USZ Universitäts Spital Zürich

COVID-19 Quo Vadis 2021? Diagnostik, Prävention und Therapie von COVID-19 in der hausärztlichen Praxis

Hugo Sax und Aline Wolfensberger

26. Symposium „Infektionskrankheiten in der Praxis“ - 30.11.2019

Ein Patient mit Husten kommt in Ihre Praxis – was tu

Frage von 2019

Ruhig Blut! Patient darf ins Wartezimmer, dann schaue ich ihn an und entscheide über Schutzmassnahmen abhängig von der Anamnese.

In der Wintersaison erhält der Patient eine chirurgische Maske, muss die Hände desinfizieren und darf ins Wartezimmer.

Während des ganzen Jahres erhält der Patient eine chirurgische Maske, muss die Hände desinfizieren und darf ins Wartezimmer.

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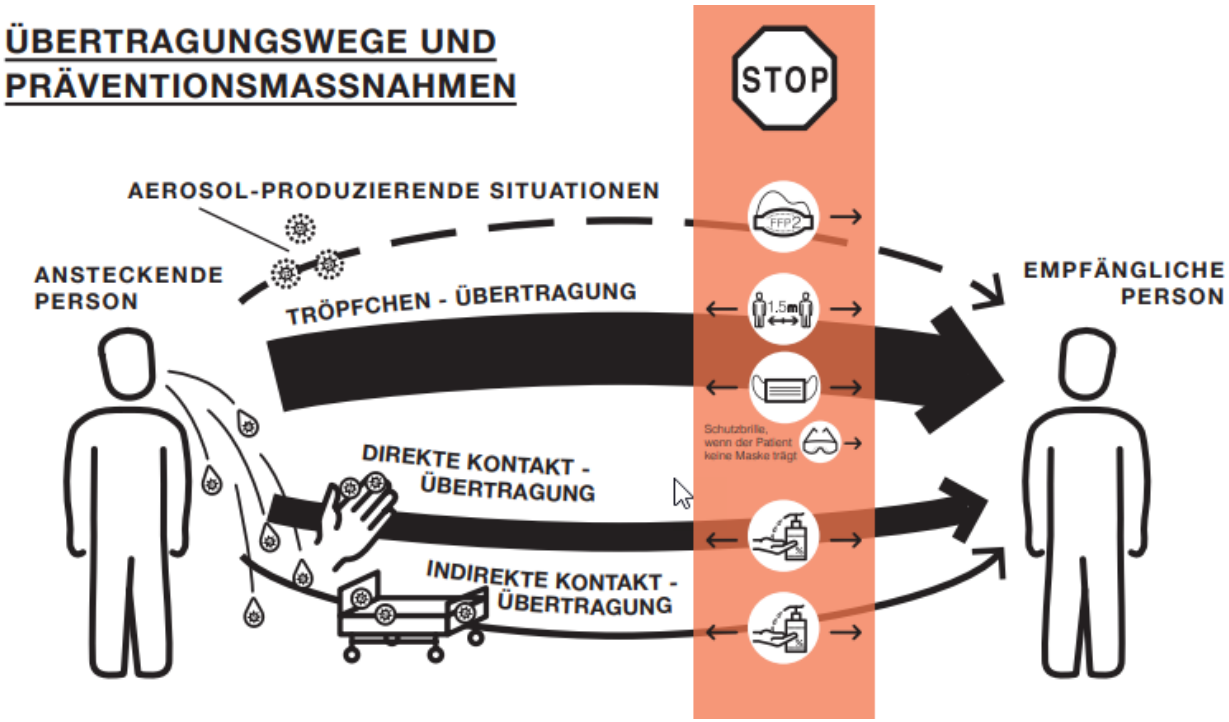
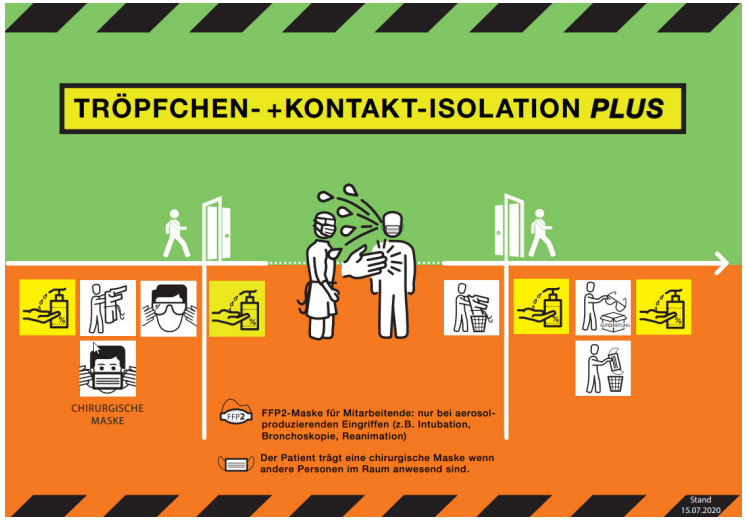
Übertragungswege



Unser Blog: www.spitalhygiene.net

PPE (Personal protective equipment) – Personalschutz!



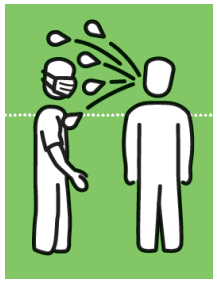
Chirurgische Maske

FFP2 Maske
Bei Aerosolproduktion

Schutzbrille

Einwegschürze

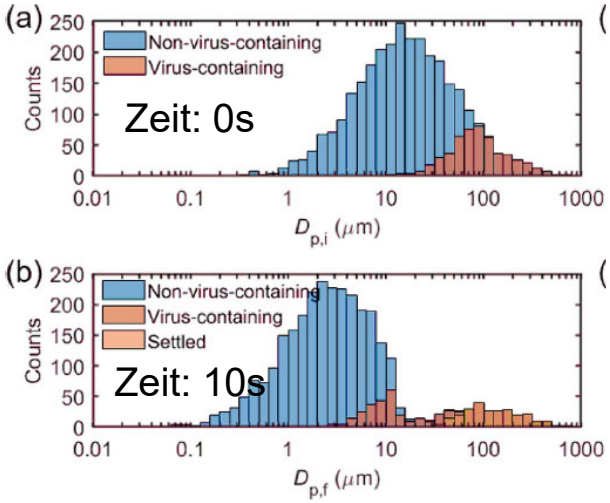
Handschuhe
Nur bei Kontakt mit Körperflüssigkeiten



«Soll mein Patient eine Maske tragen?»

(Virenhaltige) Partikel in der Luft nach Hustenstoss / Sprechen

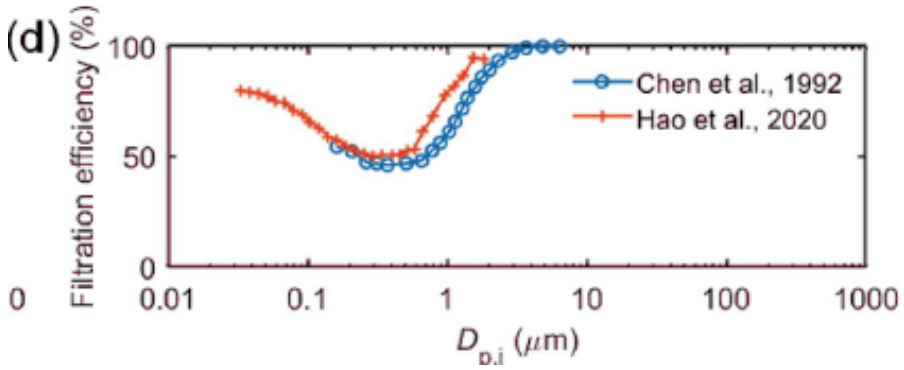
Husten, Viruslast 7 Millionen



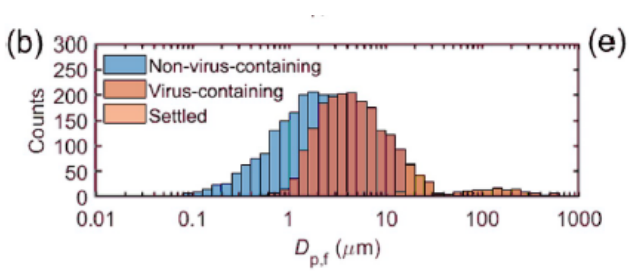
Hustenstoss = 3000 Partikel
«Grenze» zwischen Tröpfchen und Aerosol = 5µm

Wang et al., Modeling the load of SARS-CoV-2 virus in human expelled particles during coughing and speaking, Plos One, 2020

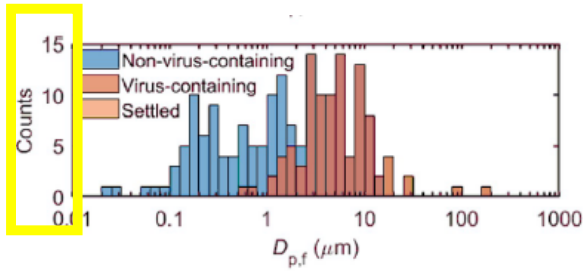
(Virenhaltige) Partikel in der Luft nach Sprechen



Filtereffizienz von chir. Masken ist abhängig von Partikelgrösse



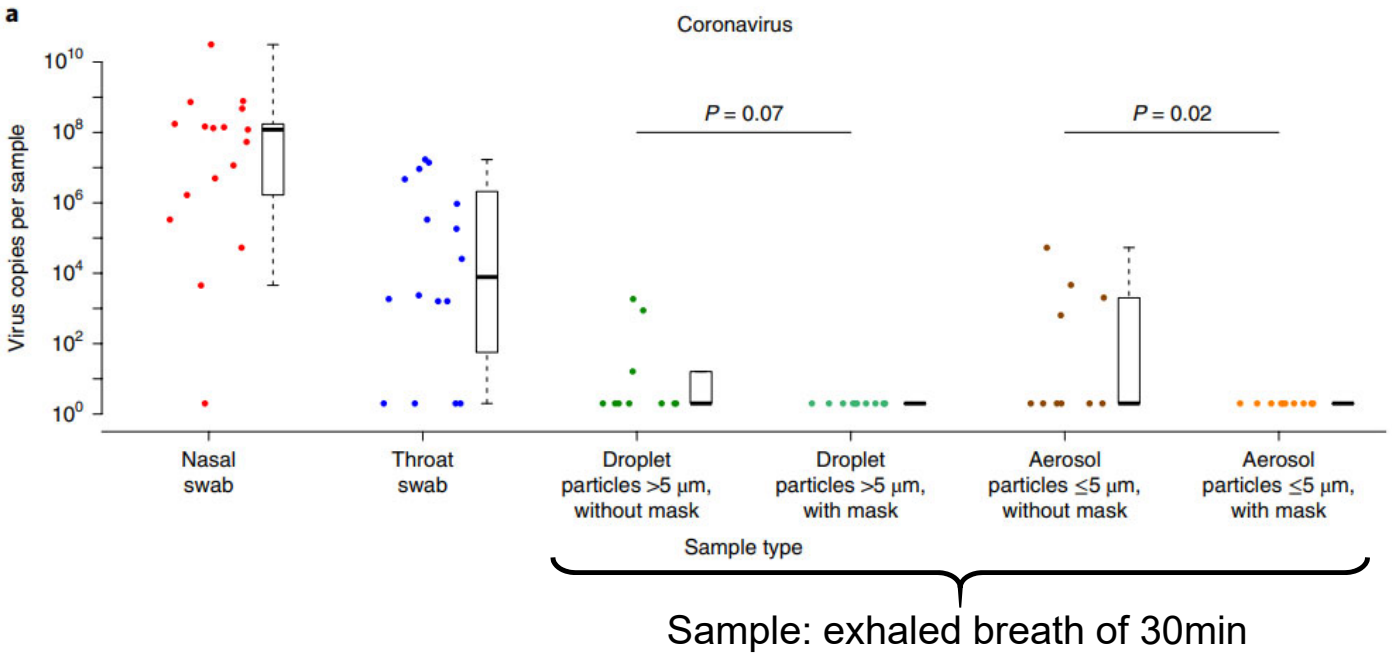
1 Minute Sprechen ohne Maske



1 Minute Sprechen mit chir. Maske, Annahme: 5% Leakage

Wang et al., Modeling the load of SARS-CoV-2 virus in human expelled particles during coughing and speaking, Plos One, 2020

Chirurgische Maske als «Source control»



Sample: exhaled breath of 30min

Leung et al., Respiratory virus shedding in exhaled breath and efficacy of face masks, Nature Medicine, 2020

Filterleistung und Leakage chirurgische und FFP2 Maske

Prüfung	Typ I	Typ I R	Typ II	Typ II R
Bakterielle Filterleistung	≥95 %	≥95 %	≥98 %	≥98 %
Druckdifferenz Pa	< 29,4	< 49,0	< 29,4	< 49,0
Druck des Spritzwiderstandes mm Hg	entfällt	≥120	entfällt	≥120
Widerstandsfähig gegen Flüssigkeitsspritzer		ja		ja

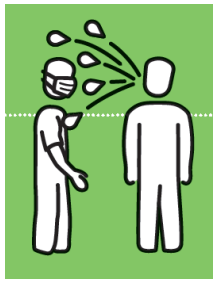
«Filterleistung >3µm»

Typ II chir. Maske:
- keine Anforderungen bzgl. «inward Leakage»
- keine Anforderungen Filterperformance bzgl. Partikel <0.1 µm
- Geschätzter Schutz gegenüber aerosolisierten Influenzaviren: 6-fache Reduktion

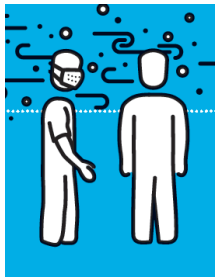
FFP2-Maske:
- max. 8% «inward Leakage»
- Filterperformance für Partikel <0.3 µm: min. 94%
- Geschätzter Schutz gegenüber aerosolisierten Influenzaviren: 100-fache Reduktion

RKI: https://www.krankenhaushygiene.de/informationen/hygiene-tipp/hygienetipp2011/362

Sommerstein et al., Risk of SARS-CoV-2 transmission by aerosols, the rational use of masks, and protection of healthcare workers from COVID-19, ARIC 2020



«Soll mein Patient eine Maske tragen?» → JA



«Soll ich einen Luft-Reiniger kaufen?»

Luftreiniger (Beispielprodukt)

Medical Advanced hat eine Kapazität von 450m^3/h, die in 5 Stufen geregelt wird:

1. Stufe: 90m^3/h
2. Stufe: 180m^3/h
3. Stufe: 270m^3/h
4. Stufe: 360m^3/h
5. Stufe: 450m^3/h

Beispielraum: 4 x 5 x 2.5m = 50m^3 → Stufe 3 = Luftwechselrate 6/h

Referenzbild

▸ Maße: L 465mm x B 422mm x H 760mm

«Lüften»

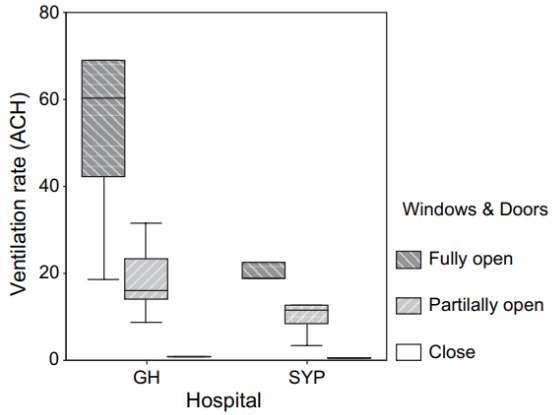
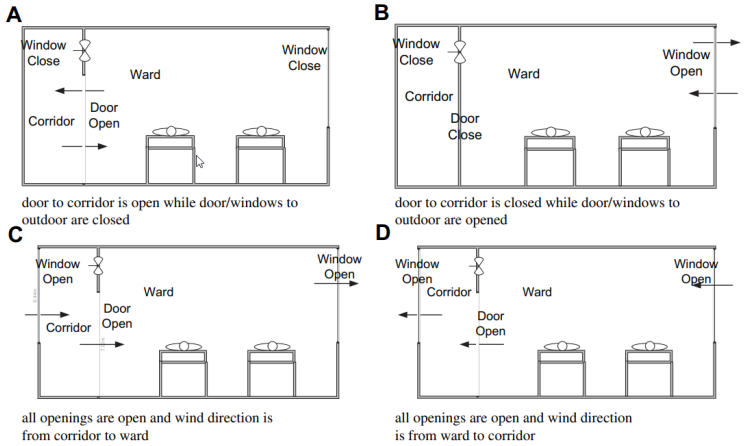


Fig. 2. Comparison of the measured ventilation rate at Hospital GH and Outpatient Clinic SYP when all the fans were switched off.



ACH= air change rate (Luftwechselrate)

GH-Hospital: am Hang, im Grünen
SYP-Hospital: in Stadt, umgeben von Häusern

Partially open (Fenster offen, aber Tür zu Korridor zu): ACH 14.0 - 31.6
Fully open (Fenster offen, Türe zu Korridor offen): ACH 11.9 - 69

CDC-Guidelines für Isolation rooms: 12 ACH

Qian et al., Natural ventilation for reducing airborne infection in hospitals, Building and Environment, 2010

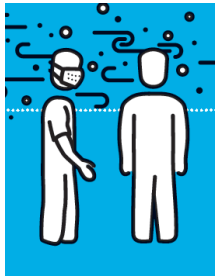
«Lüften»

Table 2
Decay of droplet nuclei concentration for different ventilation rates and duration of time in a room.

Time (min)	Ventilation rate (%)			
	6 ACH	12 ACH	18 ACH	24 ACH
0	100	100	100	100
5	60.7	36.8	22.37	13.5
10	36.8	13.5	5.0	**1.8**
15	22.3	5.00	**1.1**	0.3
20	13.5	**1.8**	0.3	0.03
25	8.2	0.7	0.06	0.00
30	5.0	0.3	0.01	0
40	**1.8**	0.03	0	0
50	0. 7	0	0	0
60	0.3	0	0	0

«z.B. Gerät» Partially open Fully open

Qian et al., Natural ventilation for reducing airborne infection in hospitals, Building and Environment, 2010



«Soll ich einen Luft-Reiniger kaufen?» → NEIN

«Kann ich mich über Oberflächen anstecken?»

SARS-CoV-2 Transmission

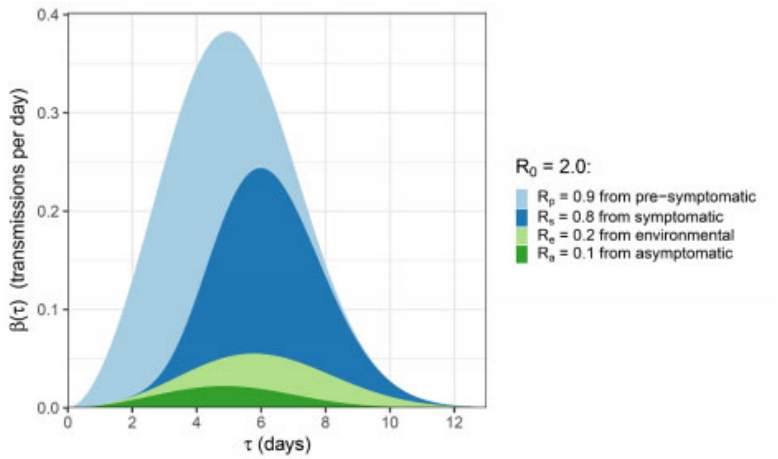
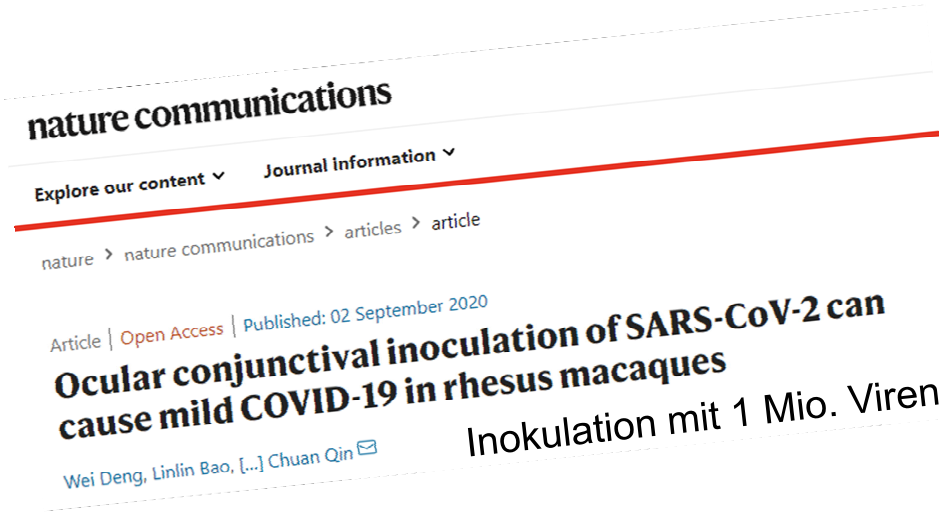
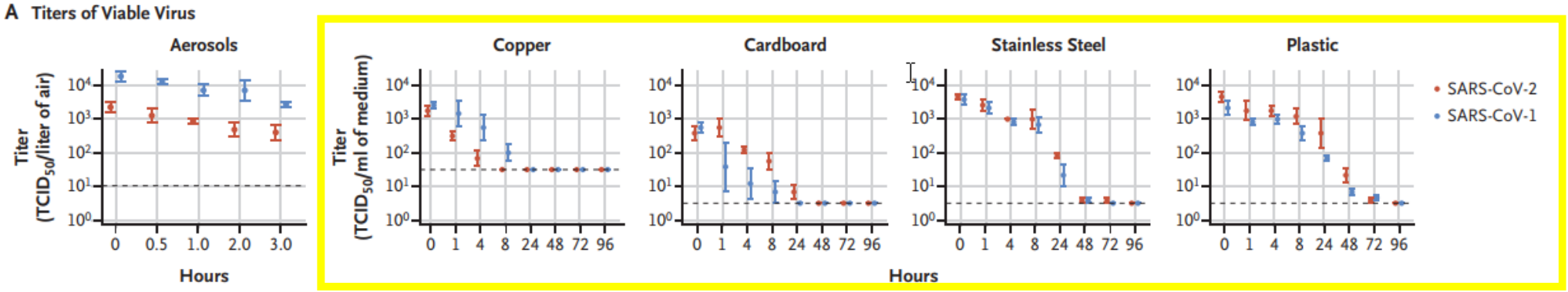


Fig. 2. Our model of infectiousness. The average infectiousness (rate of infecting others), β, as a function of the amount of time since infection, τ. The total colored area found between two values of τ is the number of transmissions expected in that time window. The total colored area over all values of τ is the number of transmissions expected over the full course of one infection, i.e., the basic reproduction number R_0. The different colors indicate the contributions of the four routes of transmission (stacked on top of one another), so that the total area of one color over all values of τ is the average number of transmissions via that route over the whole course of infection: R_P, R_S, R_E, and R_A for pre-symptomatic, symptomatic, environmentally mediated, and asymptomatic transmission respectively. Values are rounded to one decimal place. Stopping disease spread requires reduction of R to less than 1: blocking transmission, from whatever combination of colors and values of τ we can achieve, such that the total area is halved.



Ferretti et al., “Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing”, Science 2020

Stabilität SARS-CoV-2 in der Umgebung



Doremalen et al., Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1, NEJM 2020

Desinfektion von Flächen

Table I
Inactivation of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) by 70% ethanol (EtOH), 70% isopropanol (IPA), 0.1% hydrogen peroxide (H_2O_2) and 0.1% sodium lauryl sulphate (SLS) on various surfaces

Reduction of viral infectivity (log_{10})	Time (s)	Stainless steel	Plastic (PET)	Glass	PVC	Cardboard	Cotton fabric
70% EtOH	30	≥4.1	≥4.1	≥3.8	≥4.0	≥3.8	-
	60	≥5.0	≥5.0	≥4.7	≥4.9	≥4.7	-
70% IPA	30	≥4.1	≥4.1	≥3.8	≥4.0	≥3.8	-
	60	≥5.0	≥5.0	≥4.7	≥4.9	≥4.7	-
0.1% H_2O_2	30	2.4±0.3	-	2.3±0.4	2.4±0.5	-	-
	60	≥4.8	-	≥4.5	≥4.7	-	-
0.1% SLS	30	3.1±0.4	≥3.6	≥3.3	≥3.5	-	≥3.1
	60	≥4.9	≥4.9	≥4.6	≥4.8	-	≥4.4

PET, polyethylene terephthalate; PVC, polyvinyl chloride; -, not measured.
Surfaces were challenged with SARS-CoV-2 and subjected to treatment with various chemical agents for 30 s and 60 s. The experimental approach was identical for all tested disinfectants, except for neutralization due to varying toxicity and interference of the chemical agents with the cell culture test system. As a control, surfaces were left untreated (0 s treatment). The table summarizes the results of three independent replicates. The logarithmic reduction of viral infectivity for each treatment condition was determined by comparing the total SARS-CoV-2 load in the input (0 s treatment) with that in the final output sample (60 s treatment). If complete virus inactivation was observed, the titre equals the limit of detection, and the logarithmic reduction of viral infectivity factor is reported as '≥'. In this case, the largest logarithmic reduction of viral infectivity factor of all replicates is reported with no standard deviation of the mean. In the case that one or more of the replicates did not show complete virus inactivation, the mean logarithmic reduction of viral infectivity factor and the standard deviation of the mean is reported. The limit of detection is determined by the tested sample volume. In the case of 60 s treatment, expanded volume testing was performed to achieve a lower limit of detection. For details, see the methods section in the online supplementary material.

Tensid: enthalten
in Reinigungsmitteln,
Zahnpasta, Shampoo

Gerlach et al., Rapid SARS-CoV-2 inactivation by commonly available chemicals on inanimate surfaces, JHI 2020

«Kann ich mich über Oberflächen anstecken?» Theoretisch JA.

«Wie gross ist das Ansteckungsrisiko im Kontakt mit Patienten, Familie, Freunden mit COVID-19?»

Im Haushalt / andere Kontakte – retrospektive Kohorte (Singapur)

	Household (n=1779)	Work (n=2231)	Social (n=3508)
Median age of contacts, years (IQR)	35 (22–53)	38 (30–49)	28 (10–47)
Number of female contacts (%)	1046 (58·9%)	1064 (47·7%)	1832 (52·2%)
Number of unique index cases linked to all contacts	581	225	347
Median age of unique index cases linked to all contacts, years (IQR)	39 (26–54)	39 (30–50)	39 (27–54)
Number of female cases among unique index cases linked to all contacts (%)	244 (42·0%)	71 (31·6%)	151 (43·5%)
Median time, in days, from symptom onset to hospital admission of index case due to COVID-19 (IQR)*	4 (2–7)	5 (4–7)	5 (2–7)
Number of unique contact groups†‡	578	225	346
1 contact	131	36	102
2 contacts	113	33	60
3 contacts	334	156	184
Median number of contacts in each contact group (IQR)‡	3 (2–4)	5 (2–12)	3 (1–7)
Mean number of contacts in each contact group (SD)‡	3 (2)	10 (17)	10 (26)
Number of cases among contacts detected by symptom-based PCR	105	30	45
Secondary clinical attack rate (95% CI)	5·9% (4·9–7·1)	1·3% (0·93–1·9)	1·3% (0·95–1·7)
Number of contact groups with no cases among contacts detected by symptom-based PCR screening (%)	499/578 (86·3%)	206/225 (91·6%)	312/346 (90·2%)
Number of contact groups with cases among contacts detected by symptom-based PCR screening (%)	79/578 (13·7%)	19/225 (8·4%)	34/346 (9·8%)
1 case	63	12	26
2 cases	13	3	6
3 cases	3	4	2

*Median for all unique index cases linked to all contacts. †Contact group refers to a group consisting of one or more index cases and their close contacts. ‡Number of contacts, excluding the linked index case (or index cases). §PCR-based assay for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral nucleic acid.

Table 1: **Characteristics of close contact groups included in analysis**

Definitionen:

Haushaltkontakt: Wohnen in gleicher Wohnung/Haus wie Index

Non-Haushaltkontakt: 30min in 2m Distanz zu Index

Risikofaktoren für Ansteckung im Haushalt:

- Gleiches Schlafzimmer wie Index
- 30min Face-to-face Gespräch mit Index

Risikofaktoren für Ansteckung ausserhalb Haushalt:

- Exposition gegenüber >1 Index
- 30min Face-to-face Gespräch mit Index
- Gleiches Auto

Oon Tek Ng et al., SARS-CoV-2 seroprevalence and transmission risk factors among high-risk close contacts: a retrospective cohort study, Lancet Infect Dis, 2020

Im Haushalt – eine prospektive Kohorte (USA)

TABLE 2. Rates of secondary laboratory-confirmed SARS-CoV-2 infections among household members enrolled in a prospective study of SARS-CoV-2 household transmission — Tennessee and Wisconsin, April–September 2020

Characteristic	Laboratory-confirmed SARS-CoV-2 infections/ Household members at risk	Secondary infection rate % (95% CI)*
All household members	102/191	53 (46–60)
Nasal swab–positive tests only	89/191	47 (40–54)
RT-PCR–negative at enrollment	48/137	35 (28–43)
Index patient age group, yrs		
<12	9/17	53 (31–74)
12–17	11/29	38 (23–56)
18–49	64/116	55 (46–64)
≥50	18/29	62 (44–77)
Index patient sex		
Female	66/108	61 (52–70)
Male	36/83	43 (33–54)
Index patient race/ethnicity		
White, non-Hispanic	71/139	51 (43–59)
Other race, non-Hispanic	9/17	53 (31–74)
Hispanic or Latino	22/35	63 (46–77)
Household member age group, yrs		
<12	18/32	57 (39–72)
12–17	14/30	47 (30–64)
18–49	54/92	59 (48–68)
≥50	16/37	43 (29–59)
Household member sex		
Female	52/103	50 (41–60)
Male	50/88	57 (46–67)
Household member race/ethnicity		
White, non-Hispanic	67/127	53 (44–61)
Other race, non-Hispanic	9/24	38 (21–57)
Hispanic or Latino	26/40	65 (50–78)
Household size, no. of persons		
2	26/38	68 (53–81)
3	25/41	61 (46–74)
4	18/40	45 (31–60)
≥5	33/72	46 (35–57)

Abbreviations: CI = confidence interval; RT-PCR = reverse transcription–polymerase chain reaction.

* Secondary infection rate, and 95% CI, estimated over 7 days of follow-up. Enrolled household members who did not report symptoms at time of illness onset in the index case-patient were considered at risk.

Grijalva et al., Transmission of SARS-COV-2 Infections in Households — Tennessee and Wisconsin, April–September 2020, MMWR, November 6, 2020 / Vol. 69 / No. 44

Im Spital – Risikofaktoren für COVID-19 bei Spitalpersonal

Table 3
Basic characteristics of the cases and the controls

Variables	Cases N = 47	Controls N = 134	*P* value
Date interval of RT-PCR detection	26.03.2020-16.04.2020	26.03.2020-30.04.2020	
Age (the mean, min-max)	35.7 (21-61)	34.4 (21-50)	.253
	n/(%)	n/(%)	
Sex			.507
Female	32 (68.1)	84 (62.7)	
Male	15 (31.9)	50 (37.3)	
Profession			.107
Medical doctor	7 (14.9)	41 (30.6)	
Nurse	28 (59.6)	67 (50.0)	
Cleaning personnel	12 (25.5)	26 (19.4)	
Having an underlying disorder	16 (34.0)	41 (30.6)	.662
Presence of an HCW in the household	10 (21.3)	31 (23.1)	.793
Presence of a SARS-CoV-2 positive person in the household	3 (6.5)	0 (0.0)	.016
Presence of a SARS-CoV-2 positive person within the occupational or social surroundings	25 (53.2)	109 (81.3)	.000
Working in a COVID-19 unit (yes)	31 (66.0)	99 (73.9)	.299
Entering a room in which a suspected or confirmed COVID-19 patient was hospitalized (yes)	31 (66.0)	103 (76.9)	.142
Examining (touching) a suspected or confirmed Covid-19 patient (yes)	27 (57.4)	102 (76.1)	.015
Obtaining a respiratory sample from a suspected or confirmed COVID-19 patient (yes)	9 (19.1)	43 (32.1)	.092
Intubating a suspected or confirmed COVID-19 patient or being present in the room during intubation (yes)	6 (13.3)	21 (15.7)	.705
Resuscitating a suspected or confirmed COVID-19 patient or being present in the room during resuscitation (yes)	6 (13.0)	14 (10.4)	.629
Entering the ICU room of a suspected or confirmed patient with mechanical ventilation (yes)	9 (19.6)	33 (24.6)	.484
Being present in the operation room during a surgical procedure on a suspected or confirmed COVID-19 patient (yes)	0 (0.0)	2 (1.5)	1.000
Improper use of PPE while caring for a suspected or confirmed COVID-19 patient	8 (17.0)	5 (3.8)	.003
Making a mistake while implementing infection control precautions (yes)	3 (6.4)	3 (2.3)	.191
Staying in the same personnel break room as an HCW without wearing medical mask for more than 15 minutes (yes)	33 (70.2)	37 (27.8)	.000
Consuming food within one meter of an HCW (yes)	33 (70.2)	60 (44.8)	.003
Failing to keep a safe social distance from an HCW	29 (63.0)	52 (39.1)	.005

*A student *t* test was used to compare the groups; a *P* value indicates the degree of statistical significance.

Risikofaktoren für COVID-19

- Untersuch eines COVID-Patienten
- Nicht-korrekter Gebrauch von PPE

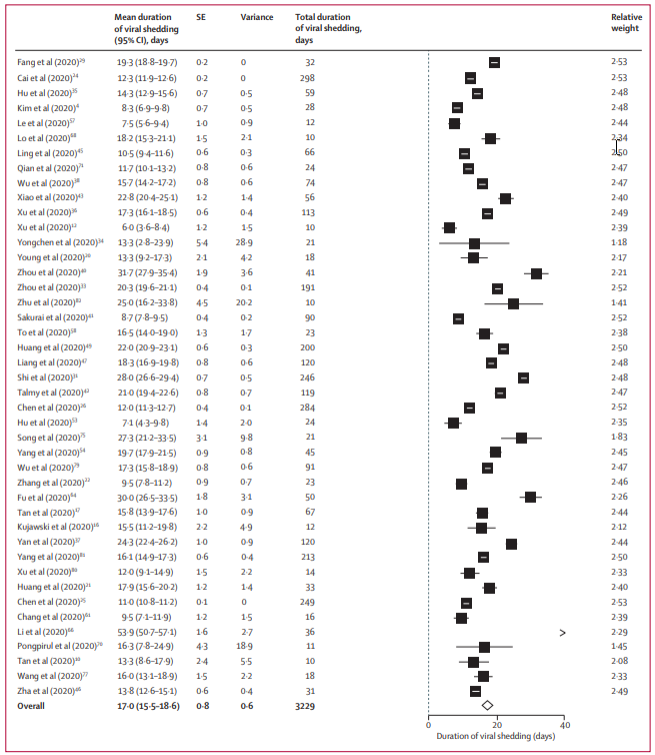
- Haushaltskontakt mit COVID-19
- (Arbeits-)kollege mit COVID-19
- Besuch von Pausenraum ohne Maske
- Gemeinsames Essen oder anderer Kontakt am Arbeitsplatz ohne Abstand

Celebi et al., Specific risk factors for SARS-CoV-2 transmission among health care workers in a university hospital, AJIC, 2020

«Wie lange müssen Patienten isoliert werden?»

«Sind Verlaufsabstriche sinnvoll?»

Virusausscheidung und Ansteckungsfähigkeit



	Mean duration of viral shedding (95% CI), days	SE	Variance	Total duration of viral shedding, days	Relative weight
Fang et al (2020)[29]	19·3 (18·8–19·7)	0·2	0	32	2·53
Cai et al (2020)[44]	12·3 (11·9–12·6)	0·2	0	298	2·53
Hu et al (2020)[35]	14·3 (12·9–15·6)	0·7	0·5	59	2·48
Kim et al (2020)[4]	8·3 (6·9–9·8)	0·7	0·5	28	2·48
Le et al (2020)[37]	7·5 (5·6–9·4)	1·0	0·9	12	2·44
Lo et al (2020)[68]	18·2 (15·3–21·1)	1·5	2·1	10	2·34
Ling et al (2020)[45]	10·5 (9·4–11·6)	0·6	0·3	66	2·50
Qian et al (2020)[31]	11·7 (10·1–13·2)	0·8	0·6	24	2·47
Wu et al (2020)[38]	15·7 (14·2–17·2)	0·8	0·6	74	2·47
Xiao et al (2020)[43]	22·8 (20·4–25·1)	1·2	1·4	56	2·40
Xu et al (2020)[26]	17·3 (16·1–18·5)	0·6	0·4	113	2·49
Xu et al (2020)[32]	6·0 (3·6–8·4)	1·2	1·5	10	2·39
Yongchen et al (2020)[34]	13·3 (2·8–23·9)	5·4	28·9	21	1·18
Young et al (2020)[28]	13·3 (9·2–17·3)	2·1	4·2	18	2·17
Zhou et al (2020)[40]	31·7 (27·9–35·4)	1·9	3·6	41	2·21
Zhou et al (2020)[33]	20·3 (19·6–21·1)	0·4	0·1	191	2·52
Zhu et al (2020)[42]	25·0 (16·2–33·8)	4·5	20·2	10	1·41
Sakurai et al (2020)[41]	8·7 (7·8–9·5)	0·4	0·2	90	2·52
To et al (2020)[18]	16·5 (14·0–19·0)	1·3	1·7	23	2·38
Huang et al (2020)[49]	22·0 (20·9–23·1)	0·6	0·3	200	2·50
Liang et al (2020)[47]	18·3 (16·9–19·8)	0·8	0·6	120	2·48
Shi et al (2020)[30]	28·0 (26·6–29·4)	0·7	0·5	246	2·48
Talmy et al (2020)[48]	21·0 (19·4–22·6)	0·8	0·7	119	2·47
Chen et al (2020)[36]	12·0 (11·3–12·7)	0·4	0·1	284	2·52
Hu et al (2020)[53]	7·1 (4·3–9·8)	1·4	2·0	24	2·35
Song et al (2020)[55]	27·3 (21·2–33·5)	3·1	9·8	21	1·83
Yang et al (2020)[54]	19·7 (17·9–21·5)	0·9	0·8	45	2·45
Wu et al (2020)[39]	17·3 (15·8–18·9)	0·8	0·6	91	2·47
Zhang et al (2020)[52]	9·5 (7·8–11·2)	0·9	0·7	23	2·46
Fu et al (2020)[64]	30·0 (26·5–33·5)	1·8	3·1	50	2·26
Tan et al (2020)[67]	15·8 (13·9–17·6)	1·0	0·9	67	2·44
Kujawski et al (2020)[66]	15·5 (11·2–19·8)	2·2	4·9	12	2·12
Yan et al (2020)[27]	24·3 (22·4–26·2)	1·0	0·9	120	2·44
Yang et al (2020)[63]	16·1 (14·9–17·3)	0·6	0·4	213	2·50
Xu et al (2020)[60]	12·0 (9·1–14·9)	1·5	2·2	14	2·33
Huang et al (2020)[21]	17·9 (15·6–20·2)	1·2	1·4	33	2·40
Chen et al (2020)[25]	11·0 (10·8–11·2)	0·1	0	249	2·53
Chang et al (2020)[61]	9·5 (7·1–11·9)	1·2	1·5	16	2·39
Li et al (2020)[46]	53·9 (50·7–57·1)	1·6	2·7	36	2·29
Pongpirul et al (2020)[70]	16·3 (7·8–24·9)	4·3	18·9	11	1·45
Tan et al (2020)[69]	13·3 (8·6–17·9)	2·4	5·5	10	2·08
Wang et al (2020)[17]	16·0 (13·1–18·9)	1·5	2·2	18	2·33
Zha et al (2020)[68]	13·8 (12·6–15·1)	0·6	0·4	31	2·49
Overall	**17·0 (15·5–18·6)**	**0·8**	**0·6**	**3229**	

0 20 40
Duration of viral shedding (days)

Figure 2: **Pooled mean duration (days) of SARS-CoV-2 shedding from the upper respiratory tract (random-effects model)**

Cevik et al., SARS-CoV-2, SARS-CoV, and MERS-CoV viral load dynamics, duration of viral shedding, and infectiousness: a systematic review and meta-analysis, Lancet Microbe, 2020

Mittlere Dauer der Virusausscheidung: **17d, Maximum: 83d**

Längere Ausscheidung bei schwerer Erkrankten und Älteren

Keine positive Viruskultur nach Tag 9

Keine positive Kultur bei <100'000 Viren/ml vs. bei CT-Values > 24 vs. bei CT-Values > 34

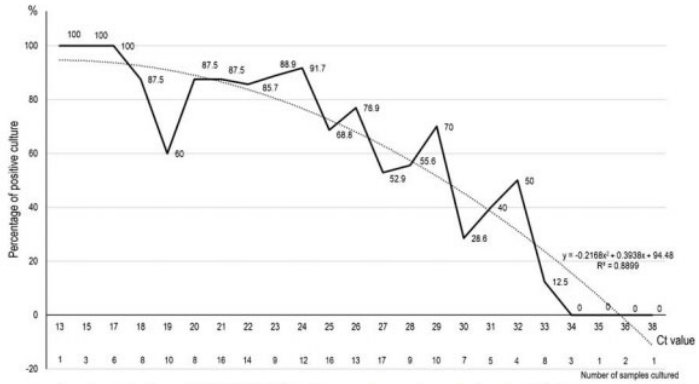


Fig. 1 Percentage of positive viral culture of SARS-CoV-2 PCR-positive nasopharyngeal samples from Covid-19 patients, according to Ct value (plain line). The dashed curve indicates the polynomial regression curve

Scola et al., Viral RNA load as determined by cell culture as a management tool for discharge of SARS-CoV-2 patients from infectious disease wards, Eur J Clin Microb. & Inf Dis, 2020

Kriterien für Aufhebung der Isolation

swissnoso

Tabelle 1: Aufhebung der Isolation

Klinik	Entisolation	PCR Tests
Milder Verlauf, Patient auf Station, Entlassung nach Hause möglich	Frühestens 10 Tage nach Auftritt Symptome und mindestens 48 Stunden ohne Symptome	Keine
Milder Verlauf, Patient auf Station, Patient bleibt hospitalisiert oder wird in Langzeitpflegeeinrichtung verlegt	Frühestens 14 Tage nach Auftritt Symptome und mindestens 48 Stunden ohne Symptome	Keine
Schwere Erkrankung (zum Beispiel, IPS Aufenthalt)	Frühestens 21 Tage nach Auftritt Symptome und mindestens 48 Stunden ohne Symptome.	Zur Abkürzung der Isolationsdauer können zwei PCRs aus adäquaten respiratorischen Proben (zB. Trachealsekret) durchgeführt werden. Sollte diese negativ sein oder hat der viral load mind. 3 log abgenommen, kann der Patient entisoliert werden
Schwere Erkrankung (zum Beispiel, IPS Aufenthalt) und Vorliegen von zusätzlichen Risikofaktoren (z.B. schwere Immunsuppression, Tracheostoma)	Frühestens 28 Tage nach Auftritt Symptome und mindestens 48 Stunden ohne Symptome.	Zur Abkürzung der Isolationsdauer können zwei PCRs aus adäquaten respiratorischen Proben (zB. Trachealsekret) durchgeführt werden. Sollte diese negativ sein oder hat der viral load mind. 3 log abgenommen, kann der Patient entisoliert werden

«Wie lange müssen Patienten isoliert werden?»

Ausserhalb Spital:	48h symptomfrei, mind. 10 Tage
Im Spital:	48h symptomfrei, mind. 14 Tage

«Sind Verlaufsabstriche sinnvoll?»

Selten.

USZ Universitäts Spital Zürich

Vielen Dank für Ihre Aufmerksamkeit