or cloth) after index case illness onset: • All the time vs. never: 0.30 (0.11-0.82) • Sometimes vs. never: 1.15 (0.11-0.82) Mask use after index case symptom onset not included in multivariate model	-

Author, Year (Reference)	Mask Use Versus Nonuse	Comparison of Mask Types	Consistency of Mask Use	Multiple Mask Layers Versus Single Layer
	Adjusted OR (95% CI) for household with secondary infection of family member <ul style="list-style-type: none"> • Mask use all the time by at least one family member or index case vs. no family members prior to index case illness onset: 0.21 (0.06-0.79) 			
Healthcare setting				
Akinbami et al 2020 (7)	--	--	Always use N95 vs. less than always: adjusted OR 0.83 (0.72-0.95) Always use surgical mask vs. less than always: adjusted OR 0.86 (0.75-0.98)	--
Chatterjee et al, 2020 (8)	Any mask vs. no mask: OR 0.35 (0.22-0.57)*	--	--	--
Heinzerling et al, 2020 (9)	--	--	Always facemask (non-N95) during aerosol generating procedures: OR 0.77 (0.03-20.02) Always facemask (non-N95) during non-aerosol generating procedures: OR 1.29 (0.05-30.38)	--
Khalil et al, 2020 (10)	Medical/surgical mask (yes vs. no): 1.40 (0.30-6.42)	--	--	--
Piapan et al, 2020 (11)	Mask (FFP2-3 or surgical) vs. no mask: adjusted OR 1.6 (0.9-2.9)	FFP2 mask vs. surgical mask: adjusted OR 7.1 (3.6-13.9)	--	--

Author, Year (Reference)	Mask Use Versus Nonuse	Comparison of Mask Types	Consistency of Mask Use	Multiple Mask Layers Versus Single Layer
Sims et al 2020 (12)	Any mask vs. no mask: OR 0.58 (0.50-0.66) N95 or surgical mask vs. no mask: OR 0.57 (0.50-0.66) N95 vs. no mask: OR 0.54 (0.47-0.62) Surgical mask vs. no mask: OR 0.71 (0.58-0.86)	N95 vs. surgical mask: OR 0.76 (0.63-0.92)	--	--
Venugopal et al 2021 (3) Added for Update Alert #5	N95 only (yes vs. no): OR 0.87 (0.50-1.54)* Surgical mask only (yes vs. no): OR 1.70 (1.08-2.69)* N95 and surgical mask (yes vs. no): OR 0.64 (0.41-1.00)*	N95 only vs. surgical mask only: OR 0.60 (0.31-1.15)	--	--
Wang X. et al, 2020 (13)	In department with mask use (no vs. yes): adjusted OR 464.82 (97.73- ∞)	--	--	--

*Variable not included in a multivariate model

Supplement Table 4. Masks for Prevention of Respiratory Virus Infections Evidence Map—Update Alert 5

Comparison (intervention A vs. intervention B)	SARS-CoV-2 infection	SARS-CoV-1 or MERS-CoV infection †	Influenza, influenzalike illness, and other viral respiratory illness (excluding pandemic coronaviruses) ‡
Community setting			
Mask (type not specified) vs. no mask in households with an index case and other community settings <ul style="list-style-type: none"> • SARS-CoV-2*: 1 RCT (4) and 3 observational studies (2, 5, 6) • SARS-CoV-1/MERS-CoV: 3 observational studies (14-16) 	◆	◆	-
N95[§] vs. surgical mask in household contacts <ul style="list-style-type: none"> • SARS-CoV-2: no studies • SARS-CoV-1/MERS-CoV: no studies • Influenza, influenzalike illness or other viral respiratory illness: 1 RCT (17) 	-	-	◆
N95[§] vs. no mask in household contacts <ul style="list-style-type: none"> • SARS-CoV-2: no studies • SARS-CoV-1/MERS-CoV: no studies • Influenza, influenzalike illness or other viral respiratory illness: 1 RCT (17) 	-	-	◆
Surgical mask vs. no mask in households with an index case and other community settings <ul style="list-style-type: none"> • SARS-CoV-2: 1 RCT (4) and 1 observational study (5) • SARS-CoV-1/MERS-CoV: no studies • Influenza, influenzalike illness or other viral respiratory illness: 12 RCTs (17-27) 	◆	-	●
Cloth mask vs. no mask in community contacts <ul style="list-style-type: none"> • SARS-CoV-2: 1 observational study (5) • SARS-CoV-1/MERS-CoV: no studies • Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	-	-
Healthcare setting – moderate or higher risk (inpatient)			
Any mask vs. no mask <ul style="list-style-type: none"> • SARS-CoV-2: 2 observational studies (8, 12) • SARS-CoV-1/MERS-CoV: 12 observational studies (28-39) • Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	●	-

Comparison (intervention A vs. intervention B)	SARS-CoV-2 infection	SARS-CoV-1 or MERS-CoV infection †	Influenza, influenzalike illness, and other viral respiratory illness (excluding pandemic coronaviruses) ‡
N95 vs. no mask <ul style="list-style-type: none"> SARS-CoV-2*: 3 observational studies (3, 12, 13) SARS-CoV-1/MERS-CoV: 4 observational studies (28, 34-36) Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	◆	-
Surgical mask vs. no mask <ul style="list-style-type: none"> SARS-CoV-2*: k=3 observational studies (3, 10, 12) SARS-CoV-1/MERS-CoV: k=6 observational studies (28, 29, 31, 34, 35, 38) Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	■	-
N95 or surgical mask vs. no mask <ul style="list-style-type: none"> SARS-CoV-2* k=1 observational study (12) SARS-CoV-1/MERS/CoV: k=1 observational study (39) Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	■	-
N95 and surgical mask vs. no mask <ul style="list-style-type: none"> SARS-CoV-2*: k=1 observational study (3) SARS-CoV-1/MERS/CoV: no studies Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	-	-
Mask (type not specified) vs. no mask <ul style="list-style-type: none"> SARS-CoV-2: no studies SARS-CoV-1/MERS-CoV: k=5 observational studies (30, 32, 35, 37, 38) Influenza, influenzalike illness or other viral respiratory illness: no studies 	-	◆	-
Cloth mask vs. no mask <ul style="list-style-type: none"> SARS-CoV-2: no studies SARS-CoV-1/MERS-CoV: k=3 observational studies (28, 33, 38) Influenza, influenzalike illness or other viral respiratory illness: no studies 	-	■	-




Comparison (intervention A vs. intervention B)	SARS-CoV-2 infection	SARS-CoV-1 or MERS-CoV infection †	Influenza, influenzalike illness, and other viral respiratory illness (excluding pandemic coronaviruses) ‡
Consistent/always mask use vs. inconsistent mask use <ul style="list-style-type: none"> SARS-CoV-2: k=1 observational study (7) SARS-CoV-1/MERS-CoV: k=4 observational studies (29, 32, 40, 41) Influenza, influenzalike illness or other viral respiratory illness: no studies 	■	◆	-
N95 vs. surgical mask <ul style="list-style-type: none"> SARS-CoV-2*: k=3 observational studies (3, 11, 12) SARS-CoV-1/MERS-CoV: k=5 observational studies (28, 29, 34, 39, 42) Influenza, influenzalike illness or other viral respiratory illness: k=3 RCTs (43-45) 	■	◆	●
N95 or surgical mask vs. cloth mask <ul style="list-style-type: none"> SARS-CoV-2: no studies SARS-CoV-1/MERS-CoV: k=3 observational studies (28, 30, 38) Influenza, influenzalike illness or other viral respiratory illness: no studies 	-	■	-
Surgical mask vs. cloth mask <ul style="list-style-type: none"> SARS-CoV-2: no studies SARS-CoV-1/MERS-CoV: no studies Influenza, influenzalike illness or other viral respiratory illness: k=1 RCT (46) 	-	-	◆
Healthcare setting – lower risk (outpatient)			
N95 vs. surgical mask <ul style="list-style-type: none"> SARS-CoV-2: no studies SARS-CoV-1/MERS-CoV: no studies Influenza, influenzalike illness or other viral respiratory illness: k=1 RCT (47) 	-	-	●

* New evidence added for Update Alert #5; † Only observational evidence was included for these infections; ‡ Only RCT evidence was included for these infections§ N95 or equivalent (e.g. P2 mask)

Strength of evidence

- Moderate
- ◆ Low
- Insufficient
- No evidence

Direction of effect

-  Favors intervention A
-  Effects similar or no difference
-  No or too little evidence to determine

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