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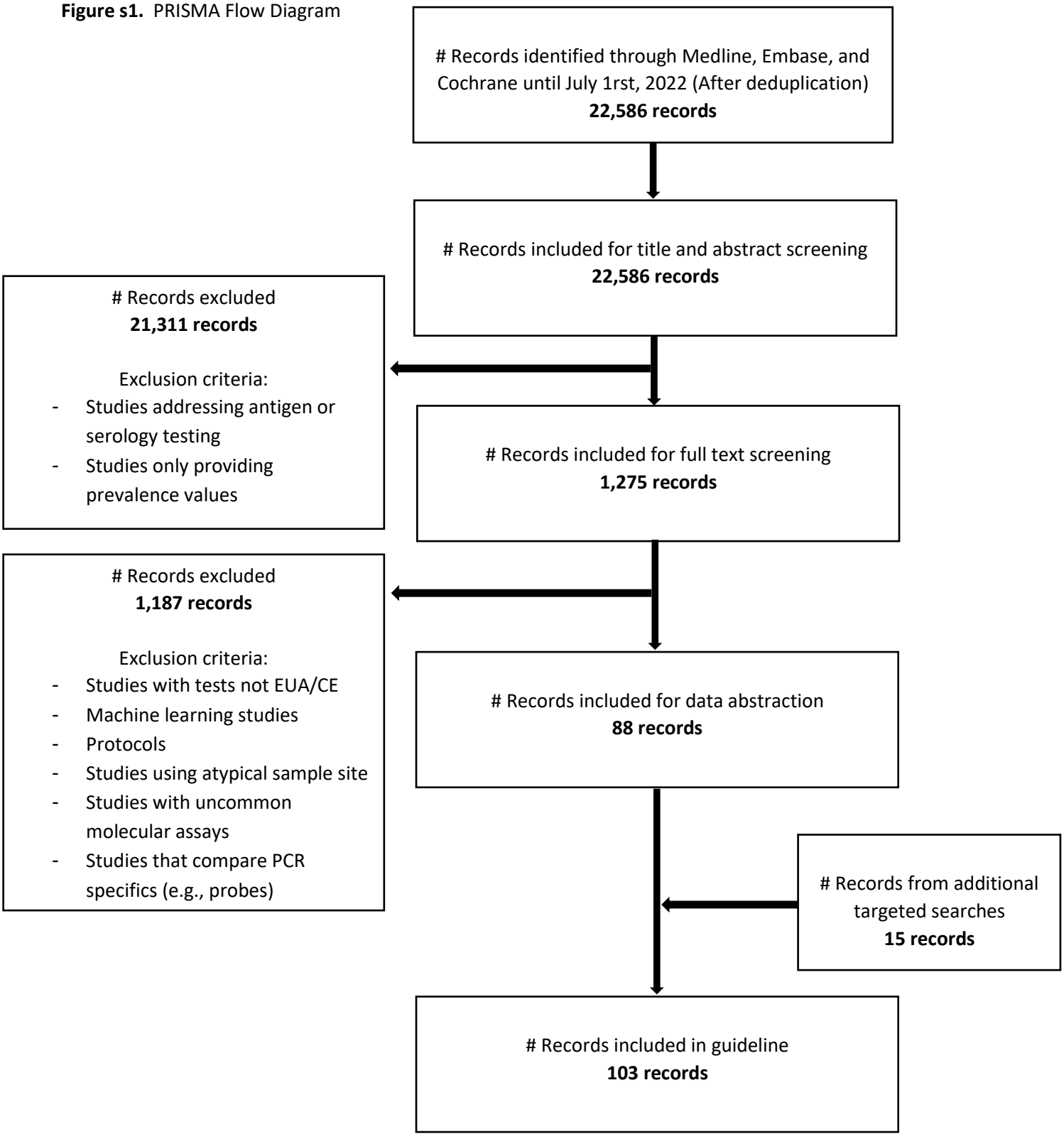


Table s1. PICO Questions Identified by the Panel Through the Three Guideline Versions

Questions	Initial guideline (May 6, 2020)	Update 1 (Dec 23, 2020)	Update 2 (Current)
• In symptomatic individuals in the community suspected of having COVID-19, should testing vs no testing be done to guide decisions about isolation and contact tracing?	✓		✓
• In symptomatic individuals suspected of having COVID-19, is the use of rapid vs lab-based testing (different EUA approved NAATs) affect the diagnostic accuracy of the test?	✓	✓	✓
• In symptomatic individuals suspected of having COVID-19, should one test vs repeated testing be done to guide decisions about isolation and going back to work?	✓		✓
• In symptomatic individuals with URTI or ILI suspected of having COVID-19, should noninvasive specimens be collected by healthcare providers vs patients? (will collection by healthcare providers vs patients affect the diagnostic accuracy of the test)?	✓		✓
• In symptomatic individuals suspected of having COVID-19, can specimen types other than a nasopharyngeal swab (i.e., anterior nasal vs. mid-turbinate vs. oropharyngeal vs. saliva vs. a combination) be used to diagnose COVID-19? (will specimen type affect the diagnostic accuracy of the test relative to an NP swab)?	✓	✓	✓
• In symptomatic individuals with LRTI suspected of having COVID-19, which of the different specimen types (upper vs lower respiratory tract sampling) should be used? (will specimen type (upper vs lower respiratory tract sampling) affect the diagnostic accuracy of the test)?	✓		
• In asymptomatic individuals who have been exposed to COVID-19, should testing vs no testing be done to diagnose SARS-CoV-2 infection (to guide decisions about quarantine and contact tracing)?	✓		✓
• In asymptomatic individuals, should testing vs no testing be done on admission to the hospital to diagnose SARS-CoV-2 infection (to guide decisions about quarantine, cohorting, and contact tracing).	✓		✓
• In asymptomatic individuals, should testing vs no testing be done before surgeries or procedures to diagnose SARS-CoV-2 infection and inform PPE use?	✓		✓

• In asymptomatic individuals, should testing vs no testing be done before immunosuppressive procedures such as solid or stem cell transplantation or cytotoxic chemotherapy to diagnose SARS-CoV-2 infection and inform candidacy?	✓	✓	
• In asymptomatic individuals, should one test vs repeated testing be done to guide decisions about isolation, returning to work or school, etc?			✓
• In individuals for whom testing is desired, should home testing be done instead of laboratory-based NAAT?			✓
• In patients with COVID-19, should repeat NAAT be performed to inform decision-making about release from isolation?			✓
• In patients with SARS-CoV-2 infection, should repeat NAAT be performed prior to procedures and surgeries?			✓

Table s2. Search Strategy

	EMBASE
Set #	Search Strategy
1	('coronavirus disease 2019'/exp OR 'Severe acute respiratory syndrome coronavirus 2'/exp)
2	((corona* OR corono*) AND (viral* OR viridae* OR virinae* OR virus*)):ti,ab
3	('2019 novel*' OR '2019-ncov' OR 2019ncov OR betacoronavirus* OR Coronaviridae* OR coronavirinae* OR coronavirus* OR coronovirus* OR corvid19 OR 'corvid-19' OR cov OR covid19 OR covid2019 OR 'covid 2019' OR 'covid-19' OR 'hcov-19' OR hcov19 OR ncorona* OR ncorono* OR 'n-cov' OR 'ncov-2019' OR ncov OR ncov2019 OR ncovchina* OR ncovchinese* OR ncovhubei* OR ncovor OR ncovwuhan* OR 'novel betacoronavirus' OR 'Novel Coronavirus' OR 'novel CoV' OR 'sarscov-19' OR 'sars-cov19' OR 'sars-cov-19' OR sarscov19 OR 'sarscov2' OR 'sarscov-2' OR 'sars-cov2' OR 'sars-cov-2' OR 'wn-cov' OR wncov):ti,ab
4	((epidem* OR outbreak* OR pandem* OR wildlife*) NEAR/1 (china* OR chinese* OR huanan* OR pneumonia OR respirator*)):ti,ab
5	(('food market*' OR 'seafood market*') NEAR/10 (china* OR chinese* OR huanan* OR hubei* OR wuhan*)):ti,ab
6	**OR/1-5**
7	('virus antigen'/exp)
8	antigen:ti,ab
9	**OR/7-8**
10	('delayed diagnosis'/exp OR 'diagnosis'/de OR 'diagnostic procedure'/de OR 'differential diagnosis'/exp OR 'early diagnosis'/exp OR 'examination'/exp OR 'laboratory diagnosis'/exp OR 'physical examination'/exp OR 'qualitative diagnosis'/exp OR 'quantitative diagnosis'/exp OR 'screening'/exp OR 'symptom assessment'/exp OR 'virus diagnosis'/exp)
11	(case* OR 'case finding' OR casefinding OR detect* OR diagnos* OR screen* OR test*):ti,ab
12	**OR/10-11**
13	**6 AND 9 AND 12**
14	[english]/lim
15	13 AND 14
16	[animals]/lim NOT [humans]/lim
17	15 NOT 16
18	('abstract report'/exp OR 'animal experiment'/exp OR 'book'/exp OR 'case finding'/exp OR 'case report'/exp OR 'case study'/exp OR 'conference paper'/exp OR 'editorial'/exp OR 'feasibility study'/exp OR 'in vitro study'/exp 'letter'/exp OR 'meta analysis'/exp OR 'meta analysis topic'/exp OR 'meta analysis (topic)'/exp OR 'note'/exp OR 'practice guideline'/exp OR 'review'/exp OR 'systematic review'/exp OR 'systematic review topic'/exp OR 'systematic review (topic)'/exp OR 'veterinary clinical trial'/exp OR 'veterinary study'/exp OR [conference abstract]/lim OR [conference paper]/lim OR [conference review]/lim OR [editorial]/lim OR [letter]/lim OR [note]/lim OR [short survey]/lim OR meta*analys*:ti,ab OR (integrative NEAR/5 research NEAR/5 review*):ti,ab OR (methodologic* NEAR/5 overview*):ti,ab OR (methodologic* NEAR/5 review*):ti,ab OR (quantitativ* NEAR/5 overview*):ti,ab OR (quantitativ* NEAR/5 review*):ti,ab OR (quantitativ*

	NEAR/5 synthesi*):ti,ab OR (research NEAR/5 integration):ti,ab OR (systematic* NEAR/5 overview*):ti,ab OR (systematic* NEAR/5 review*):ti,ab)
19	17 NOT 18
20	[22-2-2021]/sd NOT [29-9-2021]/sd
21	**19 AND 20**

	PUBMED
Set #	Search Strategy
1	"COVID-19"[Mesh] OR "SARS-CoV-2"[Mesh] OR "Coronavirus Infections"[Mesh] OR "Betacoronavirus"[Mesh]
2	((corona*[tiab] OR corono*[tiab]) AND (viral*[tiab] OR viridae*[tiab] OR virinae*[tiab] OR virus*[tiab]))
3	"2019 novel*"[tiab] OR "2019-ncov"[tiab] OR 2019ncov[tiab] OR betacoronavirus*[tiab] OR Coronaviridae*[tiab] OR coronavirinae*[tiab] OR coronavirus*[tiab] OR coronovirus*[tiab] OR cov[tiab] OR covid19[tiab] OR covid2019[tiab] OR "covid 2019" [tiab] OR "covid-19"[tiab] OR "hcov-19"[tiab] OR hcov19[tiab] OR "n-cov"[tiab] OR "ncov-2019"[tiab] OR ncov[tiab] OR ncov2019[tiab] OR "novel betacoronavirus"[tiab] OR "Novel Coronavirus"[tiab] OR "novel CoV"[tiab] OR "sars-cov19"[tiab] OR "sars-cov-19"[tiab] OR sarscov19[tiab] OR "sarscov2"[tiab] OR "sarscov-2"[tiab] OR "sars-cov2"[tiab] OR "sars-cov-2"[tiab]
4	(epidem* OR outbreak* OR pandem* OR wildlife*) AND (china* OR chinese* OR huanan* OR pneumonia OR respirator*)
5	(("food market*"[tiab] OR "seafood market*"[tiab]) AND (china*[tiab] OR chinese*[tiab] OR huanan*[tiab] OR hubei*[tiab] OR wuhan*[tiab]))
6	**OR/1-5**
7	"Antigens, Viral"[Mesh]
8	antigen[tiab]
9	**OR/7-8**
10	"COVID-19 Testing"[Mesh] OR "Delayed Diagnosis"[Mesh] OR "Diagnosis"[Mesh:NoExp] OR "Diagnosis, Differential"[Mesh] OR "Diagnostic Techniques and Procedures"[Mesh] OR "Early Diagnosis"[Mesh]
11	"diagnosis"[Subheading]
12	case*[tiab] OR "case finding"[tiab] OR casefinding[tiab] OR detect*[tiab] OR diagnos*[tiab] OR screen*[tiab] OR test*[tiab]
13	**OR/10-12**
14	**6 AND 9 AND 13**

15	English[Language]
16	14 AND 15
17	animals[Mesh] NOT humans[Mesh]
18	16 NOT 17
19	"2021/02/22"[PDAT] : "3000/12/31"[PDAT]
20	18 AND 19
21	("Academic Dissertation"[Publication Type] OR "address"[Publication Type] OR "Anecdotes"[Publication Type] OR "Animation"[Publication Type] OR "autobiography"[Publication Type] OR "bibliography"[Publication Type] OR "biography"[Publication Type] OR "Book Illustrations"[Publication Type] OR "Book Review"[Publication Type] OR "Bookplate"[Publication Type] OR "Cartoon"[Publication Type] OR "Case Reports"[Publication Type] OR "Catalog"[Publication Type] OR "Chart"[Publication Type] OR "Comment"[Publication Type] OR "congress"[Publication Type] OR "consensus development conference"[Publication Type] OR "consensus development conference, nih"[Publication Type] OR "dictionary"[Publication Type] OR "directory"[Publication Type] OR "editorial"[Publication Type] OR "Expression of Concern"[Publication Type] OR "Guideline"[Publication Type] OR "Handbook"[Publication Type] OR "interactive tutorial"[Publication Type] OR "interview"[Publication Type] OR "Juvenile Literature"[Publication Type] OR "lecture"[Publication Type] OR "legal case"[Publication Type] OR "legislation"[Publication Type] OR "letter"[Publication Type] OR "Meeting Abstract"[Publication Type] OR "Meta-Analysis"[Publication Type] OR "news"[Publication Type] OR "newspaper article"[Publication Type] OR "overall"[Publication Type] OR "patient education handout"[Publication Type] OR "periodical index"[Publication Type] OR "personal narrative"[Publication Type] OR "portrait"[Publication Type] OR "Review"[Publication Type] OR "Scientific Integrity Review"[Publication Type] OR "Systematic Review"[Publication Type] OR "Unpublished Work"[Publication Type] OR "hascommenton"[All Fields] OR "Cartoons as Topic"[Mesh] OR "Meta-Analysis as Topic"[Mesh] OR "Review Literature as Topic"[Mesh] OR "Systematic Reviews as Topic"[Mesh] OR "case report*"[tiab] OR "integrative research review*"[tiab] OR "integrative review*"[tiab] OR "literature review"[tiab] OR meta-analys*[tiab] OR "meta analys*"[tiab] OR metaanalys*[tiab] OR "narrative review"[tiab] OR "research integration"[tiab] OR "scoping review"[tiab] OR ((methodologic*[tiab] OR quantitative*[tiab] OR systematic*[tiab]) AND (overview*[tiab] OR review*[tiab] OR synthesis*[tiab])))
22	**20 NOT 21**

	Cochrane
Set #	Search Strategy
1	MeSH descriptor: [Betacoronavirus] explode all trees
2	MeSH descriptor: [Coronavirus Infections] explode all trees
3	((corona* OR corono*) NEXT (viral* OR viridae* OR virinae* OR virus*)):ti,ab
4	("2019 novel*" OR "2019-ncov" OR 2019ncov OR betacoronavirus* OR Coronaviridae* OR coronavirinae* OR coronavirus* OR coronovirus* OR corvid19 OR "corvid-19" OR cov OR covid19 OR covid2019 OR "covid 2019" OR "covid-19" OR "hcov-19" OR hcov19 OR ncorona* OR ncorono* OR "n-cov" OR "ncov-2019" OR ncov OR ncov2019 OR ncovchina* OR ncovchinese* OR ncovhubei* OR ncovor OR ncovwuhan* OR "novel betacoronavirus" OR "Novel Coronavirus" OR "novel CoV" OR

	"sarscov-19" OR "sars-cov19" OR "sars-cov-19" OR sarscov19 OR "sarscov2" OR "sarscov-2" OR "sars-cov2" OR "sars-cov-2" OR "wn-cov" OR wncov):ti,ab
5	(epidem* OR outbreak* OR pandem* OR wildlife*) NEAR/1 (china* OR chinese* OR huanan* OR pneumonia OR respirator*):ti,ab
6	(("food market*" OR "seafood market*") NEAR/10 (china* OR chinese* OR huanan* OR hubei* OR wuhan*)):ti,ab
7	**OR/1-6**
8	"Antigens, Viral"[Mesh]
9	antigen:ti,ab
10	**OR/8-9**
11	MeSH descriptor: [Delayed Diagnosis] explode all trees
12	MeSH descriptor: [Diagnosis] this term only
13	MeSH descriptor: [Diagnosis, Differential] explode all trees
14	MeSH descriptor: [Diagnostic Techniques and Procedures] explode all trees
15	MeSH descriptor: [Early Diagnosis] explode all trees
16	Any MeSH descriptor in all MeSH products and with qualifier(s): [diagnosis - DI]
17	case* OR "case finding" OR casefinding OR detect* OR diagnos* OR screen* OR test*
18	**OR/11-17**
19	**7 AND 10 AND 18**
20	MeSH descriptor: [Animals] explode all trees
21	MeSH descriptor: [Humans] explode all trees
22	20 NOT 21
23	19 NOT 22
24	February 22, 2021 to Current
25	**23 AND 24**

Table s3. QUADAS-2 Risk of Bias Assessment

N^0	Author year	Patient selection Risk of bias	Index test Risk of bias	Reference standard Risk of bias	Flow and timing Risk of bias
1.	Al Suwaidi 2021	Low	Low	Low	Low
2.	Al-Kindi 2021	Unclear	Unclear	Unclear	Unclear
3.	Altamimi 2021	High	Low	Low	Low
4.	Altawalah 2020	Low	Unclear	Unclear	Low
5.	Antonara 2022	Low	Low	Low	Low
6.	Aranha 2021	Low	Low	High	High
7.	Babady 2021	Low	Low	Low	Low
8.	Balaska 2021	Low	High	High	Low
9.	Banerjee 2021	Low	Unclear	Unclear	Low
10	Barker 2022	Low	Unclear	Unclear	Low
11	Basawarajappa 2021	High	Unclear	Unclear	High
12	Bhattacharya 2021	Low	Unclear	Unclear	Low
13	Callahan 2021	High	Low	Low	Unclear
14	Challener 2020	Unclear	Unclear	Unclear	Unclear
15	Cradic 2020	Unclear	High	High	Low
16	De Pace 2021	Low	Unclear	Low	Low
17	Deslandes 2022	Low	Low	Low	Low
18	Domnich 2021	High	Low	Low	Low
19	Echavarria 2021	Low	Low	Low	Low
20	Farfour 2021	Low	Low	Low	Low
21	Fitoussi 2021	Low	Low	Low	Low
22	Flores-León 2022	High	Unclear	Low	Low
23	Fougère 2021	Low	Unclear	Unclear	Low
24	Freire-Paspuel 2021a	Low	Unclear	Unclear	High
25	Freire-Paspuel 2021b	Low	Unclear	Unclear	High

26	Hanson 2020	Low	Low	Low	Low
27	Harrington 2020	Low	Low	Low	Low
28	Heger 2022	Low	Unclear	Low	Low
29	Hofman 2021	Low	Low	Low	Low
30	Hou 2020	Unclear	Unclear	Low	Low
31	Iwasaki 2020	High	Low	High	Low
32	Kandel 2020	Low	Low	Low	Unclear
33	Kandel 2021	Low	Low	Low	Unclear
34	Karino 2021	High	Low	Low	Low
35	Kim 2022	Low	Low	High	Low
36	Kitagawa 2020	High	Low	Low	Unclear
37	Kitajima 2021	Low	Low	Low	Low
38	Kocagoz 2021	Low	Unclear	Low	Low
39	Kojima 2021	Low	Low	High	Low
40	Krause 2021	Low	Low	Low	Unclear
41	Laferl 2021	Low	Low	Low	Unclear
42	Landry 2020	Low	Low	High	Low
43	LeBlanc 2020	Low	Low	High	Low
44	LeGoff 2021	Low	Low	Low	Unclear
45	Lephart 2021	Low	Low	Unclear	Unclear
46	Lévesque 2022	Low	Unclear	Unclear	High
47	Liotti 2020	High	Unclear	Low	Low
48	Loeffelholz 2020	Low	Low	Unclear	Low
49	Mack 2022a	Low	Low	High	High
50	Mack 2022b	Low	Unclear	Low	Low
51	Mahmoud 2021b	Low	Unclear	Low	Unclear
52	Masse 2021	Low	Low	Low	Low
53	McCormick-Baw 2020	Low	Low	High	Low

54	McCulloch 2020	Low	Low	High	Low
55	McDonald 2020	Low	Low	Low	Unclear
56	Micocci 2021	Low	Low	Low	Low
57	Migueres 2020	High	Low	High	Low
58	Migueres 2021b	Low	Low	Low	Low
59	Mitchell 2020	High	Unclear	Low	Low
60	Montaño 2022	High	Low	Low	Low
61	Moran 2020	Unclear	Unclear	Low	Low
62	Nacher 2021	Low	Low	Low	Low
63	NguyenVan 2021	Low	Low	Low	Low
64	Patel 2021	Low	Low	Low	Low
65	Péré 2020	Low	Low	High	Low
66	Pham 2020	High	Low	High	Low
67	Pitman 2021	High	Low	Low	Low
68	Procop 2020a	Low	Low	Low	Low
69	Procop 2020b	Low	Low	High	Low
70	Ramachandran 2021	Low	Unclear	Unclear	Unclear
71	Rao 2021b	Low	Low	Low	Low
72	Renzoni 2021	Low	Unclear	Unclear	Unclear
73	Sahni 2021	Low	Unclear	Unclear	Unclear
74	Smith 2020	High	Unclear	Unclear	Unclear
75	Sogbesan 2022	Low	Low	Low	Low
76	Stevens 2020	Unclear	High	Low	Low
77	Sun 2021	Low	Unclear	Unclear	Unclear
78	Thwe 2020	Low	Low	Low	Low
79	Tu 2020	Low	Low	High	Low
80	Uršič 2022	Low	Low	Low	Low
81	Vermeiren 2020	Low	Low	High	Low
82	Visseaux 2020	Unclear	Low	Low	Low

83	Vos 2022	Low	Unclear	Low	Low
84	Wang 2020	Unclear	Low	High	Unclear
85	Wehrhahn 2020	Low	Unclear	High	Low
86	Wolters 2020	Unclear	Low	Low	Low
87	Yun 2021	High	Low	Low	Low
88	Zander 2021	High	Unclear	Low	Low

Table s4. Baseline Characteristics of the Included Studies from Systematic Review

N[0]	Author (Country)	Patient Selection	Index test	Reference Standard
1.	**Author, year:** Al Suwaidi 2021[1] **Country:** UAE **Study Design:** Cohort	**Number of patients:** 476 **Age:** mean 10.8 +/- 3.9 **Gender (%male):** 58.2% male **Patient selection:** ambulatory - Indications for testing included contact with confirmed COVID-19 patients, presence of presumptive symptoms or testing for return to school. All children presenting for COVID-19 screening were eligible for participation. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Seegene Allplex **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Using sterile containers without transport medium, self-collected saliva samples (1-3 mL) were obtained at least 30 minutes after abstinence from food or drink as previously described. Participants were asked to close their mouths, allow saliva to pool in the mouth for 1 or 2 minutes and then gently spit into the provided sterile container. NP swab specimens were obtained by trained healthcare personnel using standardized DHA NP swab collection protocol for COVID-19 screening. The NP swabs were placed in Greiner Bio-One universal transport system (Greiner Bio-One, Kremsmünster, Austria).	**Test name(s):** Allplex **Collection sample site:** NP **Self vs HCW:** Self for saliva, HCW for NP **Description of swab collection:** NP swab specimens were obtained by trained healthcare personnel using standardized DHA NP swab collection protocol for COVID-19 screening. The NP swabs were placed in Greiner Bio-One universal transport system (Greiner Bio-One, Kremsmünster, Austria).
2.				

	Author, year: Al-Kindi 2021[2] **Country:** Oman **Study Design:** cross-sectional	**Number of patients:** 155 **Age:** NR **Gender (%male):** NR **Patient selection:** Hospitalized **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NA	**Test name(s):** Cepheid Xpert Xpress **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Liferiver assay for most tests, 4 samples on Cobas Roche 6800, 5 samples on Novel Coronavirus 2019-nCoV (Sansure) **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR
3.	**Author, year:** Altamimi 2021[3] **Country:** Saudi Arabia **Study Design:** Cohort	**Number of patients:** 94 **Age:** NR **Gender (%male):** NR **Patient selection:** ambulatory **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** 1. BGI 2. RealStar 3. Genesig 4. IQ Real 5. KAIRA 7. Sansure 8. DiaPlexQ 9. TaqPath 10. LightMix 11. LYRA 12. RADI **EUA certified:** Yes - some **CE certified:** Yes - some **Collection sample site:** ONPS	**Test name(s):** Mixture (>6 kits had to agree on positivity) **Collection sample site:** NP/OP **Self vs HCW:** NR **Description of swab collection:** NR

			Self-collection of swab: Unclear **Description of swab collection:** NR	
4.	**Author, year:** Altawalah 2020[4] **Country:** Kuwait **Study Design:** cross-sectional	**Number of patients:** 891 **Age:** NR **Gender (%male):** NR **Patient selection:** Hospitalized **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Thermo Fisher TaqPath **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Whole saliva (≈1.5 mL) was collected after deep cough from the suspected patients into a sterile container.	**Test name(s):** Thermo Fisher TaqPath multiplex (same as index but saliva vs. NP) **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** To collect NPS, the swab was passed through the nostril until reaching the posterior nasopharynx and removed while rotating. After swabbing, each absorbent swab was placed immediately into a sterile tube with viral transport medium.
5.	**Author, year**: Antonara 2022[5] **Country:** United States **Study Design:** Cohort	**Number of patients:** 253 **Age:** NR **Gender (%male):** NR **Patient selection:** asymptomatic patients with known exposures to suspected COVID-19 infections or for pre-operative testing for surgical	**Test name(s):** DiaSorin Simplexa **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** OP **Self-collection of swab:** No **Description of swab collection:** Flocked swabs were used to collect oropharyngeal specimens from asymptomatic patients.	**Test name(s):** Roche Cobas **Collection sample site:** OP **Self vs HCW:** NR but likely HCW **Description of swab collection:** Flocked swabs were used to collect oropharyngeal specimens from asymptomatic patients. After collection, the swabs were placed into 3 ml of sterile

		patients at OhioHealth Riverside Methodist Hospital **Symptomatic or Asymptomatic or Mix:** Asymptomatic **Days since symptom onset (if applicable):** NA	After collection, the swabs were placed into 3 ml of sterile Universal Viral Transport (UVT; BD). Specimens were tested as soon as possible after collection, or if testing was delayed, were stored for up to 72 h at 2-8° C. Following routine testing, samples were stored frozen (≤-80°C) until comparator testing could be completed.	Universal Viral Transport (UVT; BD).
6.	**Author, year:** Aranha 2021[6] **Country:** India **Study Design:** case control	**Number of patients:** 207 **Age:** 50 (median) **Gender (%male):** NR **Patient selection:** A total of 2233 nasopharyngeal swab specimens from outpatients and inpatients were collected in HiViral Transport Medium (Himedia) from COVID Care Centres in Mumbai. These samples were transferred to the laboratory under cold chain conditions within 12 h. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Roche Cobas **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** unclear **Description of swab collection:** NR	**Test name(s):** Roche Cobas **Collection sample site:** NP **Self vs HCW:** unclear **Description of swab collection:** NR
7.				

	Author, year: Babady 2021[7] **Country:** United States **Study Design:** Cohort	**Number of patients:** 100 **Age:** NR **Gender (%male):** NR **Patient selection:** Employees with a positive symptom screen (fever or chills, cough, shortness of breath, body aches, or new loss of sense of smell or taste) or exposure to a case of COVID-19 were scheduled for testing at a location for sample collection. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Multiple **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Water Gargle **Self-collection of swab:** Yes **Description of swab collection:** Flocked swab for NPS or OPS. For saliva specimens, HCWs were first asked to swallow and then bring up saliva from the back of the throat and spit at least 3.0 mL of saliva into an empty sterile container. For oral rinses, HCWs were asked to place 10 mL of sterile water in their mouth and with mouth closed, swish for 15 seconds, without gargling and spit the water in a sterile container.	**Test name(s):** Xpert Xpress, Cobas Roche **Collection sample site:** NPS or OPS **Self vs HCW:** HCW for OPS or NPS **Description of swab collection:** Flocked swabs for NPS or OPS. For saliva specimens, HCWs were first asked to swallow and then bring up saliva from the back of the throat and spit at least 3.0 mL of saliva into an empty sterile container. For oral rinses, HCWs were asked to place 10 mL of water in their mouth and with mouth closed, swish for 15 seconds, without gargling and spit the water in a sterile container.
8.	**Author, year:** Balaska 2021[8] **Country:** Greece **Study Design:** Cohort	**Number of patients:** 420 **Age:** mean 44.7 (SD 13) **Gender (%male):** 38.3% male **Patient selection:** a diagnostic outpatient and a healthcare worker screening convenience sample,	**Test name(s):** Fluidigm Advanta **EUA certified:** Yes **CE certified:** No **Collection sample site:** Saliva **Self-collection of swab:** Yes	**Test name(s):** NeumoDx or Abbott Real Time **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NPS was collected by trained HCWs.

		collected in November–December 2020 **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Description of swab collection:** The study participants were instructed to avoid the consumption of food and drinks, smoking, use of nasal sprays and practice of oral hygiene 30 min before sampling. A self-collected saliva sample of at least 2 mL was placed in a sterile falcon type tube or in a sterile urine collection container without HCW supervision.	
9.	**Author, year:** Banerjee 2021[9] **Country:** United States **Study Design:** Cohort	**Number of patients:** 336 **Age:** Mean 10.8years (range 5-14) **Gender (%male):** 50.5% males **Patient selection:** A total of 336 paired samples were collected prospectively from 335 unique children (age range 5-18 years) who had standard of care (SOC **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):**	**Test name(s):** Hologic Aptima **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Study participants were instructed to avoid eating or drinking anything 30 minutes prior to sample collection. Volunteer patients were given a saliva collection kit that included a 9.5” plastic white individually wrapped straw (U.S. Foods, Lenexa, KS) and 10 ml conical tube without any transport media) during their visit at the drive-through test center and asked to fill their mouth with saliva and	**Test name(s):** Hologic Aptima **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** Respiratory specimen was collected with a flocked, nylon nasopharyngeal (NP) swab (Jiangsu Hanheng Medical Technology Co., Ltd, China) during the same visit, by the nurse and placed in viral transport media.

			use the straw to fill the collection tube with 2 ml of saliva.	
10.	**Author, year:** Barker 2022[10] **Country:** Canada **Study Design:** Other	**Number of patients:** 2,244 **Age:** NR **Gender (%male):** NR **Patient selection:** symptomatic individuals presenting at the ED **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 7 days	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Roche Cobas 6800 Cobas SARS-CoV-2 RT-PCR assay **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
11.	**Author, year:** Basawarajappa 2021[11] **Country:** India **Study Design:** case control	**Number of patients:** 75 **Age:** NR **Gender (%male):** NR **Patient selection:** Previous positive and negative samples without further details **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Test name(s):** Truenat POC **EUA certified:** No **CE certified:** Yes **Collection sample site:** ONPS **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** TaqMan rRT-PCR **Collection sample site:** NR **Self vs HCW:** NR **Description of swab collection:** NR
12.				

	Author, year: Bhattacharya 2021[12] **Country:** India **Study Design:** Cohort	**Number of patients:** 74 **Age:** NR **Gender (%male):** NR **Patient selection:** Two hundred twenty-four patients with symptoms deemed consistent with COVID-19 submitted an enhanced saliva specimen 5 to 10 min prior to having a matched NPS collected by a trained medical professional. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 2 days	**Test name(s):** Roche Cobas **EUA certified:** Yes **CE certified:** **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** The NPS and saliva were collected within 48 h after symptoms onset. Saliva specimens were collected by the patients themselves in sterile sputum containers and transported as per the standard guidelines	**Test name(s):** Roche Cobas 6800 **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** Both the NPS and saliva were collected within 48 h after symptoms onset. Saliva specimens were collected by the patients themselves in sterile sputum containers and transported as per the standard guidelines
13.	**Author, year:** Callahan 2021[13] **Country:** United States **Study Design:** Cohort	**Number of patients:** 307 **Age:** >18 **Gender (%male):** NR **Patient selection:** Participants were adults over 18 years of age tested for SARS-CoV-2 during the normal course of clinical care, based either on clinically suspected COVID-19 infection or follow-up after previous SARS-CoV-2-positive RT-PCR testing.	**Test name(s):** Abbott RealTime **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN **Self-collection of swab:** Yes **Description of swab collection:** For the shallower/shorter collection procedure (henceforth, “shallow”), for each naris, the swab tip was inserted into the nostril, the patient was told to press a finger against the exterior of that naris, and the swab	**Test name(s):** Abbott Realtime **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** For the shallower/shorter collection procedure (henceforth, “shallow”), for each naris, the swab tip was inserted into the nostril, the patient was told to press a finger against the exterior of that naris, and the

		Symptomatic or Asymptomatic or Mix: Unclear **Days since symptom onset (if applicable):** NR	was rotated against this external pressure for 10 seconds; For the deeper/longer collection procedure (henceforth, "deep"), the swab was inserted into the naris until resistance was felt, and the swab was then rotated for 15 seconds without external pressure; this procedure was repeated with the same swab on the other naris procedure was repeated with the same swab on the other naris	swab was rotated against this external
14.	**Author, year:** Challener 2020[14] **Country:** United States **Study Design:** Cohort	**Number of patients:** 2,315 **Age:** median 46 **Gender (%male):** 39% **Patient selection:** collected the results of all patients in our electronic health record (EHR) who underwent PCR testing for COVID-19 **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** repeat testing within 7 days (median time to second test 7 days, IQR: 4 to 10 days)	**Test name(s):** Roche Cobas SARS-CoV-2 test, Abbott RealTime SARS-CoV-2 assay **EUA certified:** Yes - both **CE certified:** Yes - both **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** **Collection sample site:** **Self vs HCW:** **Description of swab collection:**
15.		**Number of patients:** 184	**Test name(s):** Abbott ID NOW	

	Author, year: Cradic 2020[15] **Country:** United States **Study Design:** Cohort	**Age:** NR **Gender (%male):** NR **Patient selection:** ER or inpatients **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP, OP, and AN **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Abbott, Simplexa and Roche (The consensus standard was defined as the result obtained from at least 2 of the 3 assays) **Collection sample site:** NP, OP, AN **Self vs HCW:** HCW **Description of swab collection:** NR
16.	**Author, year:** De Pace 2021[16] **Country:** Italy **Study Design:** Cohort	**Number of patients:** 75 **Age:** median patient age was 65 (IQR: 58–72.2) **Gender (%male):** 74.60% **Patient selection:** symptomatic patients in the ICUs at San Martino Hospital **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** median times and IQR, in days, from the onset of symptoms to SARS-CoV-2 testing in group 1 (high viral load) (19.5 days, IQR=9.7–24.7) and group 2 (low viral load) (39 days, IQR=29–95).	**Test name(s):** Bosch Vivalytic **EUA certified:** No **CE certified:** Yes **Collection sample site:** LRT (BAL and BAS) **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Allplex™ SARS-CoV-2 assay **Collection sample site:** LRT **Self vs HCW:** HCW **Description of swab collection:** NA

17.	**Author, year:** Deslandes 2022[17] **Country:** Canada **Study Design:** Cohort	**Number of patients:** 269 **Age:** NR **Gender (%male):** NR **Patient selection:** Patient seen in the ED at The Ottawa Hospital – General campus, were deemed eligible for testing with the Abbott ID Now if they presented with symptoms compatible with SARS-CoV-2 infection. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** No **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Seegene Allplex, Roche Cobas, Hologic Panther, Hologic Aptima **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
18.	**Author, year:** Domnich 2021[18] **Country:** Italy **Study Design:** Case control	**Number of patients:** 400 **Age:** 50.4 ± 21.8 years **Gender (%male):** 47.50% **Patient selection:** 400 routinely collected leftover nasopharyngeal samples with a known RT-PCR result were tested by means of the HG COVID-19 RT-LAMP assay.	**Test name(s):** HG RT-LAMP **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Seegene Allplex **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR

		Symptomatic or Asymptomatic or Mix: Mix **Days since symptom onset (if applicable):** NR		
19.	**Author, year:** Echavarria 2021[19] **Country:** Argentina **Study Design:** Cohort	**Number of patients:** 174 **Age:** median age in the population was 38 years old (interquartile range [IQR], 31–50) **Gender (%male):** 40% **Patient selection:** Paired NPS and saliva were prospectively collected from patients presenting at the emergency room (ER) in CEMIC University Hospital from August to September 2020. Patients with signs or symptoms potentially due to COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** median of 2 days (IQR, 1–4)	**Test name(s):** Altona Realstar **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Patients were also instructed to collect saliva by themselves in a plastic sterile container without any transport media	**Test name(s):** Altona realstar **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
20.	**Author, year:** Farfour 2021[20]	**Number of patients:** 48 **Age:** NR	**Test name(s):** Abbott ID Now **EUA certified:** Yes	**Test name(s):** Abbott Alinity **Collection sample site:** NP

	Country: France **Study Design:** Cohort	**Gender (%male):** NR **Patient selection:** Ambulatory **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**CE certified:** No **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Self vs HCW:** Unclear **Description of swab collection:** NR
21.	**Author, year:** Fitoussi 2021[21] **Country:** France **Study Design:** Cohort	**Number of patients:** 239 **Age:** NR **Gender (%male):** NR **Patient selection:** Patients who were suspected of COVID-19 attending the Centre were prospectively included during the last second epidemic wave in France from October to November 2020. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** Credo VitaPCR **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Liferiver **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR
22.	**Author, year:** Flores-León 2022[22] **Country:** Peru	**Number of patients:** 360 **Age:** NR **Gender (%male):** NR	**Test name(s):** Genesystem SMARTCHEK **EUA certified:** No **CE certified:** Yes	**Test name(s):** CDC diagnostic panel **Collection sample site:** NP **Self vs HCW:** Unclear

	Study Design: Case control	**Patient selection:** A total of 360 nasopharyngeal swab samples were received by the Instituto Nacional de Salud (INS) for molecular diagnosis by RT-qPCR under the SARS-CoV-2 surveillance system in Peru. **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Description of swab collection:** NR
23.	**Author, year**: Fougère 2021[23] **Country:** Switzerland **Study Design:** Cohort	**Number of patients:** 397 **Age:** 12.7 (3.8) mean (SD) **Gender (%male):** 51.70% **Patient selection:** ambulatory **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 2.4 (1.8) mean days (SD)	**Test name(s):** Roche Cobas **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** collection of a significant amount of saliva and the drooling of at least 10 µL of saliva in a tube when possible.	**Test name(s):** Roche Cobas **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
24.	**Author, year:** Freire-Paspuel 2021[24]	**Number of patients:** 89 **Age:** NR	**Test name(s):** Bioneer AccuPower, Seegene Allplex	**Test name(s):** CDC protocol RTPCR

	Country: Ecuador **Study Design:** Cohort	**Gender (%male):** NR **Patient selection:** laboratory **Symptomatic or Asymptomatic or Mix:** Asymptomatic **Days since symptom onset (if applicable):** NA	**EUA certified:** Yes - Seegene Allplex **CE certified:** Yes - Accupower **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
25.	**Author, year:** Freire-Paspuel 2021b[25] **Country:** Ecuador **Study Design:** Cohort	**Number of patients:** 156 **Age:** NR **Gender (%male):** NR **Patient selection:** laboratory **Symptomatic or Asymptomatic or Mix:** Asymptomatic **Days since symptom onset (if applicable):** NA	**Test name(s):** Viasure RT-qPCR kit **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** 2019-nCoV CDC (IDT) RT-qPCR kit **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
26.	**Author, year:** Hanson 2020[26] **Country:** United States **Study Design:** Cohort	**Number of patients:** 354 **Age:** average age 35 years (range, 18 to 75 years) **Gender (%male):** 53% **Patient selection:** ambulatory **Symptomatic or Asymptomatic or Mix:** Symptomatic	**Test name(s):** Hologic Aptima **EUA certified:** Yes **CE certified:** **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Hologic Aptima SARS-CoV-2 transcription-mediated amplification (TMA) assay **Collection sample site:** Saliva **Self vs HCW:** Self **Description of swab collection:** the subjects were instructed to swab both nostrils, pool saliva in

		Days since symptom onset (if applicable): NR		their mouth without coughing, and then repeatedly spit a minimum of 1 ml saliva into a sterile empty tube in the presence of a health care worker.
27.	**Author, year:** Harrington 2020[27] **Country: United States** **Study Design:** Cohort	**Number of patients:** 524 **Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic patients from three emergency departments and two immediate care centers **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Abbott RealTime SARSCoV-2 Assay (target N and RdRp genes) **Collection sample site:** NP **Self vs HCW:** **Description of swab collection:**
28.	**Author, year:** Heger 2022[28] **Country:** Germany **Study Design:** Cohort	**Number of patients:** 120 **Age:** NR **Gender (%male):** 55% **Patient selection:** Hospitalized **Symptomatic or Asymptomatic or Mix:** Mix	**Test name(s):** Bosch Vivalytic **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Allplex 2019-nCOV Assay **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

		Days since symptom onset (if applicable): NR		
29.	**Author, year:** Hofman 2021[29] **Country:** France **Study Design:** Cohort	**Number of patients:** 112 **Age:** mean (± SD) age 40±15 years **Gender (%male):** 40.4 **Patient selection:** Ambulatory **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 4	**Test name(s):** Biocartis Idylla **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** DAAgene Kit **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
30.	**Author, year:** Hou 2020[30] **Country: China** **Study Design:** Cohort	**Number of patients:** 285 **Age:** NR **Gender (%male):** NR **Patient selection:** Submitted clinical samples **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):**	**Test name(s):** Cepheid Xpert Xpress **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** OP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Commercially available real-time reverse transcription-PCR (RTPCR) assays approved by the **Collection sample site:** OP **Self vs HCW:** NR **Description of swab collection:** NR
31.	**Author, year:** Iwasaki 2020[31]	**Number of patients:** 76	**Test name(s):** Pishtaz One-Step	**Test name(s):** Same as Index Test

	Country: Japan **Study Design:** Cohort	**Age:** Median 66 (range 23-106 **Gender (%male):** NR **Patient selection:** Patients suspicious of having COVID-19 and those with a diagnosis of COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** <10 days	**EUA certified:** No **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Patients asked to spit into sterile PP Screw cup 50	**Collection sample site:** NP **Self vs HCW:** NR **Description of swab collection:** NR
32.	**Author, year:** Kandel 2020[32] **Country:** Canada **Study Design:** Cohort	**Number of patients:** 432 **Age:** median age of persons with COVID-19 was 42 (IQR 30 to 54) **Gender (%male):** 43.20% **Patient selection:** Outpatient COVID-19 suspected individuals **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** in those with symptoms the median time from symptom onset to testing was 4 days (IQR 2–7 days)	**Test name(s):** Multiple **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** were asked to provide as much saliva as they could produce, up to a maximum of 5 mL into a sterile container	**Test name(s):** CFX96 Touch Real-time PCR detection system **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

33.	**Author, year:** Kandel 2021[33] **Country:** Canada **Study Design:** Cohort	**Number of patients:** 340 **Age:** NR **Gender (%male):** NR **Patient selection:** The study population was consecutive individuals presenting to 3 assessment centers in Toronto, Ontario, who had a nasopharyngeal swab obtained for SARS-CoV-2 testing. During 3 separate study periods, a self-collected paired non-nasopharyngeal specimen wa **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** ThermoFisher TaqPath **EUA certified:** Yes **CE certified:** No **Collection sample site:** Other **Self-collection of swab:** Yes **Description of swab collection:**	**Test name(s):** ThermoFisher TaqPath Combo Kit **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
34.	**Author, year:** Karino 2021[34] **Country:** Japan	**Number of patients:** 51 **Age:** NR **Gender (%male):** NR	**Test name(s):** Eiken Loopamp **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP	**Test name(s):** Roche Cobas **Collection sample site:** NP **Self vs HCW:** Unclear

	Study Design: Case control	**Patient selection:** Suspected COVID-19 cases **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** range 0-25 days	**Self-collection of swab:** Unclear **Description of swab collection:** NR	**Description of swab collection:** NR
35.	**Author, year:** Kim 2022[35] **Country:** Korea **Study Design:** Cohort	**Number of patients:** 249 **Age:** median: 60 years (range, 7– 89 years **Gender (%male):** 44.19% **Patient selection:** Patients who visited the hospital between dec 2020 and feb 2021 **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Test name(s):** Seegene Allplex, SD Biosensor Standard M, Seasun Biomaterials U-TOP **EUA certified:** Yes **CE certified:** **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** two out of three rRT-PCR assays **Collection sample site:** NP **Self vs HCW:** NR **Description of swab collection:** NR
36.	**Author, year:** Kitagawa 2020[36] **Country:** Japan **Study Design:** Other	**Number of patients:** 76 **Age:** NR **Gender (%male):** NR	**Test name(s):** Eiken Loopamp **EUA certified:** no **CE certified:** yes **Collection sample site:** NP	**Test name(s):** RT-qPCR **Collection sample site:** NP **Self vs HCW:** Unclear

		Patient selection: Patients with suspected COVID-19 **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Self-collection of swab:** Unclear **Description of swab collection:** NR	**Description of swab collection:** NR
37.	**Author, year:** Kitajima 2021[37] **Country:** Japan **Study Design:** Cohort	**Number of patients:** 239 **Age:** NR **Gender (%male):** NR **Patient selection:** Suspected COVID-19 cases **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Test name(s):** Eiken Loopamp **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP, Sputum **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** QuantiTect® Probe RT-PCR kit (QIAGEN, Hilden, Germany) and LightCycler® 480 (Roche, Penzberg, Germany) **Collection sample site:** NP, Sputum **Self vs HCW:** NR **Description of swab collection:** NR
38.	**Author, year:** Kocagoz 2021[38] **Country:** Turkey **Study Design:** Cohort	**Number of patients:** 363 **Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic hospitalized volunteers **Symptomatic or Asymptomatic or Mix:** Symptomatic	**Test name(s):** Bioeksen Bio-speedy **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Water Gargle **Self-collection of swab:** Yes **Description of swab collection:** patients were instructed to take a few sips of	**Test name(s):** Bioeksen Bio-speedy **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR

		Days since symptom onset (if applicable): NR	regular drinking water, and then to gargle and rigorously rinse their mouth forcefully with this water for at least 10 s and put it back to an empty cup	
39.	**Author, year:** Kojima 2021[39] **Country:** United States **Study Design:** case control	**Number of patients:** 45 **Age:** > 65 years **Gender (%male):** NR **Patient selection:** Non-Hospitalized persons that tested for COVID-19 in Los Angeles County, California. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN **Self-collection of swab:** unclear **Description of swab collection:** Insert the swab into one nostril to the depth of 3-4 cm, rotate the swab for 5 to 10 seconds, place the swab into the collection tube, invert the tube 3-5 times, and place the capped tube into a collection bag.	**Test name(s):** **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** Posterior nasopharyngeal swab specimens were collected by a clinician with the recommended medical technique using nasopharyngeal swabs (Becton Dickinson and Company, Franklin Lakes, NJ, USA)
40.	**Author, year:** Krause 2021[40] **Country:** Germany **Study Design:** Cohort	**Number of patients:** 271 **Age:** NR **Gender (%male):** NR **Patient selection:** Unclear **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NA	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** ONPS **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** SARS-CoV-2 RT-qPCR test **Collection sample site:** NP, OP **Self vs HCW:** NR **Description of swab collection:** NR

41.	**Author, year:** Laferl 2021[41] **Country:** Austria **Study Design:** Cohort	**Number of patients:** 170 **Age:** 51.46 (+-23.39) range **Gender (%male):** 58.06% **Patient selection:** Hospitalized patients **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** 7.80 (+-4.60)	**Test name(s):** Roche Cobas **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP, buccal, mouthwash **Self-collection of swab:** Yes **Description of swab collection:** NP swab sampling was performed on both nostrils and oropharynx sampling using a single swab.	**Test name(s):** SARS-CoV-2 RT-qPCR test **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** Both nostrils
42.	**Author, year:** Landry 2020[42] **Country: United States** **Study Design: Cohort**	**Number of patients:** 124 **Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic outpatients suspected of having COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Patients asked to not eat or drink for 30 minutes, let saliva pool in their mouths and then spit into a sterile container	**Test name(s):** CDC Diagnostic Panel **Collection sample site:** NP **Self vs HCW:** NR **Description of swab collection:** NR
43.		**Number of patients:** 190	**Test name(s):** Roche Cobas	**Test name(s):** modified reference standard defined as

	Author, year: LeBlanc 2020[43] **Country:** Canada **Study Design:** Cohort	**Age:** NR **Gender (%male):** NR **Patient selection:** Assessment centers, prioritizing areas with suspected community spread of SARS-CoV-2 **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**EUA certified:** Yes **CE certified:** Yes **Collection sample site:** OP+AN **Self-collection of swab:** No **Description of swab collection:** HCW-collected using a flocked NP swab in 3 mL Universal transport medium TM (Copan Diagnostics Inc.)	concordant results from at least two methods with different genetic targets **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** according to instructional video
44.	**Author, year:** LeGoff 2021[44] **Country:** France **Study Design:** Cohort	**Number of patients:** 1718 **Age:** 37 [26–52] (median) **Gender (%male):** 45% **Patient selection:** Suspected COVID-19 cases **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** 3	**Test name(s):** Thermo Fisher TaqPath, The EasyCov RT-LAMP, **EUA certified:** Yes - Taqpath **CE certified:** Yes - EasyCov **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Swish saliva around in mouth for 30 s	**Test name(s):** TaqPath COVID-19 CE IVD RT PCR Kit **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR
45.	**Author, year:** Lephart 2021[45] **Country:** United States	**Number of patients:** 88 **Age:** NR **Gender (%male):** NR	**Test name(s):** Abbott RealTime, Diasorin Simplexa, Cepheid Xpert Xpress, Abbott ID Now **EUA certified:** Yes - all	**Test name(s):** CRS- Abbott RealTime m2000 SARS-CoV-2 Assay, DiaSorin Simplexa COVID-19 Direct, Cepheid Xpert Xpress

	Study Design: Cohort	**Patient selection:** COVID-19 suspected cases, 75 were patients presenting in the ED and 13 were from a population of recovering COVID-19-positive inpatients **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**CE certified:** Yes - Abbott Real Time, Diasorin Simplexa, Cepheid Xpert Xpress **Collection sample site:** NP+AN **Self-collection of swab:** No **Description of swab collection:** NR	SARS-CoV-2, and Abbott ID NOW COVID-19 **Collection sample site:** NP and nasal **Self vs HCW:** Unclear **Description of swab collection:** NR
46.	**Author, year:** Lévesque 2022[46] **Country:** Canada **Study Design:** Case control	**Number of patients:** 213 **Age:** NR **Gender (%male):** NR **Patient selection:** Unclear **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Abbott ID NOW **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Water Gargle **Self-collection of swab:** Yes **Description of swab collection:** Briefly, patients were asked not to eat, drink, or smoke for 15 min before sampling. They were provided with a cup containing 5 ml of natural spring water and were told to gargle with the water for 5 sec in the mouth, 5 sec in the throat, then to repeat this process once and spit out as much as possible in the original cup.	**Test name(s):** standard of care (SOC) NAAT assay. Multiple SOC-NAAT assays for SARS-CoV-2 detection are used in participating laboratories. Commercial assays are: Simplexa™ COVID-19 Direct Kit (DiaSorin Molecular LLC), Cobas® SARS-CoV-2 performed with the Cobas®6800/880 **Collection sample site:** Water gargle **Self vs HCW:** Self **Description of swab collection:** Briefly, patients were asked not to eat, drink, or smoke for 15 min before sampling. They were provided with a cup containing 5 ml of natural spring water and

				were told to gargle with the water for 5 sec in the mouth, 5 sec in the throat, then to repeat this
47.	**Author, year**: Liotti 2020[47] **Country: Italy** **Study Design:** Cross-Sectional	**Number of patients:** 120 **Age:** NR **Gender (%male):** NR **Patient selection:** Submitted clinical samples **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Test name(s):** BioFire FilmArray Respiratory Panel (FA-RP) **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN +OP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Quanty COVID-19 Assay **Collection sample site:** Nasal Swab, OPS **Self vs HCW:** Unclear **Description of swab collection:** NR
48.	**Author, year:** Loeffelholz 2020[48] **Country: United States, United Kingdom, France, Italy** **Study Design:** cross-sectional	**Number of patients:** 99 **Age:** NR **Gender (%male):** NR **Patient selection:** Convenience sample set to enrich for positive specimen, one site collected samples from symptomatic patients over four days **Symptomatic or Asymptomatic or Mix:** Symptomatic	**Test name(s):** Cepheid Xpert Xpress **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** ONPS **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** New York SARS-CoV-2 Real Time RT-PCR Diagnostic Assay Panel (Modified CDC assay, target N1 and N2 genes) (Hologic Panther Fusion SARS-CoV-2 Assay for discordant results) **Collection sample site:** NPS/OPS **Self vs HCW:** Unclear **Description of swab collection:** NR

		Days since symptom onset (if applicable): NR		
49.	**Author, year:** Mack 2022a[49] **Country:** United States **Study Design:** Cohort	**Number of patients:** 173 **Age:** NR **Gender (%male):** NR **Patient selection:** Fully Vaccinated National Football League Players who had an initial positive test results received December 14–19, 2021; confirmed or presumed as Omicron **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Roche Cobas assay, or Mesa Accula **EUA certified:** Yes **CE certified:** Yes Two testing protocols were implemented from June – December 2021. Among 4,134 persons tested, 173 either confirmed as Omicron or unsequenced (presumed Omicron) were tested for isolation release.	**Patient related outcome:** Outcome 1 – 79/173 (46%)received negative test results/ RT-PCR test result with a Ct≥35 by day 6 postdiagnosis (i.e., concluding 5 days of isolation) and 146/173 (84%) before day 10. None of the people who returned to work reported onset of new symptoms after early return during the 10 days after diagnosis. **Transmission events:** Outcome 1 – Variant: December 12, 2021–January 1, 2022 (Omicron variant), a surge in COVID-19 cases occurred, with an average of 336/ per week, compared with 30/ per week during the preceding 3 months. 111 (95%) were classified as Omicron and six (5%) as the SARS-CoV-2 B.1.617.2 (Delta) variant.

50.	**Author, year:** Mack 2022b[50] **Country:** United States **Study Design:** Cohort	**Number of patients:** 4989 **Age:** NR **Gender (%male):** NR **Patient selection:** NFL players and Club staff **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Mesa Accula **EUA certified:** Yes **CE certified:** No **Collection sample site:** Unclear **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Thermo Fisher TaqPath, Roche Cobas, Hologic Aptima **Collection sample site:** NR **Self vs HCW:** Unclear **Description of swab collection:** NR
51.	**Author, year:** Mahmoud 2021b[51] **Country:** United Arab Emirates (UAE) **Study Design:** Case control	**Number of patients:** 4981 **Age:** NR **Gender (%male):** NR **Patient selection:** COVID-19 quarantine facilities for positive sample, negative samples from those that visited lab **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** The Abbott ID NOW COVID-19 assay, Atila iAMP COVID-19 detection, AQ-TOP Plus COVID-19 Rapid Detection Kit, Genechecker PCR system-UF 300–RT PCR, Cobas Liat system SARS-CoV-2 and Influenza A/B nucleic acid test, POCKIT SARS-CoV-2 assay **EUA certified:** Yes - The Abbott ID NOW COVID-19 assay, Atila iAMP COVID-19 detection, AQ-TOP Plus COVID-19 Rapid Detection Kit, Cobas Liat system SARS-CoV-2 and Influenza A/B nucleic acid test	**Test name(s):** RT-PCR was done using the Bioer LineGene 9600 Plus Fluorescent Quantitative Detection System. **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

			CE certified: Yes - Atila iAMP COVID-19 detection, Cobas Liat system SARS-CoV-2 and Influenza A/B nucleic acid test **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	
52.	**Author, year:** Masse 2021[52] **Country:** France **Study Design:** Cohort	**Number of patients:** 143 **Age:** Medial age - 35.8 (8–74) **Gender (%male):** 44% **Patient selection:** Patients with COVID-19 symptoms **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 9	**Test name(s):** Thermo Fisher TaqPath **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** participants were asked to produce saliva coughed up from the posterior oropharynx by clearing the throat and/or by gargling for 15–20 s with 1 mL of water and spitting it back into a tube	**Test name(s):** TaqPath **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
53.	**Author, year:** McCormick-Baw 2020[53] **Country: United States** **Study Design:** Cohort	**Number of patients:** 156 **Age:** Mean: 47.8 **Gender (%male):** NR **Patient selection:** Patients in ED with suspected COVID-19 or randomly selected in the hospital	**Test name(s):** Cepheid Xpert Xpress **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes	**Test name(s):** Cepheid Xpert Xpress **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** The NPS specimens were

		COVID-19 unit from patients not requiring mechanical ventilation. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Description of swab collection:** Patients instructed to avoid food, drink, tobacco, and gum for 30 minutes; staff educated on collecting saliva and not sputum	collected in the standard fashion, and similarly, testing was performed according to the manufacturer's instructions
54.	**Author, year:** McCulloch 2020[54] **Country:** United States **Study Design:** Cohort	**Number of patients:** 185 **Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic outpatients testing (SARS-CoV-2)–positive and symptomatic HCWs presenting to drive-through clinics. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):**	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** MT **Self-collection of swab:** Yes **Description of swab collection:** Patients provided with self-collection kit with instructions	**Test name(s):** Same as Index Test **Collection sample site:** NP **Self vs HCW:** **Description of swab collection:**
55.	**Author, year:** McDonald 2020[55] **Country:** United States	**Number of patients:** 585 **Age:** Mean: 53 (±19 SD) **Gender (%male):** NR	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes	**Test name(s):** Abbott RealTime SARSCoV-2 Assay and (target N and RdRp genes) **Collection sample site:** NP

	Study Design: Cohort	**Patient selection:** Symptomatic patients in the emergency department. Only negative samples received reference standard (positive patients presumed to be true positive). **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):**	**Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Self vs HCW:** unclear **Description of swab collection:** NR
56.	**Author, year:** Micocci 2021[56] **Country:** United Kingdom **Study Design:** Cohort	**Number of patients:** 278 **Age:** NR **Gender (%male):** NR **Patient selection:** patients from nursing and residential homes **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** GeneReach POCKIT **EUA certified:** No **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** RT-PCR **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
57.	**Author, year:** Migueres 2020[57] **Country:** France **Study Design:** Cohort	**Number of patients:** 123 **Age:** Median: 43 **Gender (%male):** NR	**Test name(s):** Hologic Panther Fusion **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva	**Test name(s):** Hologic Panther Fusion **Collection sample site:** NP **Self vs HCW:** Unclear

		Patient selection: Hospitalized and ambulatory patients **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):**	**Self-collection of swab:** Yes **Description of swab collection:** HCW asked patients to salivate, swill their saliva around their mouths for 30 seconds and then spit into a sterile container	**Description of swab collection:** NR
58.	**Author, year:** Migueres 2021b[58] **Country:** France **Study Design:** Cohort	**Number of patients:** 160 **Age:** average age: 33 years; range: 03 to 77 years **Gender (%male):** 48% **Patient selection:** Suspected COVID-19 cases **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Hologic Aptima and Hologic Panther **EUA certified:** Yes - some **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Saliva (1mL) was collected after the subjects had swilled their saliva around their mouths for at least 30 seconds and then spitting into a sterile container.	**Test name(s):** a laboratory-developed test (LDT) based on real-time RT-PCR on a Panther FusionTM module (Hologic, San Diego, California) **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
59.	**Author, year:** Mitchell 2020[59] **Country:** United States **Study Design:** Cohort	**Number of patients:** 61 **Age:** NR **Gender (%male):** NR **Patient selection:** Submitted clinical samples	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** Unclear	**Test name(s):** CDC 2019-nCoV RealTime RT-PCR Diagnostic Panel, New York SARSCoV-2 Real Time RTPCR Diagnostic Assay Panel (Modified CDC assay, target N1 and N2 genes)

		Symptomatic or Asymptomatic or Mix: Unclear **Days since symptom onset (if applicable):**	**Description of swab collection:** NR	**Collection sample site:** NP **Self vs HCW:** unclear **Description of swab collection:** NR
60.	**Author, year:** Montaño 2022[60] **Country:** United States **Study Design:** Case control	**Number of patients:** 257 **Age:** median age = 37 **Gender (%male):** NR **Patient selection:** Symptomatic adults with COVID-19 visiting either visiting a University of Washington (UW) Medicine COVID-19 testing site, a City of Seattle COVID-19 testing site, or had a documented recent positive COVID-19 RT-PCR result. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** Multiple **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** AN **Self-collection of swab:** Yes **Description of swab collection:** NR	**Test name(s):** Roche Cobas, Hologic Panther, Abbott ABI 7500 **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
61.	**Author, year:** Moran 2020[61] **Country:** United States **Study Design:** Cohort	**Number of patients:** 103 **Age:** NR **Gender (%male):** NR	**Test name(s):** Cepheid Xpert Xpress **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** ONPS	**Test name(s):** Roche Cobas SARS-CoV-2 Assay (target ORF1ab and E genes) **Collection sample site:** NPS/OPS

		Patient selection: Symptomatic inpatient and ambulatory patients **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Self-collection of swab:** Unclear **Description of swab collection:** NR	**Self vs HCW:** unclear **Description of swab collection:** NR
62.	**Author, year:** Nacher 2021[62] **Country:** French Guiana **Study Design:** Cohort	**Number of patients:** 1028 **Age:** median age = 34 **Gender (%male):** 44% **Patient selection:** samples from Cayenne hospital, the Red Cross mobile team, sampled by Doctors of the World mobile teams (Médecins du Monde), and some were recruited by a team in Maripasoula remote village. **Symptomatic or Asymptomatic or Mix:** Mix	**Test name(s):** OSANG GeneFinder **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** patients were advised to accumulate saliva in their mouth before spitting it in the dedicated container	**Test name(s):** OSANG GeneFinder **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
63.	**Author, year:** NguyenVan 2021[63] **Country:** France **Study Design:** Cohort	**Number of patients:** 395 **Age:** mean age was 71 **Gender (%male):** 50% **Patient selection:** Suspected COVID-19 cases	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** Unclear	**Test name(s):** Simplexa COVID-19 direct assay **Collection sample site:** NP **Self vs HCW:** HCW

		Symptomatic or Asymptomatic or Mix: Mix **Days since symptom onset (if applicable):** NR	**Description of swab collection:** NR	**Description of swab collection:** NR
64.	**Author, year:** Patel 2021[64] **Country:** United States **Study Design:** Cohort	**Number of patients:** 146 **Age:** median age of 40 years (IQR, 24–56) **Gender (%male):** 56% **Patient selection:** matched NP and OP swabs collected on the same date from the same person collected ≤7 days after illness onset **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** collected ≤7 days after illness onset and were included in our main analysis.	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** OP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** CDC 2019-Novel Coronavirus (nCoV) Real-Time Reverse Transcriptase (RT)-Polymerase Chain Reaction (PCR) Diagnostic Panel **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR
65.	**Author, year:** Péré 2020[65] **Country:** France **Study Design:** Cohort	**Number of patients:** 44 **Age:** median 63 (range 18-94) **Gender (%male):** NR	**Test name(s):** Seegene Allplex **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** MT **Self-collection of swab:** Unclear	**Test name(s):** Seegene Allplex **Collection sample site:** NP **Self vs HCW:** unclear **Description of swab collection:** inserted in the nostril until they hit an obstacle (the inferior

		Patient selection: Hospitalized patients suspected of having COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):**	**Description of swab collection:** nasal swab inserted in the nostril until it hit an obstacle (the inferior concha), rotated five times, and removed	concha and the back of the nasopharyngeal cavity, respectively), rotated five times, and removed. The test was conducted in only one nostril per patient
66.	**Author, year:** Pham 2020[66] **Country:** United States **Study Design:** Cohort	**Number of patients:** 35 **Age:** NR **Gender (%male):** NR **Patient selection:** Clinical sample sets from symptomatic patients suspected of having COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):**	**Test name(s):** Hologic Panther Fusion **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** OP **Self-collection of swab:** No **Description of swab collection:** OP swab samples collected by swabbing the posterior pharynx for 3-5 seconds and placing the swab into specimen tube containing STM; samples frozen and shipped to Hologic for testing	**Test name(s):** Hologic Panther Fusion **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NS samples were collected first by inserting the swab into the subject's nostril past the inferior turbinate, approximately 3 cm, twisting the swab in the mid-turbinate area for 3 to 5 s, and placing the swab into a tube of STM
67.	**Author, year:** Pitman 2021[67] **Country:** United States, New Zealand	**Number of patients:** 147 **Age:** NR **Gender (%male):** NR	**Test name(s):** UIUC CovidShield **EUA certified:** Yes **CE certified:** No **Collection sample site:** Saliva	**Test name(s):** Abbott RealTime **Collection sample site:** NP **Self vs HCW:** HCW

	Study Design: Case control	**Patient selection:** consenting COVID-19 positive and negative participants located in Chicago and Wisconsin, United States **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Self-collection of swab:** Yes **Description of swab collection:** Participants provided a saliva sample by following guidelines that instructed them to allow saliva to collect in the mouth before gently expelling saliva into the collection tube (passive drool method). They then capped their tube and handed it to the healthcare professional or collection-site staff, who placed it into a collection container	**Description of swab collection:** NR
68.	**Author, year:** Procop 2020a[68] **Country:** United States **Study Design:** Cohort	**Number of patients:** 224 **Age:** mean age of 44 years **Gender (%male):** NR **Patient selection:** Patients with symptoms consistent with COVID-19 at a healthcare clinic **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** No **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** patient was instructed to “snuff” (i.e., sniff strongly) to gather any nasal secretion/mucus into the oropharynx, to cough to produce any phlegm, and then to submit these secretions and additional saliva until the specimen reached the premarked fill line on the sterile specimen collection container (also called a urine cup). We requested 3 ml of saliva/naso-oropharyngeal secretions (referred to	**Test name(s):** CDC 2019 nCoV real-time RT-PCR diagnostic panel **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

			here as “enhanced saliva”) for this study but accepted whatever volume the patient could provide.	
69.	**Author, year**: Procop 2020b[69] **Country:** United States **Study Design:** Cohort	**Number of patients:** 224 **Age:** Mean: 44 (range: 18-82) **Gender (%male):** NR **Patient selection:** Patients with symptoms suggestive of COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):**	**Test name(s):** CDC Diagnostic Panel **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** Patients instructed to sniff strongly to gather nasal secretions into the oropharynx and then to cough all secretions into a "urine cup"	**Test name(s):** CDC Diagnostic Panel **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
70.	**Author, year:** Ramachandran 2021[70] **Country:** United States **Study Design:** Cohort	**Number of patients:** 2895 **Age:** MEAN 52.7 **Gender (%male):** 52.4 **Patient selection:** Convenience sample of asymptomatic patients presenting to a single academic emergency department (ED)	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** No **Description of swab collection:** NR	**Test name(s):** Diasorin Simplexa or Genmark ePlex assays **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

		Symptomatic or Asymptomatic or Mix: Asymptomatic **Days since symptom onset (if applicable):** NR		
71.	**Author, year:** Rao 2021b[71] **Country:** Malaysia **Study Design:** Cohort	**Number of patients:** 217 **Age:** Median age = 27, (IQR: 18–36) **Gender (%male):** 100% **Patient selection:** This prospective single center diagnostic study was conducted among 217 individuals who were tested positive for SARS CoV-2 via NPS at a COVID-19 quarantine center, MAEPS. These selected individuals were on days 8–10 of isolation during the sampling. **Symptomatic or Asymptomatic or Mix:** Asymptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** BioSewoom Real-Q **EUA certified:** Yes **CE certified:** No **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** upon waking up, the individuals were instructed to avoid food, water, and brushing of teeth before the collection of 2 mL of saliva	**Test name(s):** BioSewoom Real-Q 2019 **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
72.	**Author, year:** Renzoni 2021[72] **Country:** Switzerland **Study Design:** Cohort	**Number of patients:** 78 **Age:** NR **Gender (%male):** NR **Patient selection:** vast majority of positive samples come from	**Test name(s):** Visby Medical **EUA certified:** Yes **CE certified:** No **Collection sample site:** NP	**Test name(s):** COBAS 6800 ROCHE **Collection sample site:** MID-TURBINATE **Self vs HCW:** HCW

		outpatient symptomatic patients enrolled in a COVID-19 screening center at the Geneva University Hospitals. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 2	**Self-collection of swab:** No **Description of swab collection:** NR	**Description of swab collection:** NR
73.	**Author, year:** Sahni 2021[73] **Country:** United States **Study Design:** Cohort	**Number of patients:** 569 **Age:** 5 (median) **Gender (%male):** 52.7 **Patient selection:** children <18 years of age who completed an outpatient visit (either in-person or by telemedicine) at one of >50 hospital-affiliated outpatient pediatric practices and had been scheduled for SARS-CoV-2 testing at one of the hospital's affiliated drive-thro **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 4	**Test name(s):** Altona RealStar **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** MT **Self-collection of swab:** No **Description of swab collection:** MT and NP in opposite nostrils	**Test name(s):** ALTONA **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** Opposite nostril of MT swab
74.				

	Author, year: Smith 2020[74] **Country: United States** **Study Design:** Cohort	**Number of patients:** 150 **Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic patient samples	**Test name(s):** BioFire COVID-19 Test (target ORF1ab and ORF8 genes) **EUA certified:** Yes **CE certified:** Yes	Hologic Panther Fusion SARS-CoV-2 Assay (target ORF1ab gene), Hologic Aptima SARS-CoV-2 Assay (NAAT, target ORF1ab gene), and BioFire COVID-19 (target ORF1ab, ORF8 genes) ***Minimum 2/3 tests agree**
75.	**Author, year:** Sogbesan 2022[75] **Country:** United States **Study Design:** Cohort	**Number of patients:** 89 **Age:** Mean 48 **Gender (%male):** 42.70% **Patient selection:** Drive-through facility **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** The self-reported onset of infection had a median of 3 days with an upper limit of 7 days.	**Test name(s):** Roche Cobas **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** participants were provided a self-collection kit for collection of saliva, which featured kit instructions in the form of a video tutorial and paper handout. Using an FDA EUA-approved self-collection device (Spectrum DNA), participants were to spit approximately 2.0 mL into the device. The instructions then required participants to add 1.50 mL of an RNA stabilization/lysing agent to their sample.	**Test name(s):** Cobas 6800 system **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
76.		**Number of patients:** 110	**Test name(s):** Cepheid Xpert Xpress	

	Author, year: Stevens 2020[76] **Country:** United States **Study Design:** Cohort	**Age:** NR **Gender (%male):** NR **Patient selection:** Asymptomatic and symptomatic patients **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):**	**EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Hologic Panther Fusion SARS-CoV-2 Assay (target ORF1ab) **Collection sample site:** NP **Self vs HCW:** unclear **Description of swab collection:** NR
77.	**Author, year:** Sun 2021[77] **Country:** United States **Study Design:** Cohort	**Number of patients:** 175 **Age:** NR **Gender (%male):** NR **Patient selection:** Previous positive and negative samples without further details **Symptomatic or Asymptomatic or Mix:** Unclear **Days since symptom onset (if applicable):** NR	**Test name(s):** Diacarta QuantiVirus **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Unclear **Description of swab collection:** following the kit insert instructions and under the supervision of healthcare providers. No eating or drinking 30 minutes before saliva sample collection.	**Test name(s):** Abbott m2000 RealtTime SARS-CoV-2 PCR **Collection sample site:** Saliva **Self vs HCW:** Unclear **Description of swab collection:** NR
78.	**Author, year**: Thwe 2020[78] **Country:** United States **Study Design:** Cohort	**Number of patients:** 129 **Age:** NR **Gender (%male):** NR	**Test name(s):** Abbott ID Now **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP	**Test name(s):** Hologic Panther Fusion SARS-CoV-2 Assay (target ORF1ab) **Collection sample site:** NP

		Patient selection: Symptomatic patients in the emergency department **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Self-collection of swab:** Unclear **Description of swab collection:** NR	**Self vs HCW:** unclear **Description of swab collection**: NR
79.	**Author, year:** Tu 2020[79] **Country:** United States **Study Design:** Cohort	**Number of patients: 530** **Age:** NR **Gender (%male):** NR **Patient selection:** obtained swab samples from the nasopharynx and from at least one other location in 530 patients with symptoms indicative of upper respiratory infection. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** Quest Diagnostics **EUA certified:** Yes **CE certified:** No **Collection sample site:** tongue, nasal, and mid-turbinate samples, in that order **Self-collection of swab:** Yes **Description of swab collection:** NR	**Test name(s):** Quest Diagnostics **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR
80.	**Author, year:** Uršič 2022[80] **Country:** Slovenia	**Number of patients:** 624 **Age:** NR **Gender (%male):** 39.30%	**Test name(s):** Roche Cobas **EUA certified:** No **CE certified:** Yes	**Test name(s):** CE IVD LightMix Kit **Collection sample site:** NP **Self vs HCW:** HCW

	Study Design: Cohort	**Patient selection:** Outpatients **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** 1 ml of self-collected posterior saliva sample following instructions and supervision by medical personnel onsite	**Description of swab collection:** NR
81.	**Author, year:** Vermeiren 2020[81] **Country:** Canada **Study Design:** Cohort	**Number of patients:** 94 **Age:** NR **Gender (%male):** NR **Patient selection:** COVID-19 symptomatic inpatients, outpatients, and ED patients across five hospitals sampled with both collection systems. **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable**): NR	**Test name(s):** BD Max RT-PCR **EUA certified:** Yes **CE certified:** No **Collection sample site:** MT **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** BD Max RT-PCR **Collection sample site:** NP **Self vs HCW:** Unclear **Description of swab collection:** NR
82.	**Author, year:** Visseaux 2020[82] **Country:** France **Study Design:** Cohort	**Number of patients:** 43 **Age:** NR **Gender (%male):** NR	**Test name(s):** QIAGEN QIASTAT **EUA certified:** Yes **CE certified:** Yes	**Test name(s):** WHO protocol RT-PCR (target E and ORF1 genes) **Collection sample site:** NP **Self vs HCW:** unclear

		Patient selection: Symptomatic inpatient population **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Collection sample site:** NP **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Description of swab collection:** NR
83.	**Author, year:** Vos 2022[83] **Country:** United States **Study Design:** Cohort	**Number of patients:** 154 **Age:** Study subjects ranged in age from 5 to 19 years **Gender (%male):** 56% **Patient selection:** Drive-through and ED **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** 10 days	**Test name(s):** Aptima Panther Fusion **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Saliva **Self-collection of swab:** Yes **Description of swab collection:** A saliva sample was collected by providing a 30 or 50 mL sterile conical tube to the participant, asking them to allow spit to collect in their mouths, and then spitting into the sterile tube until at least 2-3 mL of fluid was obtained. No additional instruction was provided to the participants, such as rinsing the mouth or not eating within a certain timeframe prior to collection.	**Test name(s):** Panther Fusion **Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** The healthcare practitioner inserted an NP swab into the nasopharynx, and it remained in place for 5 seconds.
84.	**Author, year:** Wang 2020[84]	**Number of patients:** 192	**Test name(s):** Suzhou TianLong	**Test name(s):** same as index

	Country: China **Study Design:** Cohort	**Age:** 49 (IQR: 36 to 61) **Gender (%male):** NR **Patient selection:** Outpatients presenting with symptoms of COVID-19 **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**EUA certified:** No **CE certified:** Yes **Collection sample site:** OP **Self-collection of swab:** No **Description of swab collection:** NR	**Collection sample site:** NP **Method of collection:** HCW-collected
85.	**Author, year:** Wehrhahn 2020[85] **Country:** Australia **Study Design:** Cohort	**Number of patients:** 236 **Age:** 40 (range 9–81) **Gender (%male):** 40% **Patient selection:** , patients presenting for SARS-CoV-2 testing at dedicated COVID-19 collection rooms were offered participation in the study **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**Test name(s):** Seegene Allplex **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Nasal and throat **Self-collection of swab:** Yes **Description of swab collection:** Printed instructions including diagrams were provided on how to collect throat and nasal swab	**Test name(s):** Seegene Allplex **Collection sample site:** Nasal and throat **Self vs HCW:** HCW **Description of swab collection:** Throat swabs were collected from the posterior throat and tonsil areas while nasal swabs were inserted as far as comfortably possible and at least 2–3 cm inside one nostril, rotating the swab 5 times and leaving in place for 5–10 seconds.
86.		**Number of patients:** 88	**Test name(s):** Cepheid Xpert Xpress	

	Author, year: Wolters 2020[86] **Country:** Amsterdam **Study Design:** Cohort	**Age:** NR **Gender (%male):** NR **Patient selection:** Symptomatic patients **Symptomatic or Asymptomatic or Mix:** Symptomatic **Days since symptom onset (if applicable):** NR	**EUA certified:** Yes **CE certified:** Yes **Collection sample site:** NP, OP, and AN **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** RT-PCR (target RdRp and E genes) **Collection sample site:** NP, MT, OP **Self vs HCW:** unclear **Description of swab collection:** NR
87.	**Author, year:** Yun 2021[87] **Country:** Korea **Study Design:** Case control	**Number of patients:** **Age:** NR **Gender (%male):** NR **Patient selection:** Previous positive and negative samples without further details **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**Test name(s):** Seegene Allplex, KogeneBiotech PowerChek, SD Biosensor STANDARD M **EUA certified:** Yes **CE certified:** Yes **Collection sample site:** Other **Self-collection of swab:** Unclear **Description of swab collection:** NR	**Test name(s):** Reference results for positive and negative agreements were defined as follows: With regards to SARS-CoV-2, positive samples were defined as the sum of positive samples for all three kits and confirmed cases with discrepant results between three kits. Neg **Collection sample site:** NP and/or OP **Self vs HCW:** Unclear **Description of swab collection:** NR
88.	**Author, year:** Zander 2021[88]	**Number of patients:** 80 **Age:** NR	**Test name(s):** R-Biopharm Rida **EUA certified:** No	**Test name(s):** R-Biopharm Rida assay

	Country: Germany **Study Design:** Cohort	**Gender (%male):** 40% **Patient selection:** patients with possible/probable SARS-CoV-2 infection between October and December 2020. Participants had been traced by health authorities as close contacts of SARS-CoV-2-positive persons and had attended different doctors' offices. **Symptomatic or Asymptomatic or Mix:** Mix **Days since symptom onset (if applicable):** NR	**CE certified:** Yes **Collection sample site:** Water Gargle **Self-collection of swab:** Yes **Description of swab collection:** NR	**Collection sample site:** NP **Self vs HCW:** HCW **Description of swab collection:** NR

Table s5. Narrative Summaries of Included Studies from Additional Targeted Searches

N^0	Author, year	Patient Selection	Methodology	Outcomes and Results
1.	Chu, 2022[89]	Adults and children with RT-PCR–confirmed infection part of a household transmission investigation. Among 552 individuals from 151 households, 225 individuals (41%) from 107 households had RT-PCR–confirmed SARS-CoV-2 infection.	Daily NP swabs for RT-PCR and viral culture were collected by trained health care professionals from all participants at enrollment and 14 days later, regardless of symptom status. A subset of participants consented to undergo additional daily NP swabs for 7 days after enrollment	Six days after illness onset, when people with mild or asymptomatic SARS-CoV-2 infection may discontinue isolation according to current CDC guidance,[21] RT-PCR positivity was 86% At 11 days after illness onset, when most individuals are no longer considered infectious, RT-PCR positivity remained high (86%)

2.	COVIDSurg Collaborative, 2021[90]	Participating hospitals included consecutive patients undergoing elective or emergency surgery for any indication between 5 October 2020 – 1 November 2020. (Symptomatic and Asymptomatic, unvaccinated)	Patients were classified as having pre-operative SARSCoV-2 infection based on any one of the following criteria: (a) positive RT-PCR nasopharyngeal swab taken before surgery (even if the result became available after surgery); (b) positive rapid antigen test performed before surgery; (c) chest computed tomography (CT) scan performed before surgery showing changes consistent with pneumonitis secondary to SARS-CoV-2 infection; (d) positive preoperative immunoglobulin G or immunoglobulin M antibody test; or (e) clinical diagnosis made before surgery (in the absence of negative RT-PCR swab results). Patients who were diagnosed with SARS-CoV-2 in the period between postoperative days 0 and 30 were not studied. Time from the diagnosis of SARS-CoV-2 infection to day of surgery was collected as a categorical factor and pre-determined to be analyzed in the following categories: 0–2 weeks; 3–4 weeks; 5–6 weeks; and ≥ 7 weeks.	In the adjusted model, there was a significantly higher risk of 30-day mortality in patients with pre-operative SARSCoV-2 infection diagnosed 0–2 weeks, 3–4 weeks and 5– 6 weeks before surgery compared with patients who did not have a pre-operative SARS-CoV-2 infection (Table 2). However, there was no significant difference in 30-day postoperative mortality rate in those patients diagnosed with SARS-CoV-2 infection **≥ 7 weeks** before surgery Among those who experienced pre-operative SARS-CoV-2 infection, patients with ongoing COVID-19 **symptoms** had a higher adjusted 30-day mortality rate than patients whose symptoms had resolved or who had been **asymptomatic**
3.	COVIDSurg Collaborative, 2022[91]	We included all patients aged 17 years undergoing any surgical operation between January 1 and June 30, 2020 with perioperative SARS-CoV-2 infection (confirmed	The diagnosis of SARS-CoV-2 infection was based on either quantitative reverse transcription polymerase chain reaction testing or chest computed tomography	At 30-days postoperatively, 174 patients (11.0%) died and 622 (39.5%) developed pulmonary complications, specifically pneumonia (22.8%) and acute

		within 7 days before or 30 days after surgery) in 70 United States hospitals across 27 states.	scan, when deemed appropriate by the participating hospital. The timing of SARS-CoV-2 diagnosis was recorded as either preoperative or postoperative.	respiratory distress syndrome (15.3%) [Table 1]. Of those who developed pulmonary complications, the 30-day mortality rate was 24.4%. Pulmonary embolism occurred in 41 patients (2.6%). The unplanned hospital length of stay admission and reoperation rates were 5.5% and 19.8%, respectively. The median hospital length of stay (inter-quartile range) was 6 (2, 16) days.
4.	Deng, 2022[92]	Symphony Health through the Covid-19 Research Database that includes over 1500 hospitals, 800 outpatient facilities, and 280 million patients between March 1, 2020 and May 30, 2021 (Symptomatic and Asymptomatic, unvaccinated) We did not include patients who had received the Covid-19 vaccine before surgery or during the 90-day period after surgery We specifically excluded operations that could have been performed for emergent reasons, including Caesarian section, cholecystectomy, appendectomy, colectomy for perforated diverticulitis, hernia	COVID-19 status was based on the first positive Reverse Transcription Polymerase Chain Reaction test taken by the patient within the study period. The date of this first test was assumed to represent the start of COVID-19 infection for the patient, even though the actual date of infection was unknown. Patients were categorized into four groups based on the time of surgery relative to the Covid-19 diagnosis date (Fig. 2)	peri-COVID-19 patients (0-4 weeks) had a significantly higher risk of developing postoperative pneumonia. respiratory failure, PE, and sepsis when compared to pre-Covid-19 patients. early post-Covid-19 patients (4-8 weeks) had higher risk of developing postoperative pneumonia. late post-Covid-19 patients (8+ weeks) did not have a higher risk of developing postoperative complications when compared to patients in the pre-Covid-19 group.

		repair in the setting of incarceration, AAA repair for ruptured aneurysm, and any type of trauma surgery		
5.	Hakki, 2022[93]	Household and non-household exposed contacts aged 5 years or older were eligible for recruitment if they could provide informed consent and agree to self-swabbing of the upper respiratory tract. 57 comprised the final study population. **(mix of vaccinated and unvaccinated)**	All contacts underwent daily, longitudinal URT sampling for up to 20 days quantified daily by RT-PCR and viral culture. We defined the window of infectiousness as the period in which virus capable of forming Plaque-forming unit (PFU)s could be detected in the VTM from URT swabs.	The primary objective was to define the window of SARS-CoV-2 infectiousness from the onset of infection and its temporal correlation with symptom onset. The infectious virus was shed for a median of 5 (IQR 3–7) days. 53 (93%) of 57 cases shed viral RNA for over 7 days Age did not significantly associate, and sex and BMI only weakly associated, with the measured kinetic parameters with two-sided t tests. We had limited power to detect differences by vaccination status.
6.	Hann, 2022[94]	All patients undergoing whom endoscopic procedures Between 1 May 2020 and 31 December 2021. Vaccination was performed using two dosages of BNT162b2 (Pfizer-BioNTech) in January and February 2021. Booster immunization was performed with a single dose of BNT162b2 or mRNA-1273	Between 1 May 2020 and 31 December 2021, a total of 15750 GI endoscopies were performed at the University Hospital of Würzburg. Three different test approaches: no testing (n=4543), rapid antigen (RA) testing (n=682) and RT-PCR testing (n=10465). Endoscopies were performed using PPE as recommended	Not a single staff member 0/29 became infected with SARS-CoV-2 during the 20 months analyzed; vaccination rate of the team was 97%.

		(Moderna) in November and December 2021.		
7.	Hayee, 2021[95]	Prospective data were collected from 18 UK centers for n=6208 procedures. 40% were upper endoscopy (60% lower GI procedures)	Preprocedure nasopharyngeal swab testing for SARS-CoV-2 was performed in 2611 patients. Telephone consultation at 7 and 14 days after the procedure to check for symptoms. If symptoms were reported, they underwent NPS testing.	Only 3 (0.11%) of 2611 asymptomatic patients had tested positive for SARS-CoV-2 prior to endoscopy, deferred surgery. 12 patients reported symptoms at either the 7-day or 14-day telephone contact. All then underwent NPS testing and were found to be negative. Symptoms resolved. There were 0 (0/6208) cases of COVID-19 detected in the 2 weeks following endoscopy in HCWs and patients.
8.	Hayee, 2021[96]	Prospective data were collected from eight UK centers for n=2440 patients undergoing endoscopy. 966 (39.6%) upper endoscopy	Preprocedure nasopharyngeal swab testing for SARS-CoV-2 was performed in 2611 patients Telephone consultation at 7 and 14 days after the procedure to check for symptoms. If symptoms were reported, they underwent NPS testing. The outcome of symptoms was noted and, in COVID positive cases a root-cause analysis was performed by the reporting hospital to determine the most likely source of transmission, deemed to be due to procedure if positive within 10 days of procedure.	Pre endoscopy, 9 (0.37%) asymptomatic patients were +ve for SARS-CoV-2 by NPS and their procedures deferred. Post endoscopy, 30/2440 (1.27%) developed symptoms, with 16/2440 (0.65%) testing +ve on NPS. 3 (0.12%) cases were attributed to potential transmission from endoscopy attendance. All 16 patients recovered fully requiring only community treatment.

				There were no cases of transmission to staff members.
9.	Jagannath, 2021[97]	A total of 1549 endoscopic procedures were performed: 1064 (68.7%) were upper endoscopy.	The patients were followed up through telephone after 2 weeks of endoscopy for COVID-19 symptoms or confirmed COVID-19. HCWs were screened for symptoms and tested by reverse transcription PCR if indicated	6 (0.4%) patients turned out to be COVID-19 positive within 48–72 hours of the procedure. Of 74 HCWs, 3 (4%,) developed COVID-19 infection. None of the patients developed COVID-19 after 72 hours up to 2 weeks of endoscopy
10.	Jonker, 2020[98]	The SARS-CoV-2 positive cohort was established from consecutive patients with a pre- or postoperative SARS-CoV-2 positive status who underwent an operation between February 27 and June 1, 2020 in 27 centers across the Kingdom of the Netherlands, covering 10 out of 12 provinces **(Symptomatic and Asymptomatic, unvaccinated)** The negative control group was recruited at 4 of the 27 centers. Patients undergoing elective or emergency operations in hospitals	Patients eligible for inclusion in the SARS-CoV-2 positive cohort either had a SARS-CoV-2 positive RT-PCR test (nasopharyngeal or throat swab) or a strong clinical suspicion combined with a CT of the chest defined as suspect for SARS-CoV-2 infection 30 days before surgery or within 30 days postoperatively Patients eligible for inclusion in the control group had a negative SARS-CoV-2 history, tested negative for SARS-CoV-2 during preoperative screening with RT-PCR, and remained negative during the 30-days of follow-up Cases and controls were matched through propensity scores	In the propensity score-matched cohort, 30-day overall mortality was associated with an OR of 3.4 (95% CI 1.5e8.5) for patients with a perioperative SARS-CoV-2 positive status compared with negative control patients. Patients with perioperative SARS-CoV-2 had more complications (1 [IQR 0e3] vs 0 [IQR 0e1]; P < .001) with a higher comprehensive complication index (21 [IQR 0e40]) vs 0 [IQR 0e12]; P < .001) compared with matched negative control patients.
11.	Le, 2022[99]	21 Kaiser Permanente Northern California medical centers between	COVID-19 status was based on the first positive Reverse Transcription Polymerase Chain Reaction test taken by the patient	Among not fully vaccinated patients, the adjusted rate of perioperative complications was

		January 1, 2020 to February 28, 2022 **(Symptomatic and Asymptomatic, vaccinated and unvaccinated)** **Excluding cases** if the surgeon indicated it was an "add on" case or "emergent" and "urgent" cases needing to be performed within 24 or 48 hours from the time of the case request submission. We excluded ophthalmological and interventional pain management procedures	within the study period. The date of this first test was assumed to represent the start of COVID-19 infection for the patient, even though the actual date of infection was unknown We categorized patients into 5 groups based on the time lag between COVID-19 positivity and surgery date (Fig. 1)	higher among the early postCOVID-19 compared with the pre-COVID-19 group (relative risk: 1.55, P=0.05) hough no significant differences were seen for the mid post-COVID-19 (relative risk: 0.94, P= 0.95) or late post-COVID-19 (relative risk: 0.85, P= 1.00) groups Among fully vaccinated patients, there was no significant difference in the adjusted rate of perioperative complications between the early post-COVID-19 (relative risk: 0.66, P= 1.00), mid post-COVID-19 (0.74, P=1.00), late post-COVID-19 (1.00, P= 0.91) compared with the pre-COVID-19 group
12.	Long, 2020[100]	20,912 symptomatic patients	626 retested within 7 days (mean 3.96) Reasons for retesting included persistent or worsening symptoms NP samples laboratory-developed 2-target/2-control assay modified from the CDC , Panther Fusion, Roche RT-PCR, DiaSorin	Initial results for 91% of patients were negative. It was observed that **3.5%** (22/626) of patients subjected to retesting on clinical grounds within 7 days were subsequently found to be positive. **Transmission events:** not reported **Patient outcomes:** not reported

13.	Minnaei, 2021[101]	361 patients included in study	A structured interview was developed (symptoms and signs of COVID-19, recent trips and possible contacts). This interview was performed at the time of procedure scheduling and before examination + temperatures checked before entering the endoscopy room. Patients were stratified as high-risk if they had fever, and/or direct contact, and/or symptoms suggestive of COVID-19. NPS PCR test by HCWs was done within 48 hours of the scheduled procedure. Patients were contacted by phone and medical records were reviewed within 2 weeks after endoscopy to rule out possible COVID-19. Medical records were also reviewed 30 days after the procedure to rule out eventual infection.	Clinical screening identified 13 patients as high-risk (3.6%) mostly by fever. Only 1 of them had a positive PCR for SARS-CoV-2. None of these 13 individuals developed COVID-19 disease. The pre-procedure PCR was positive in five patients (1.40 %), all of whom were hospitalized for different reasons. 3 of them developed COVID-19 and 1 died as a consequence. Transmission events: 0 developed COVID post procedure.
14.	Podboy, 2020[102]	All new patients for whom endoscopic procedures were ordered at 2 main endoscopy units at a single institution	Retrospective data was collected for patients undergoing endoscopy before and after implementation of universal testing on April 1, 2020, Assumption was that positive testing for COVID-19 within 2 weeks of endoscopy might imply the possibility of a causal relationship with the procedure, whereas community acquisition of infection	During the period of universal testing (April 01 to May 31, 2020), 1041 patients were evaluated, with 999 COVID-19 tests administered to 907 unique patients (with the positive rate was 2 of 999 (0.20%), No known COVID-19 infections have occurred in endoscopy unit personnel or patients since the commencement of preprocedure testing

			would be more likely in patients testing positive beyond 2 weeks of their procedure.	As for patients undergoing endoscopy before initiation of preprocedural testing. Of 741 patients undergoing endoscopy in March, 214 (28.9%) underwent subsequent COVID-19 testing, 43/741 (5%) within 14 days of the procedure. Only 1 of 214 patients developed a positive test, at 29 days postprocedure.
15.	Repici, 2020[103]	Two case series: -851 patients from one large tertiary referral center - 968 HCWs from 41 hospitals in the area	Protocol with questions was used to identify patients who had developed symptoms or were diagnosed as COVID-19 positive within 2 weeks after endoscopic procedures. 802 completed the survey	8 patients developed symptoms on day 15 after lower GI endoscopy. 1 tested positive by swab test. Infection rate of 0.12% (8/851). None of the eight patients had to be hospitalized. No cases of respiratory symptoms have been recorded among the 26 HCWs of the endoscopy. 42 HCWs tested positive for COVID-19. Of these 42 cases, 85.7% occurred before the introduction of safety measures, including personal protective equipment (PPE) and case selection/reduction in GI endoscopy. All hospitalized HCWs could be discharged after a mean of 8 days (range 4–17).

				None required ICU or any form of assisted ventilation. Infection rate of 4.3% (42/968)

Supplement B

Recommendation 1: The IDSA Panel Recommends a SARS-Cov-2 NAAT in Symptomatic Individuals Suspected of Having COVID-19 *(strong recommendation, moderate certainty evidence)*.

Figure s2a. Forest Plot for the Sensitivity for Molecular Tests Using a Composite Reference Standard of Results of More Than 2 Tests

Study	Test	Type	Symptoms	Setting	Reference Standard	TP	FN	Total	Sensitivity	95% CI
Smith 2020	BioFire COVID−19 Test	Standard non−rapid RT−PCR	Symptomatic	Submitted clinical samples	2 of 3 tests	74	1	75	0.99	(0.93–1.00)
Lephart 2021	Diasorin Simplexa	Standard non−rapid RT−PCR	Unclear	Suspected cases	2 of 4 tests	22	3	25	0.88	(0.69–0.97)
Yun 2021	Seegene Allplex	Standard non−rapid RT−PCR	Mix	Submitted clinical samples	3 of 3 tests	93	4	97	0.96	(0.90–0.99)
Kim 2022	Seegene Allplex	Standard non−rapid RT−PCR	Unclear	Hospitalized patients	2 of 3 tests	89	0	89	1.00	(0.96–1.00)
Altamimi 2021	Thermo Fisher Taqpath	Standard non−rapid RT−PCR	Unclear	Submitted clinical samples	6 of 12 tests	60	3	63	0.95	(0.87–0.99)
Bivariate model									**0.97**	**(0.93–0.99)**
5 studies, 349 patients										

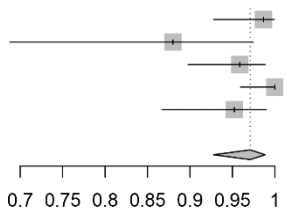
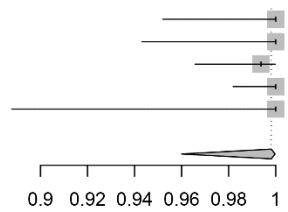


Figure s2b. Forest Plot for the Specificity for Molecular Tests Using a Composite Reference Standard of Results of More Than 2 Tests

Study	Test	Type	Symptoms	Setting	Reference Standard	TN	FP	Total	Specificity	95% CI
Smith 2020	BioFire COVID−19 Test	Standard non−rapid RT−PCR	Symptomatic	Submitted clinical samples	2 of 3 tests	75	0	75	1.00	(0.95–1.00)
Lephart 2021	Diasorin Simplexa	Standard non−rapid RT−PCR	Unclear	Suspected cases	2 of 4 tests	63	0	63	1.00	(0.94–1.00)
Kim 2022	Seegene Allplex	Standard non−rapid RT−PCR	Unclear	Hospitalized patients	2 of 3 tests	159	1	160	0.99	(0.97–1.00)
Yun 2021	Seegene Allplex	Standard non−rapid RT−PCR	Mix	Submitted clinical samples	3 of 3 tests	201	0	201	1.00	(0.98–1.00)
Altamimi 2021	Thermo Fisher Taqpath	Standard non−rapid RT−PCR	Unclear	Submitted clinical samples	6 of 12 tests	31	0	31	1.00	(0.89–1.00)
Bivariate model									**1.00**	**(0.99–1.00)**
5 studies, 530 patients										



Supplement C

Recommendation 2: For Symptomatic Individuals Suspected of Having COVID-19, The IDSA Panel Suggests Collecting and Testing Swab Specimens from Either the Nasopharynx, Anterior Nares, Oropharynx, Mid-Turbinate Regions; or Saliva, or Mouth Gargle *(conditional recommendation, low certainty evidence)*.

Table s6. GRADE Evidence Profile of Molecular Test Accuracy Results Based on Different Sample Sites Using a Prevalence/Pre-Test Probability of 5%

Sample site	Saliva (overall)	Saliva (Without coughing)	Saliva (With coughing)	OP swab	AN swab	Combined AN/OP swab	MT swab	Mouth gargle
Sensitivity	92% (95% CI: 89% to 94%)	91% (95% CI: 87% to 94%)	87% (95% CI: 83% to 90%)	78% (95% CI: 69% to %)	81% (95% CI: 78% to 84%)	87% (95% CI: 77% to 93%)	90% (95% CI: 81% to 95%)	83% (95% CI: 66% to 92%)
Specificity	98% (95% CI: 9%7 to 99%)	98% (95% CI: 96% to 99%)	98% (95% CI: 97% to 99%)	99% (95% CI: 98% to 99%)	100% (95% CI: 99% to 10%0)	10%0 (95% CI: 98% to 10%0)	10%0 (95% CI: 9%6 to 100%)	98% (95% CI: 89% to 10%0)
Outcome	**Effect per 1,000 patients tested Pre-test probability of 5% [a]**							
True positives (patients with COVID-19)	46 (45 to 47)	46 (44 to 47)	44 (42 to 45)	39 (34 to 43)	41 (39 to 42)	44 (39 to 47)	45 (41 to 48)	42 (33 to 46)
False negatives (patients incorrectly classified as not having COVID-19)	4 (3 to 5)	4 (3 to 6)	6 (5 to 8)	11 (7 to 16)	9 (8 to 11)	6 (3 to 11)	5 (2 to 9)	8 (4 to 17)

Number of participants (studies) & Quality of the evidence	2139 (25) ⨁⨁◯◯ LOW [b,c]	1357 (17) ⨁⨁◯◯ LOW [b,c]	477 (4) ⨁⨁◯◯ LOW [b,c]	105 (4) ⨁⨁◯◯ LOW [b,c]	563 (5) ⨁⨁◯◯ LOW [b,c]	76 (2) ⨁⨁◯◯ LOW [b,c]	346 (6) ⨁⨁◯◯ LOW [c,d]	352 (5) ⨁⨁◯◯ LOW [b,c]
True negatives (patients without COVID-19)	931 (922 to 941)	931 (912 to 941)	931 (922 to 941)	941 (931 to 941)	950 (941 to 950)	950 (931 to 950)	950 (152 to 950)	931 (845 to 950)
False positives (patients incorrectly classified as having COVID-19)	19 (9 to 28)	931 (912 to 941)	19 (9 to 19)	9 (0 to 19)	0 (0 to 9)	0 (0 to 19)	0 (0 to 798)	19 (0 to 105)
Number of participants (studies) & Quality of the evidence	5624 (25) ⨁⨁◯◯ LOW [b,c]	2990 (17) ⨁⨁◯◯ LOW [b,c]	961 (4) ⨁⨁◯◯ LOW [b,c]	873 (4) ⨁⨁◯◯ LOW [b,c]	1891 (5) ⨁⨁◯◯ LOW [b,c]	509 (2) ⨁⨁◯◯ LOW [b,c]	1183 (6) ⨁◯◯◯ VERY LOW [b,c,d]	965 (5) ⨁◯◯◯ VERY LOW [b,c,d]

Explanations: This table is based on applying the sensitivity and specificity estimates to calculate true and false positives and negatives in a hypothetical population of 1000 individuals for the samples of saliva, oropharyngeal (OP), anterior nasal (AN), mid-turbinate (MT), and mouth gargle

a. We used a pre-test probability of 5% to represent an example of low community prevalence.
b. Although some inconsistency can be related to the method of collection, there is serious unexplained inconsistency in the results.
c. There is indirectness of comparison, as the different sample types were not assessed directly in the same studies. Also, samples came from symptomatic and asymptomatic individuals.
d. Considering the upper and lower limits of the confidence interval might lead to different clinical decisions.

Table s7. GRADE Evidence Profile of Molecular Test Accuracy Results Based on Different Sample Sites Using a Prevalence/Pre-Test Probability of 50%

Sample site	Saliva (overall)	Saliva (Without coughing)	Saliva (With coughing)	OP swab	AN swab	Combined AN/OP swab	MT swab	Mouth gargle
Sensitivity	92% (95% CI: 89% to 94%)	91% (95% CI: 87% to 94%)	87% (95% CI: 83% to 90%)	78% (95% CI: 69% to 85%)	81% (95% CI: 78% to 84%)	87% (95% CI: 77% to 93%)	90% (95% CI: 81% to 95%)	83% (95% CI: 66% to 92%)
Specificity	98% (95% CI: 97% to 99%)	98% (95% CI: 96% to 99%)	98% (95% CI: 97% to 99%)	99% (95% CI: 98% to 99%)	100% (95% CI: 99% to 100%)	100% (95% CI: 98% to 100%)	100% (95% CI: (6% to 100%)	98% (95% CI: 089% to 100%)
Outcome	**Effect per 1,000 patients tested Pre-test probability of 50% [a]**							
True positives (patients with COVID-19)	460 (445 to 470)	455 (435 to 470)	435 (415 to 450)	390 (345 to 425)	405 (390 to 420)	435 (385 to 465)	450 (405 to 475)	415 (330 to 460)
False negatives (patients incorrectly classified as not having COVID-19)	40 (30 to 55)	45 (30 to 65)	65 (50 to 85)	110 (75 to 155)	95 (80 to 110)	65 (35 to 115)	50 (25 to 95)	85 (40 to 170)
Number of participants (studies) & Quality of the evidence	2139 (25) ⊕⊕◯◯ LOW [b,c]	1357 (17) ⊕⊕◯◯ LOW [b,c]	477 (4) ⊕⊕◯◯ LOW [b,c]	105 (4) ⊕◯◯◯ VERY LOW [b,c,d]	563 (5) ⊕◯◯◯ VERY LOW [b,c,d]	76 (2) ⊕◯◯◯ VERY LOW [b,c,d]	346 (6) ⊕⊕◯◯ LOW [c,d]	352 (5) ⊕◯◯◯ VERY LOW [b,c,d]

True negatives (patients without COVID-19)	490 (485 to 495)	490 (480 to 495)	490 (485 to 495)	495 (490 to 495)	500 (495 to 500)	500 (490 to 500)	500 (80 to 500)	490 (445 to 500)
False positives (patients incorrectly classified as having COVID-19)	10 (5 to 15)	10 (5 to 20)	10 (5 to 15)	5 (0 to 10)	0 (0 to 5)	0 (0 to 10)	0 (0 to 420)	10 (0 to 55)
Number of participants (studies) & Quality of the evidence	5624 (25) ⨁⨁◯◯ LOW [b,c]	2990 (17) ⨁⨁◯◯ LOW [b,c]	961 (4) ⨁⨁◯◯ LOW [b,c]	873 (4) ⨁⨁◯◯ LOW [b,c]	1891 (5) ⨁⨁◯◯ LOW [b,c]	509 (2) ⨁⨁◯◯ LOW [b,c]	1183 (6) ⨁◯◯◯ VERY LOW [b,c,d]	965 (5) ⨁⨁◯◯ LOW [b, c]

Explanations: This table is based on applying the sensitivity and specificity estimates to calculate true and false positives and negatives in a hypothetical population of 1000 individuals for the samples of saliva, oropharyngeal (OP), anterior nasal (AN), mid-turbinate (MT), and mouth gargle

a. We used a pre-test probability of 50% for cases of known close contact or during outbreaks.
b. Although some inconsistency can be related to the method of collection, there is a serious unexplained inconsistency in the results.
c. There is indirectness of comparison, as the different sample types were not assessed directly in the same studies. Also, samples came from symptomatic and asymptomatic individuals.
d. Considering the upper and lower limits of the confidence interval might lead to different clinical decisions.

Figure s3a. Forest Plot for the Sensitivity for Saliva (Overall) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TP	FN	Total	Sensitivity	95% CI
Echavarria 2021	Altona Realstar	Symptomatic	Yes	61	2	63	0.97	(0.89–1.00)
Vos 2022	Aptima Panther Fusion	Symptomatic	Yes	64	9	73	0.88	(0.78–0.94)
Rao 2021b	BioSewoom Real−Q	Asymptomatic	Yes	73	11	84	0.87	(0.78–0.93)
Landry 2020	CDC Diagnostic Panel	Symptomatic	Yes	28	5	33	0.85	(0.68–0.95)
Procop 2020a	CDC Diagnostic Panel	Symptomatic	Yes	38	1	39	0.97	(0.87–1.00)
Procop 2020b	CDC Diagnostic Panel	Symptomatic	Yes	38	0	38	1.00	(0.91–1.00)
McCormick−Baw 2020	Cepheid Xpert Xpress	Mix	Yes	47	2	49	0.96	(0.86–1.00)
Sun 2021	Diacarta QuantiVirus	Unclear	Unclear	84	1	85	0.99	(0.94–1.00)
Balaska 2021	Fluidigm Advanta	Mix	Yes	54	7	61	0.89	(0.78–0.95)
Migueres 2021b	Hologic Aptima	Asymptomatic	Yes	5	4	9	0.56	(0.21–0.86)
Banerjee 2021	Hologic Aptima	Mix	Yes	53	4	57	0.93	(0.83–0.98)
Migueres 2021b	Hologic Aptima	Symptomatic	Yes	42	3	45	0.93	(0.82–0.99)
Hanson 2020	Hologic Aptima	Symptomatic	Yes	75	5	80	0.94	(0.86–0.98)
Migueres 2020	Hologic Panther Fusion	Mix	Yes	34	7	41	0.83	(0.68–0.93)
Kandel 2020	Multiple	Mix	Yes	39	4	43	0.91	(0.78–0.97)
Nacher 2021	OSANG GeneFinder	Symptomatic	Unclear	64	24	88	0.73	(0.62–0.82)
Iwasaki 2020	Pishtaz One−Step	Symptomatic	Yes	8	1	9	0.89	(0.52–1.00)
Sogbesan 2022	Roche Cobas	Symptomatic	Yes	15	4	19	0.79	(0.54–0.94)
Fougère 2021	Roche Cobas	Symptomatic	Yes	86	15	101	0.85	(0.77–0.91)
Bhattacharya 2021	Roche Cobas	Symptomatic	Yes	53	5	58	0.91	(0.81–0.97)
Uršic 2022	Roche Cobas	Mix	Yes	221	12	233	0.95	(0.91–0.97)
Uršic 2022	Roche Cobas	Mix	Yes	158	5	163	0.97	(0.93–0.99)
Al Suwaidi 2021	Seegene Allplex	Mix	Yes	64	10	74	0.86	(0.77–0.93)
Altawalah 2020	Thermo Fisher TaqPath	Mix	Yes	287	57	344	0.83	(0.79–0.87)
Masse 2021	Thermo Fisher TaqPath	Symptomatic	Yes	51	5	56	0.91	(0.80–0.97)
LeGoff 2021	Thermo Fisher TaqPath	Asymptomatic	Yes	60	5	65	0.92	(0.83–0.97)
LeGoff 2021	Thermo Fisher TaqPath	Symptomatic	Yes	115	7	122	0.94	(0.89–0.98)
Pitman 2021	UIUC CovidShield	Mix	Yes	32	1	33	0.97	(0.84–1.00)
Bivariate model							**0.92**	**(0.89–0.94)**
25 studies, 2165 patients								

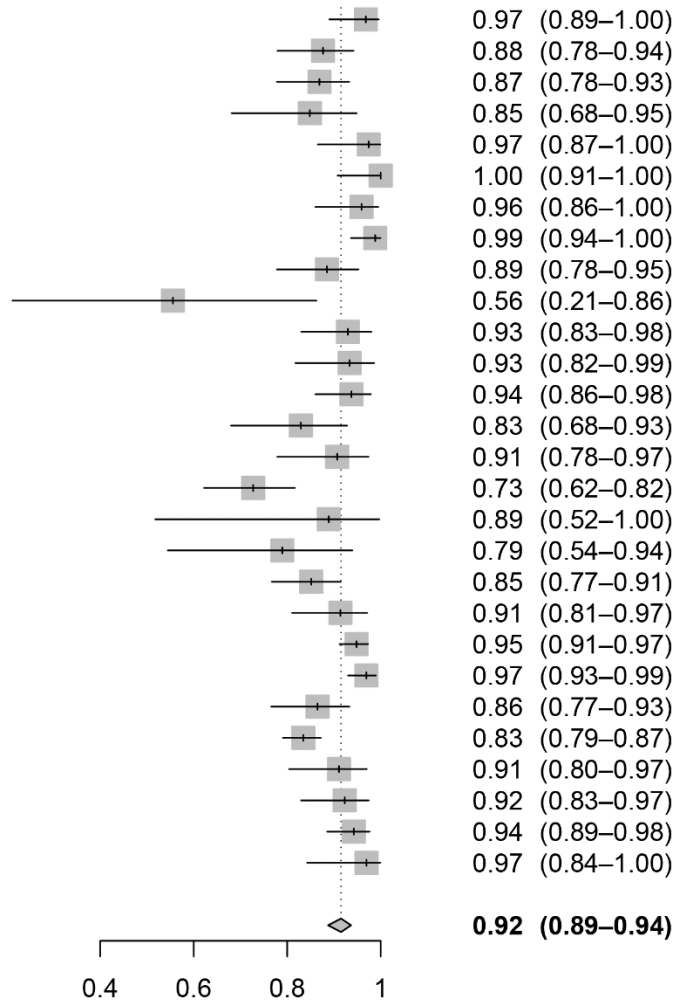


Figure s3b. Forest Plot for the Specificity for Saliva (Overall) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TN	FP	Total	Specificity	95% CI
Echavarria 2021	Altona Realstar	Symptomatic	Yes	111	1	112	0.99	(0.95–1.00)
Vos 2022	Aptima Panther Fusion	Symptomatic	Yes	68	1	69	0.99	(0.92–1.00)
Rao 2021b	BioSewoom Real−Q	Asymptomatic	Yes	57	76	133	0.43	(0.34–0.52)
Landry 2020	CDC Diagnostic Panel	Symptomatic	Yes	89	2	91	0.98	(0.92–1.00)
Procop 2020b	CDC Diagnostic Panel	Symptomatic	Yes	177	1	178	0.99	(0.97–1.00)
Procop 2020a	CDC Diagnostic Panel	Symptomatic	Yes	177	0	177	1.00	(0.98–1.00)
McCormick−Baw 2020	Cepheid Xpert Xpress	Mix	Yes	105	1	106	0.99	(0.95–1.00)
Sun 2021	Diacarta QuantiVirus	Unclear	Unclear	90	0	90	1.00	(0.96–1.00)
Balaska 2021	Fluidigm Advanta	Mix	Yes	156	3	159	0.98	(0.95–1.00)
Banerjee 2021	Hologic Aptima	Mix	Yes	51	2	53	0.96	(0.87–1.00)
Hanson 2020	Hologic Aptima	Symptomatic	Yes	268	6	274	0.98	(0.95–0.99)
Migueres 2021b	Hologic Aptima	Symptomatic	Yes	114	1	115	0.99	(0.95–1.00)
Migueres 2021b	Hologic Aptima	Asymptomatic	Yes	131	1	132	0.99	(0.96–1.00)
Migueres 2020	Hologic Panther Fusion	Mix	Yes	79	3	82	0.96	(0.90–0.99)
Kandel 2020	Multiple	Mix	Yes	383	3	386	0.99	(0.98–1.00)
Nacher 2021	OSANG GeneFinder	Symptomatic	Unclear	187	6	193	0.97	(0.93–0.99)
Iwasaki 2020	Pishtaz One−Step	Symptomatic	Yes	66	1	67	0.99	(0.92–1.00)
Uršic 2022	Roche Cobas	Mix	Yes	78	15	93	0.84	(0.75–0.91)
Uršic 2022	Roche Cobas	Mix	Yes	131	4	135	0.97	(0.93–0.99)
Sogbesan 2022	Roche Cobas	Symptomatic	Yes	68	2	70	0.97	(0.90–1.00)
Fougère 2021	Roche Cobas	Symptomatic	Yes	291	5	296	0.98	(0.96–0.99)
Bhattacharya 2021	Roche Cobas	Symptomatic	Yes	16	0	16	1.00	(0.79–1.00)
Al Suwaidi 2021	Seegene Allplex	Mix	Yes	396	6	402	0.99	(0.97–0.99)
Altawalah 2020	Thermo Fisher TaqPath	Mix	Yes	501	18	519	0.97	(0.95–0.98)
LeGoff 2021	Thermo Fisher TaqPath	Asymptomatic	Yes	890	23	913	0.97	(0.96–0.98)
Masse 2021	Thermo Fisher TaqPath	Symptomatic	Yes	85	2	87	0.98	(0.92–1.00)
LeGoff 2021	Thermo Fisher TaqPath	Symptomatic	Yes	540	0	540	1.00	(0.99–1.00)
Pitman 2021	UIUC CovidShield	Mix	Yes	113	1	114	0.99	(0.95–1.00)
Bivariate model							**0.98**	**(0.97–0.99)**
25 studies, 5602 patients								

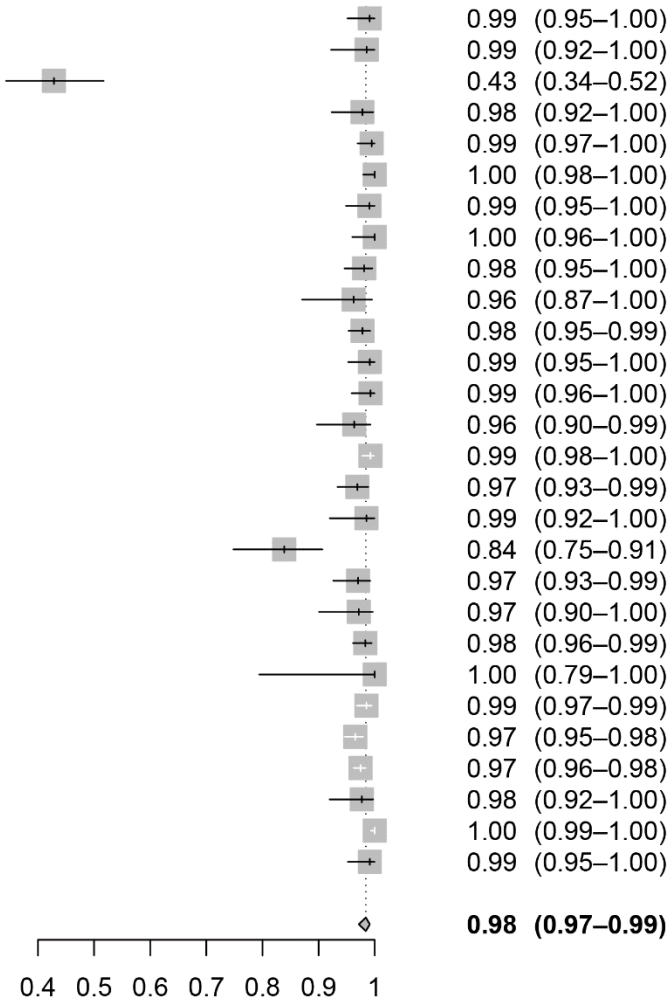


Figure s4a. Forest Plot for the Sensitivity for Saliva (Pediatrics) vs Nasopharyngeal (NP)

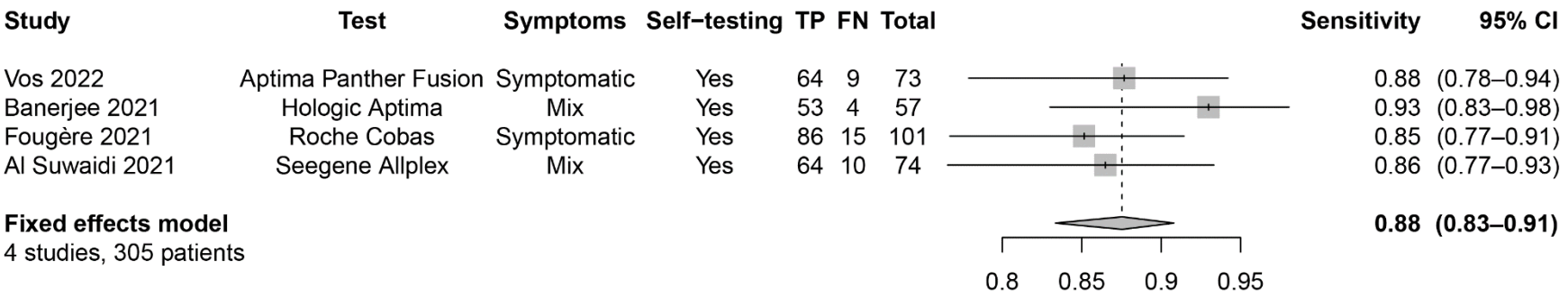


Figure s4b. Forest Plot for the Specificity for Saliva (Pediatrics) vs Nasopharyngeal (NP)

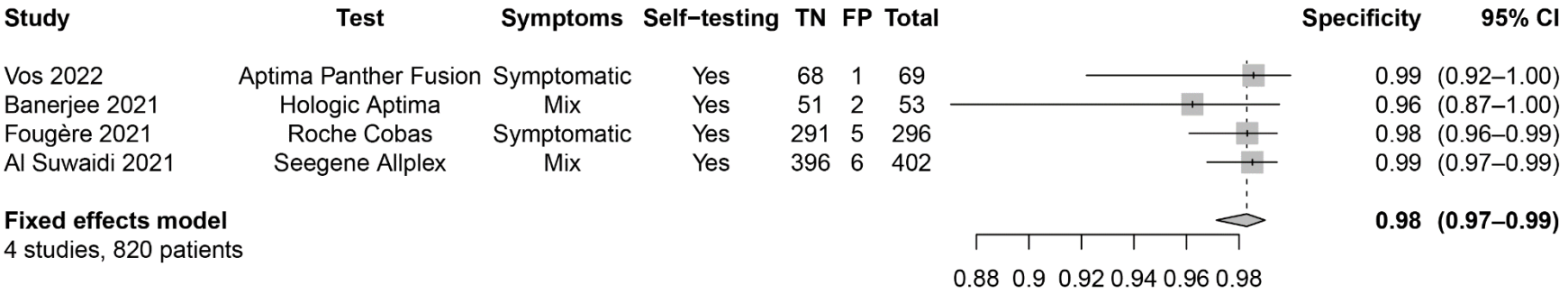


Figure s5a. Forest Plot for the Sensitivity for Saliva (Without Cough) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TP	FN	Total	Sensitivity	95% CI
Vos 2022	Aptima Panther Fusion	Symptomatic	Yes	64	9	73	0.88	(0.78–0.94)
Rao 2021b	BioSewoom Real−Q	Asymptomatic	Yes	73	11	84	0.87	(0.78–0.93)
Landry 2020	CDC Diagnostic Panel	Symptomatic	Yes	28	5	33	0.85	(0.68–0.95)
McCormick−Baw 2020	Cepheid Xpert Xpress	Mix	Yes	47	2	49	0.96	(0.86–1.00)
Sun 2021	Diacarta QuantiVirus	Unclear	Unclear	84	1	85	0.99	(0.94–1.00)
Balaska 2021	Fluidigm Advanta	Mix	Yes	54	7	61	0.89	(0.78–0.95)
Migueres 2021b	Hologic Aptima	Asymptomatic	Yes	5	4	9	0.56	(0.21–0.86)
Banerjee 2021	Hologic Aptima	Mix	Yes	53	4	57	0.93	(0.83–0.98)
Migueres 2021b	Hologic Aptima	Symptomatic	Yes	42	3	45	0.93	(0.82–0.99)
Hanson 2020	Hologic Aptima	Symptomatic	Yes	75	5	80	0.94	(0.86–0.98)
Migueres 2020	Hologic Panther Fusion	Mix	Yes	34	7	41	0.83	(0.68–0.93)
Kandel 2020	Multiple	Mix	Yes	39	4	43	0.91	(0.78–0.97)
Nacher 2021	OSANG GeneFinder	Symptomatic	Unclear	64	24	88	0.73	(0.62–0.82)
Iwasaki 2020	Pishtaz One−Step	Symptomatic	Yes	8	1	9	0.89	(0.52–1.00)
Fougère 2021	Roche Cobas	Symptomatic	Yes	86	15	101	0.85	(0.77–0.91)
Uršic 2022	Roche Cobas	Mix	Yes	221	12	233	0.95	(0.91–0.97)
Uršic 2022	Roche Cobas	Mix	Yes	158	5	163	0.97	(0.93–0.99)
Al Suwaidi 2021	Seegene Allplex	Mix	Yes	64	10	74	0.86	(0.77–0.93)
Pitman 2021	UIUC CovidShield	Mix	Yes	32	1	33	0.97	(0.84–1.00)
Bivariate model							**0.91**	**(0.87–0.94)**
17 studies, 1361 patients								

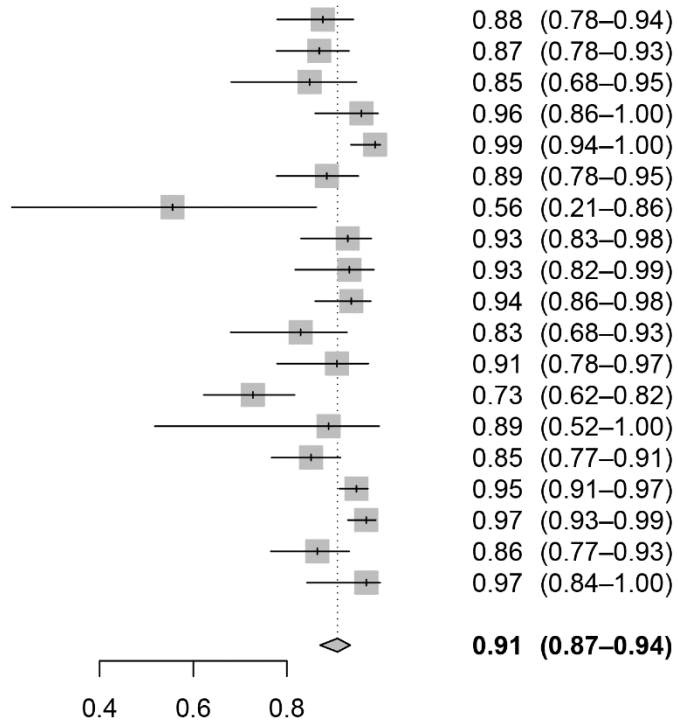


Figure s5b. Forest Plot for the Specificity for Saliva (Without Cough) vs Nasopharyngeal (NP)

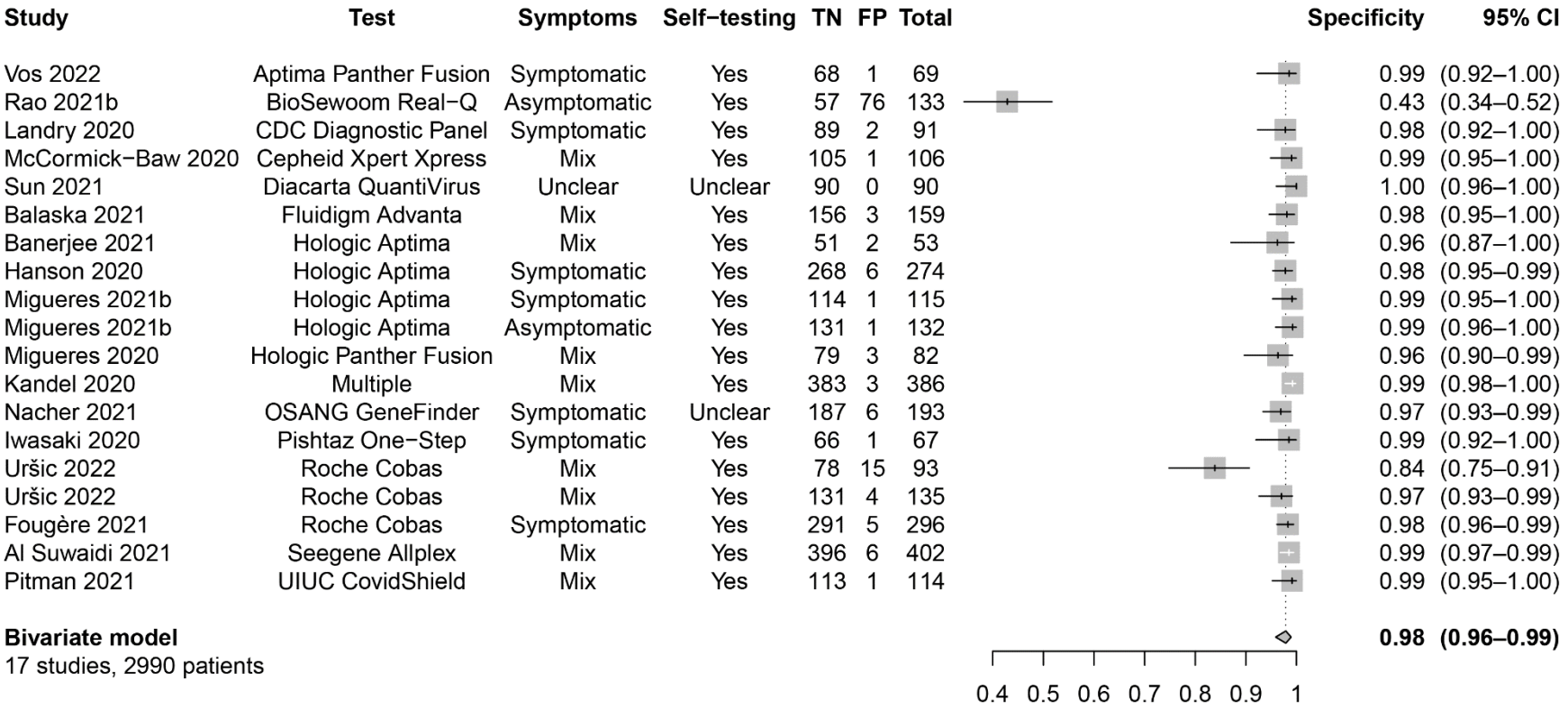


Figure s6a. Forest Plot for the Sensitivity for Saliva (With Cough) vs Nasopharyngeal (NP)

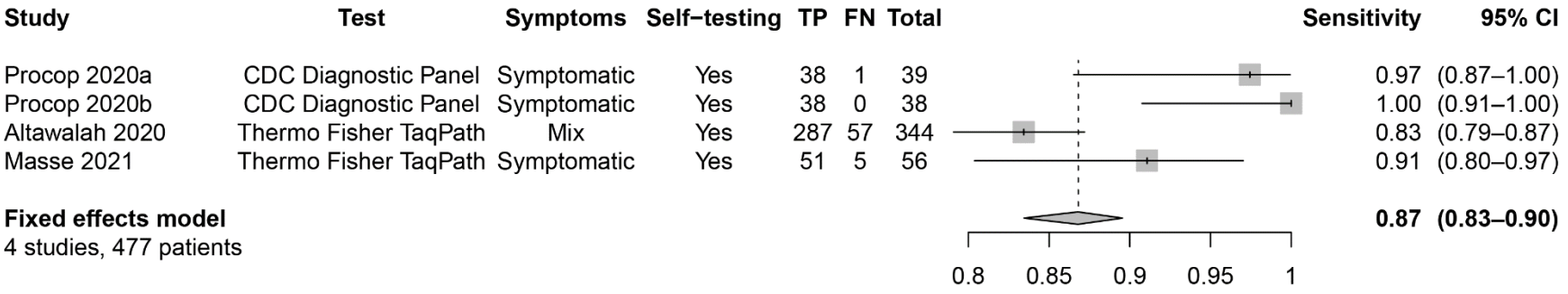


Figure s6b. Forest Plot for the Specificity for Saliva (With Cough) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TN	FP	Total	Specificity	95% CI
Procop 2020b	CDC Diagnostic Panel	Symptomatic	Yes	177	1	178	0.99	(0.97–1.00)
Procop 2020a	CDC Diagnostic Panel	Symptomatic	Yes	177	0	177	1.00	(0.98–1.00)
Altawalah 2020	Thermo Fisher TaqPath	Mix	Yes	501	18	519	0.97	(0.95–0.98)
Masse 2021	Thermo Fisher TaqPath	Symptomatic	Yes	85	2	87	0.98	(0.92–1.00)
Fixed effects model 4 studies, 961 patients							**0.98**	**(0.97–0.99)**

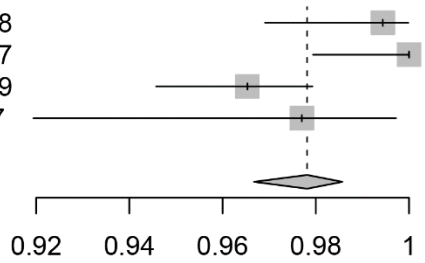


Figure s7a. Forest Plot for the Sensitivity for Oropharyngeal (OP) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TP	FN	Total	Sensitivity	95% CI
Patel 2021	CDC Diagnostic Panel	Unclear	Unclear	18	4	22	0.82	(0.60–0.95)
Pham 2020	Hologic Panther Fusion	Symptomatic	No	13	1	14	0.93	(0.66–1.00)
Wang 2020	Suzhou TianLong	Symptomatic	No	7	7	14	0.50	(0.23–0.77)
Kandel 2021	ThermoFisher TaqPath	Mix		44	11	55	0.80	(0.67–0.90)
Fixed effects model 4 studies, 105 patients							**0.78**	**(0.69–0.85)**

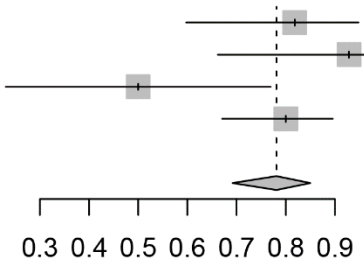


Figure s7b. Forest Plot for the Specificity for Oropharyngeal (OP) vs Nasopharyngeal (NP)

Study	Test	Symptoms	Self−testing	TN	FP	Total	Specificity	95% CI
Patel 2021	CDC Diagnostic Panel	Unclear	Unclear	121	3	124	0.98	(0.93–0.99)
Pham 2020	Hologic Panther Fusion	Symptomatic	No	21	0	21	1.00	(0.84–1.00)
Wang 2020	Suzhou TianLong	Symptomatic	No	173	5	178	0.97	(0.94–0.99)
Kandel 2021	ThermoFisher TaqPath	Mix		549	1	550	1.00	(0.99–1.00)
Fixed effects model 4 studies, 873 patients							**0.99**	**(0.98–0.99)**

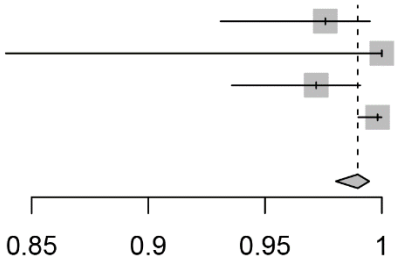


Figure s8a. Forest Plot for the Sensitivity for Anterior Nasal (AN) vs Nasopharyngeal (NP)

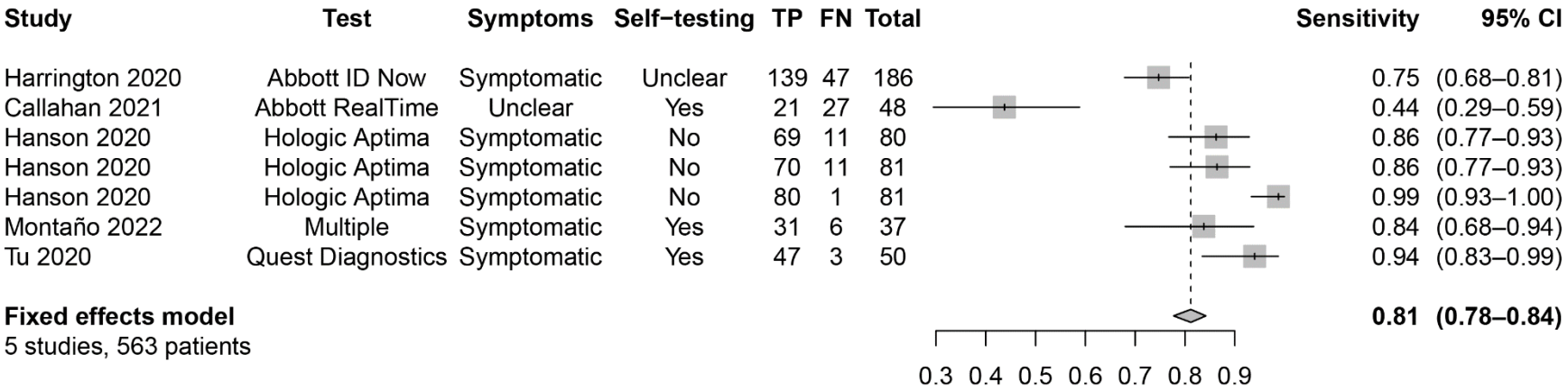


Figure s8b. Forest Plot for the Specificity for Anterior Nasal (AN) vs Nasopharyngeal (NP)

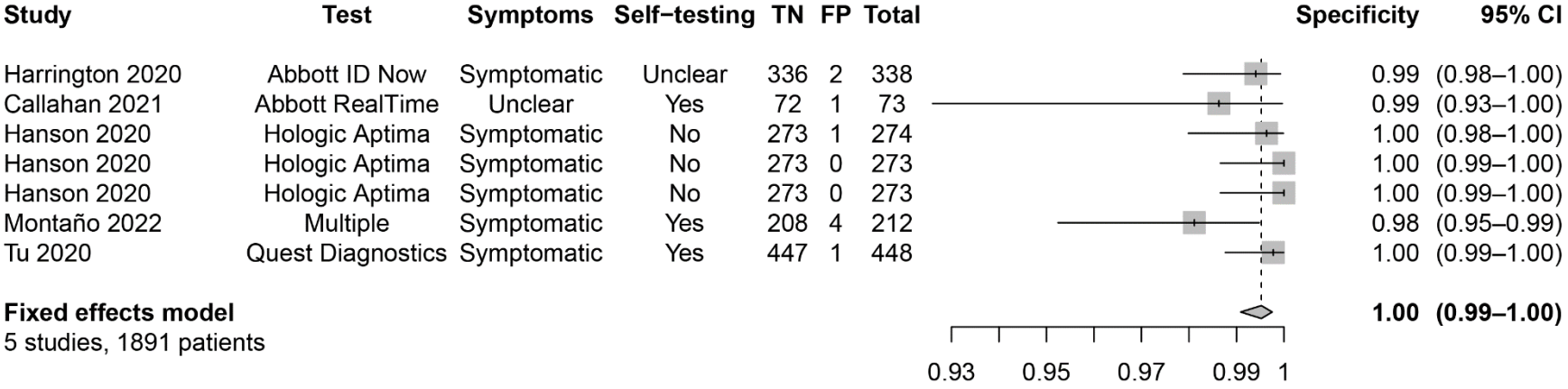


Figure s9a. Forest Plot for the Sensitivity for Combined Oropharyngeal (OP) and Anterior Nasal (AN) vs Nasopharyngeal (NP)

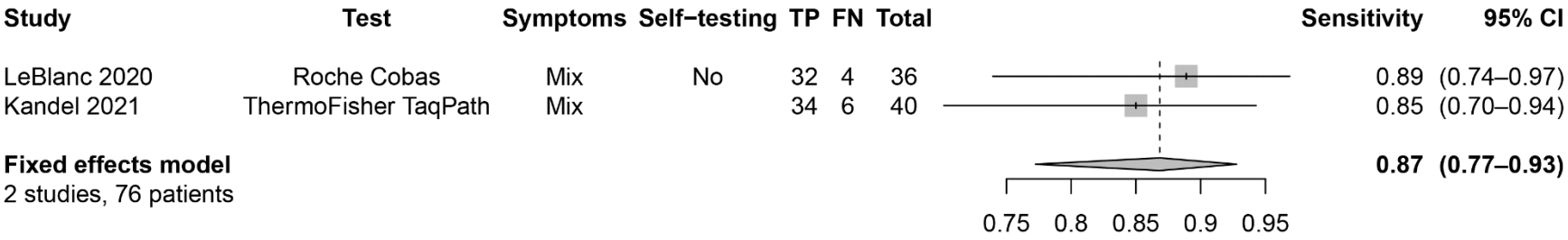


Figure s9b. Forest Plot for the Specificity for Combined Oropharyngeal (OP) and Anterior Nasal (AN) vs Nasopharyngeal (NP)

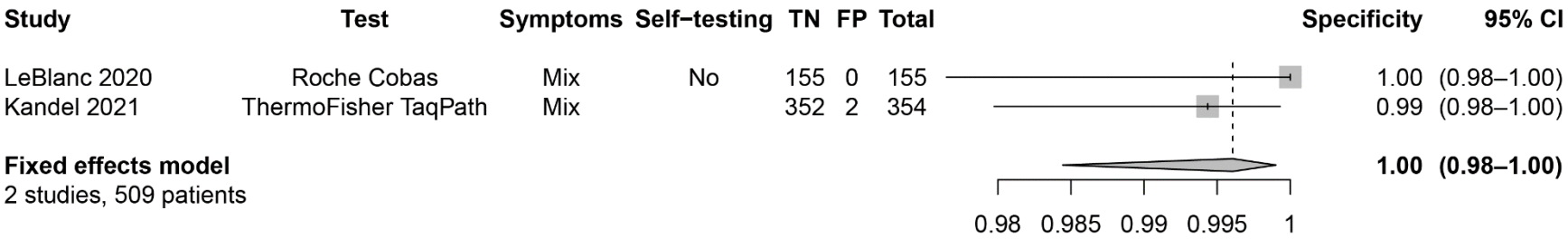


Figure s10a. Forest Plot for the Sensitivity for Mid-Turbinate (MT) vs Nasopharyngeal (NP)

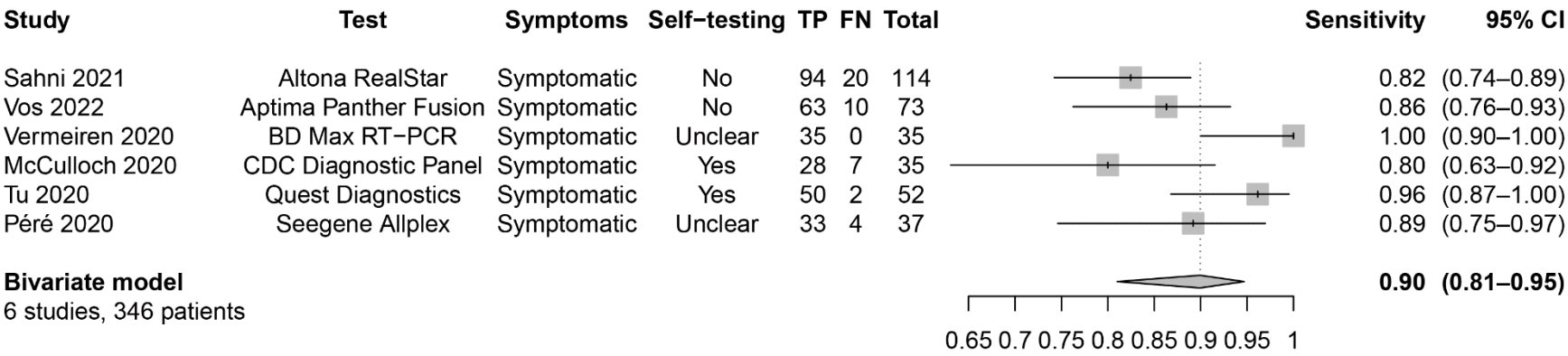


Figure s10b. Forest Plot for the Specificity for Mid-Turbinate (MT) vs Nasopharyngeal (NP)

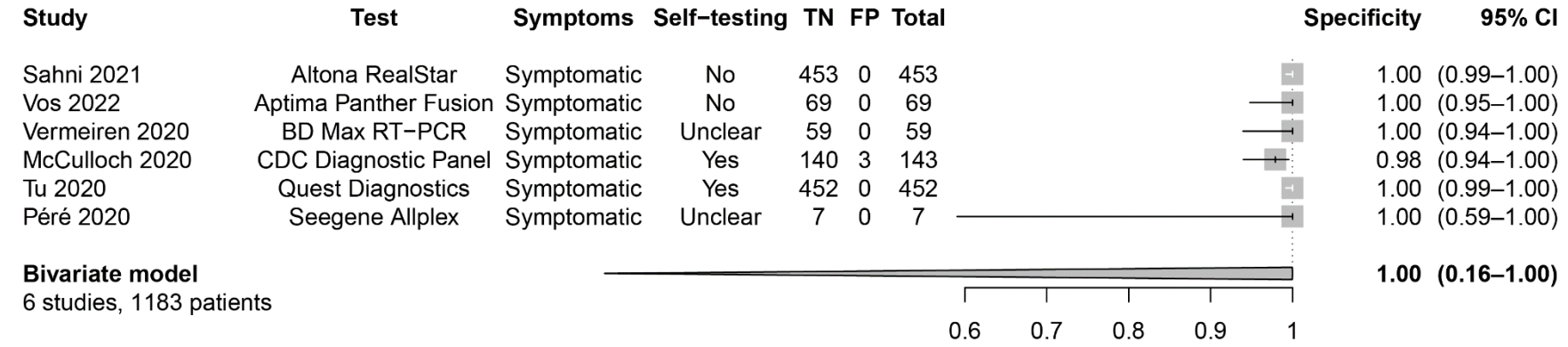


Figure s11a. Forest Plot for the Sensitivity for Mouth Gargle vs Nasopharyngeal (NP)

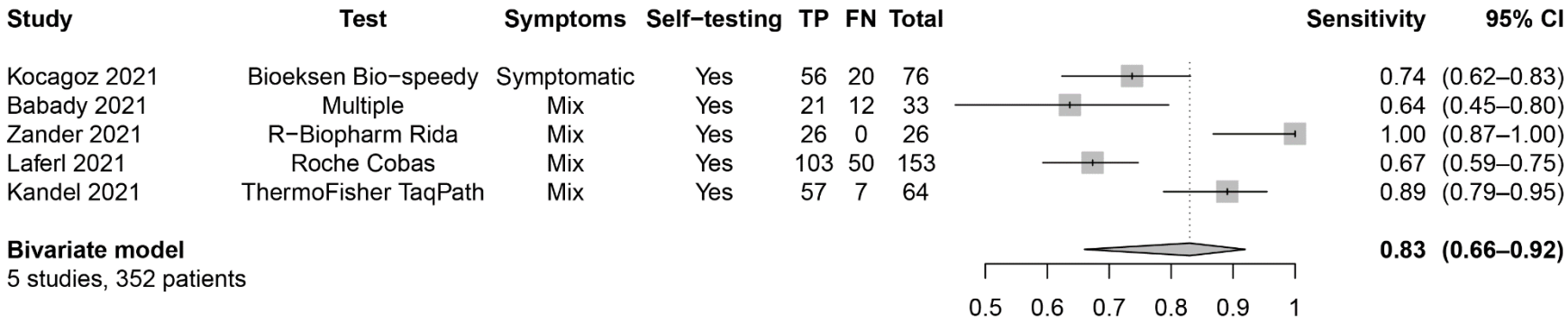
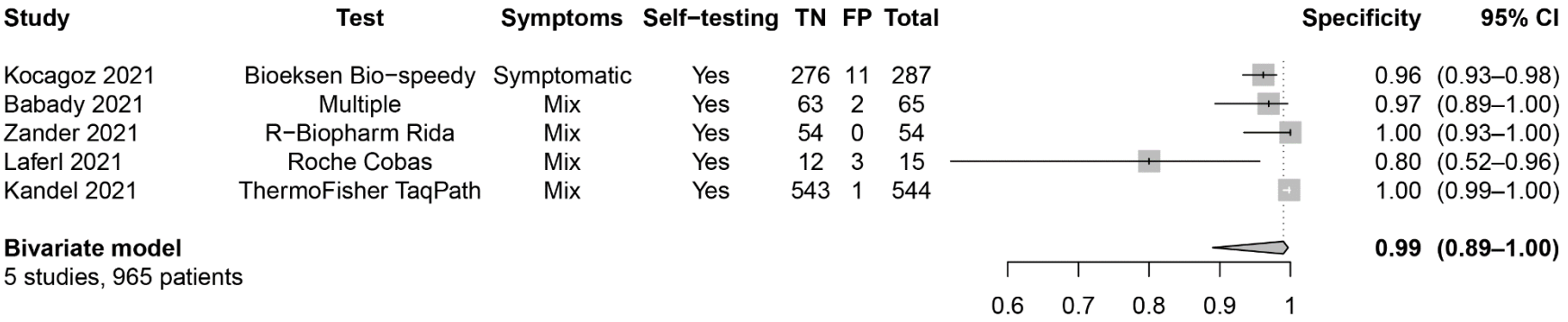


Figure s11b. Forest Plot for the Specificity for Mouth Gargle vs Nasopharyngeal (NP)



Supplement D

Recommendation 3: The IDSA Panel Suggests That for Symptomatic Individuals Suspected of Having COVID-19, Anterior Nasal and Mid-Turbinate Swab Specimens May Be Collected for SARS-Cov-2 RNA Testing by Either Patients or Healthcare Providers *(conditional recommendation, moderate certainty evidence)*.

Figure s12a. Forest Plot for the Sensitivity of Self-Collected Nasal Sampling with Reference Being Any Positive Test (HCW Or Self Collected)

Study	Test	Sample Site (Self)	Sample Site (HCW)	TP	FN	Total	Sensitivity	95% CI
McCulloch 2020	CDC Diagnostic Panel	MT	NP	31	7	38	0.82	(0.66–0.92)
Kojima 2021	CDC Diagnostic Panel	AN	NP	23	4	27	0.85	(0.66–0.96)
Hanson 2020	Hologic Aptima	AN	NP	70	11	81	0.86	(0.77–0.93)
Montaño 2022	Multiple	AN	NP	35	6	41	0.85	(0.71–0.94)
Tu 2020	Quest Diagnostics	AN	NP	48	3	51	0.94	(0.84–0.99)
Wehrhahn 2020	Seegene Allplex	Throat and Nasal	Throat and Nasal	25	0	25	1.00	(0.86–1.00)
Bivariate model							**0.88**	**(0.83–0.92)**
6 studies, 263 patients								

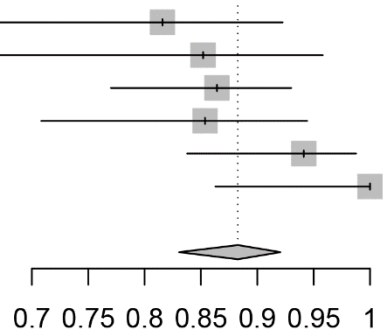


Figure s12b. Forest Plot for the Specificity of Self-Collected Nasal Sampling with Reference Being Any Positive Test (HCW Or Self Collected)

Study	Test	Sample Site (Self)	Sample Site (HCW)	TN	FP	Total	Specificity	95% CI
McCulloch 2020	CDC Diagnostic Panel	MT	NP	140	0	140	1.00	(0.97–1.00)
Kojima 2021	CDC Diagnostic Panel	AN	NP	16	0	16	1.00	(0.79–1.00)
Hanson 2020	Hologic Aptima	AN	NP	273	0	273	1.00	(0.99–1.00)
Montaño 2022	Multiple	AN	NP	208	0	208	1.00	(0.98–1.00)
Tu 2020	Quest Diagnostics	AN	NP	447	0	447	1.00	(0.99–1.00)
Wehrhahn 2020	Seegene Allplex	Throat and Nasal	Throat and Nasal	211	0	211	1.00	(0.98–1.00)
Bivariate model							**1.00**	**(0.00–1.00)**
6 studies, 1295 patients								

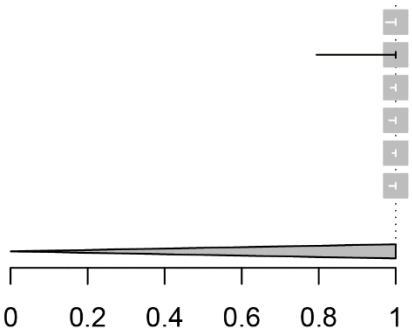


Figure s13a. Forest Plot for the Sensitivity of Health Care Worker (HCW)-Collected Nasal Sampling with Reference Being Any Positive Test (HCW Or Self Collected)

Study	Test	Sample Site (Self)	Sample Site (HCW)	TP	FN	Total	Sensitivity	95% CI
Kojima 2021	CDC Diagnostic Panel	AN	NP	23	6	29	0.79	(0.60–0.92)
McCulloch 2020	CDC Diagnostic Panel	MT	NP	35	3	38	0.92	(0.79–0.98)
Hanson 2020	Hologic Aptima	AN	NP	80	1	81	0.99	(0.93–1.00)
Montaño 2022	Multiple	AN	NP	37	4	41	0.90	(0.77–0.97)
Tu 2020	Quest Diagnostics	AN	NP	50	1	51	0.98	(0.90–1.00)
Wehrhahn 2020	Seegene Allplex	Throat and Nasal	Throat and Nasal	24	1	25	0.96	(0.80–1.00)
Bivariate model							**0.95**	**(0.88–0.98)**
6 studies, 265 patients								

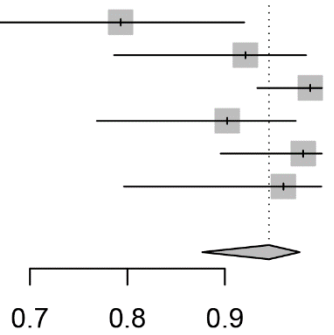
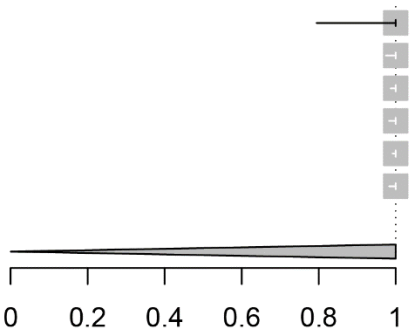


Figure s13b. Forest Plot for the Specificity Of Health Care Worker (HCW)-Collected Nasal Sampling with Reference Being Any Positive Test (HCW Or Self Collected)

Study	Test	Sample Site (Self)	Sample Site (HCW)	TN	FP	Total	Specificity	95% CI
Kojima 2021	CDC Diagnostic Panel	AN	NP	16	0	16	1.00	(0.79–1.00)
McCulloch 2020	CDC Diagnostic Panel	MT	NP	140	0	140	1.00	(0.97–1.00)
Hanson 2020	Hologic Aptima	AN	NP	273	0	273	1.00	(0.99–1.00)
Montaño 2022	Multiple	AN	NP	208	0	208	1.00	(0.98–1.00)
Tu 2020	Quest Diagnostics	AN	NP	447	0	447	1.00	(0.99–1.00)
Wehrhahn 2020	Seegene Allplex	Throat and Nasal	Throat and Nasal	211	0	211	1.00	(0.98–1.00)
Bivariate model							**1.00**	**(0.00–1.00)**
6 studies, 1295 patients								



Supplement E

Recommendation 5: The IDSA Panel Suggests Using Either Rapid or Standard Laboratory-Based Naats in Symptomatic Individuals Suspected of Having COVID-19 *(conditional recommendation, moderate certainty of evidence)*.

Figure s14a. Sensitivity of Rapid vs Laboratory-Based NAAT Accuracy in All Studies (Overall)

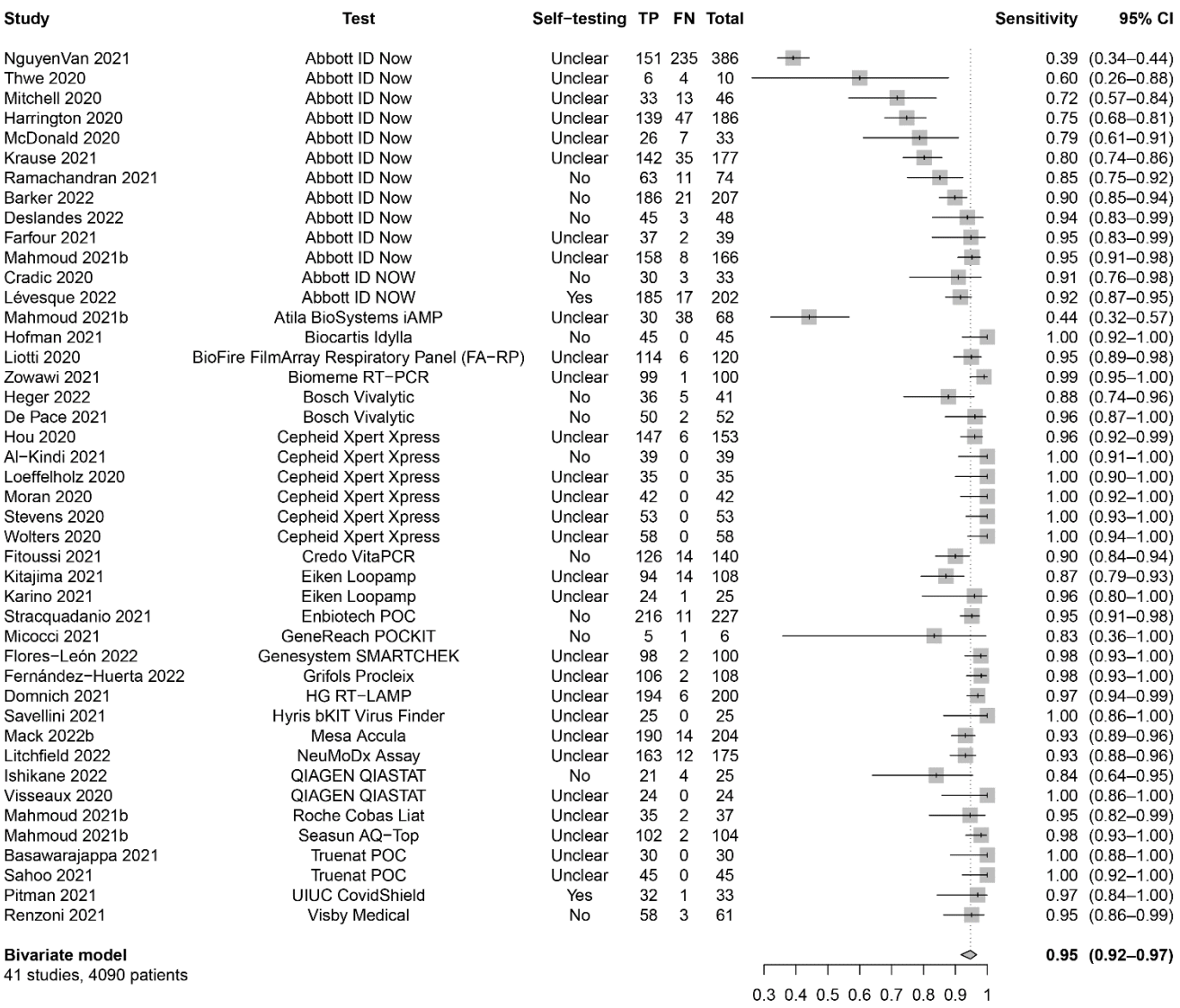


Figure s14b. Specificity of Rapid vs Standard Laboratory-Based NAAT Accuracy in All Studies (Overall)

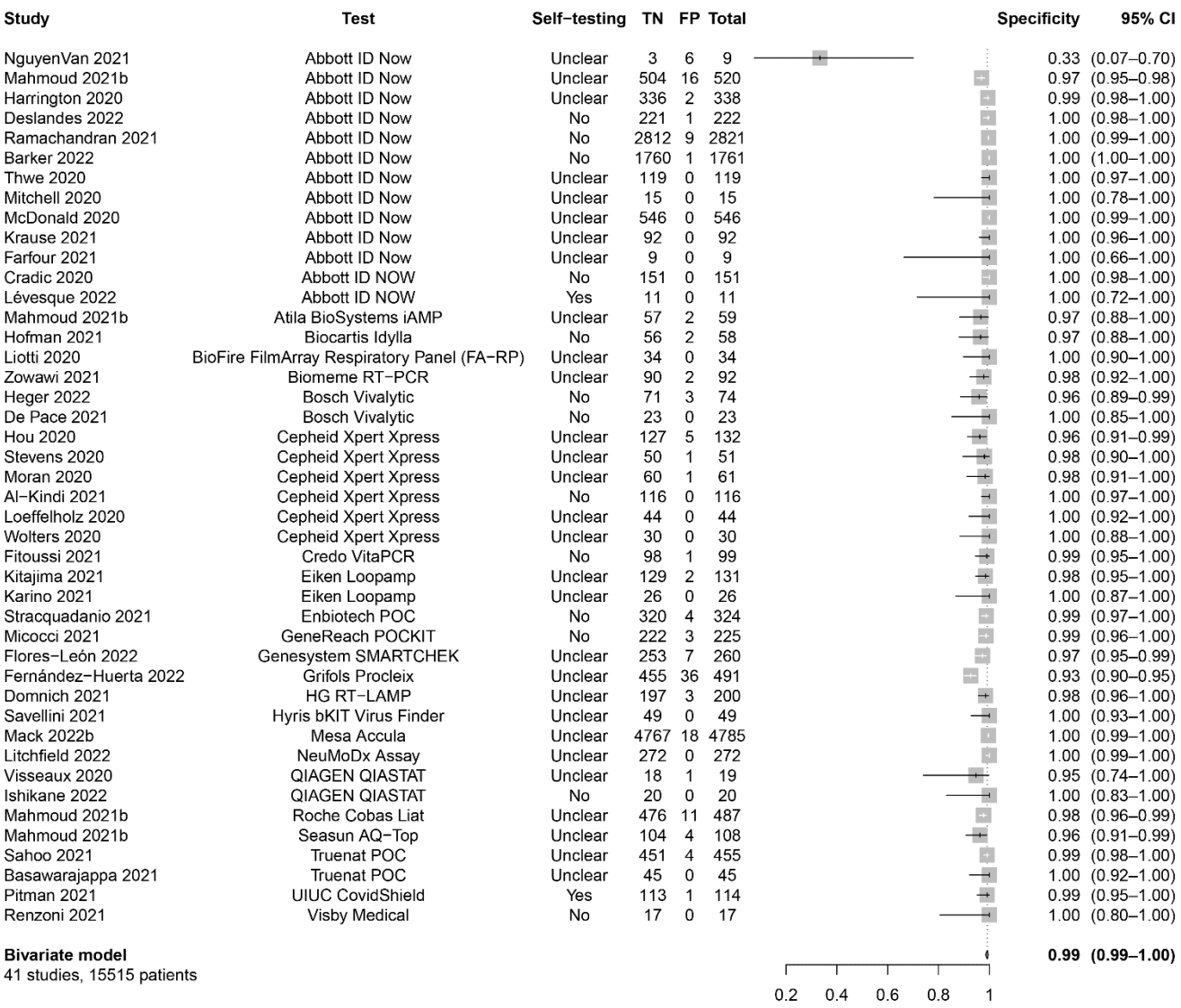


Figure s15a. Sensitivity of Rapid vs Standard Laboratory-Based NAAT Accuracy in Symptomatic Individuals Only

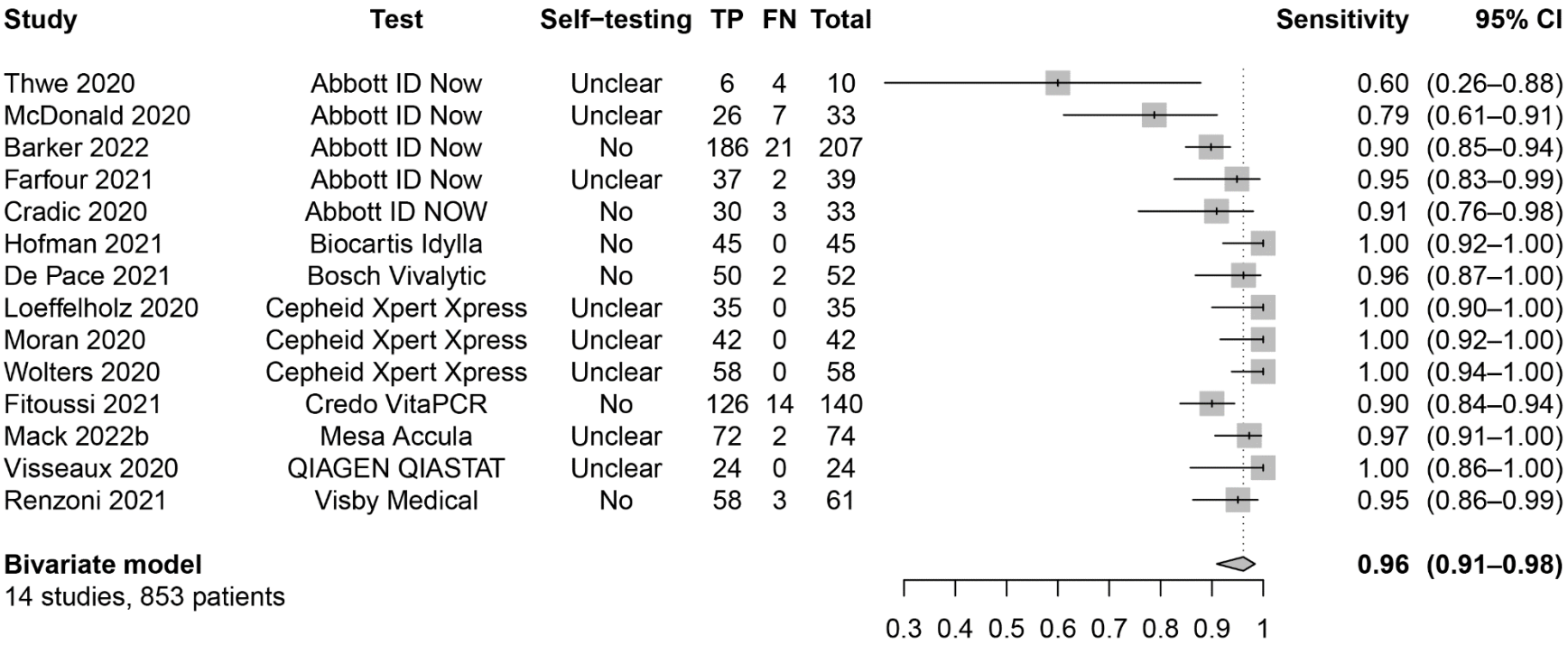
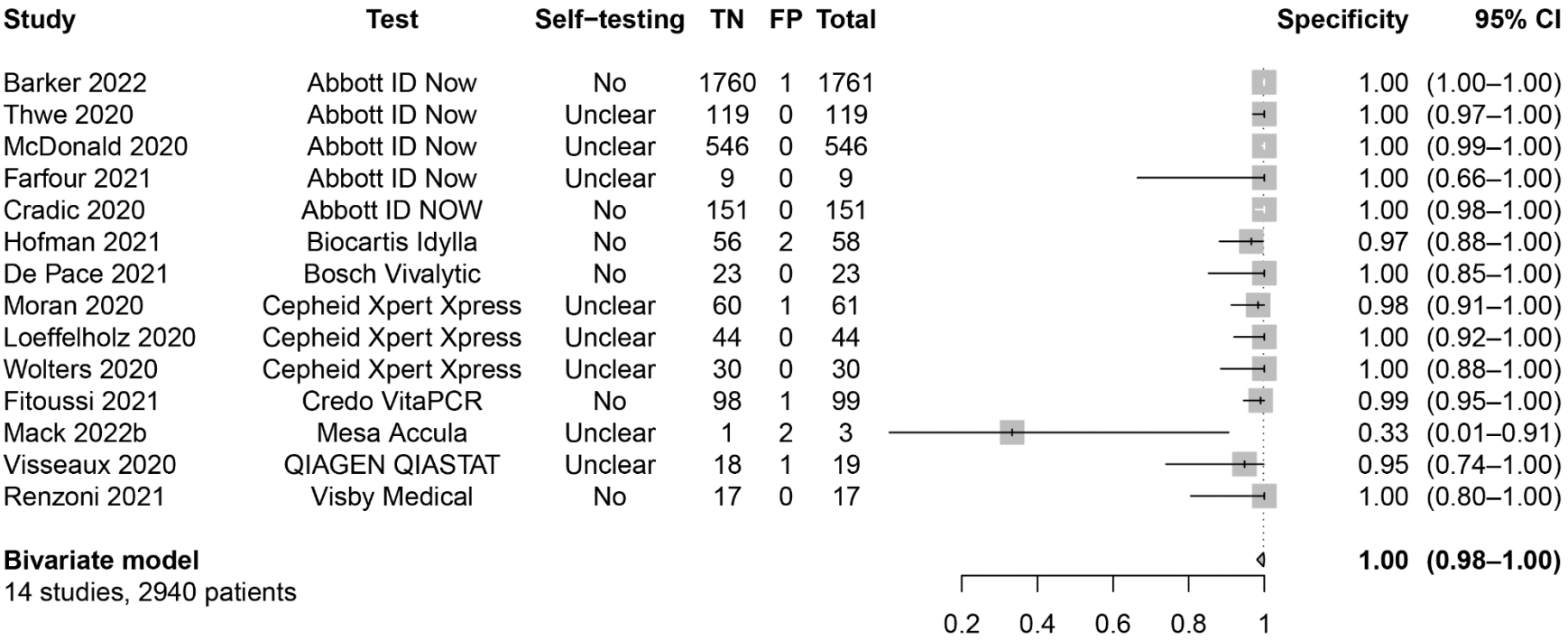


Figure s15b. Specificity of Rapid vs Standard Laboratory-Based NAAT Accuracy in Symptomatic Individuals Only



Supplement F

Recommendation 8: The IDSA Panel Suggests Using Either Rapid or Laboratory-Based Naats in Asymptomatic Individuals with Known Exposure to SARS-Cov-2 Infection *(conditional recommendation, moderate certainty of evidence)*.

Figure s16a. Sensitivity of Rapid vs Standard Laboratory-Based Naats Accuracy in Asymptomatic Individuals Only

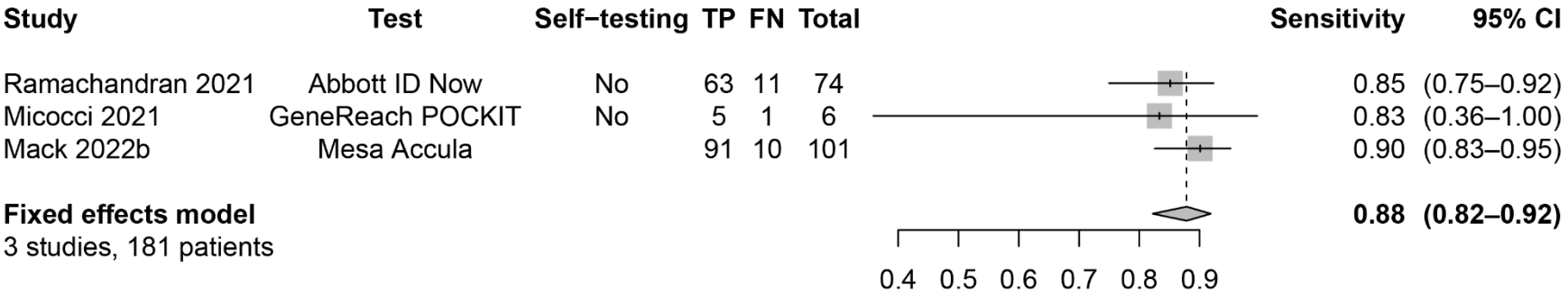
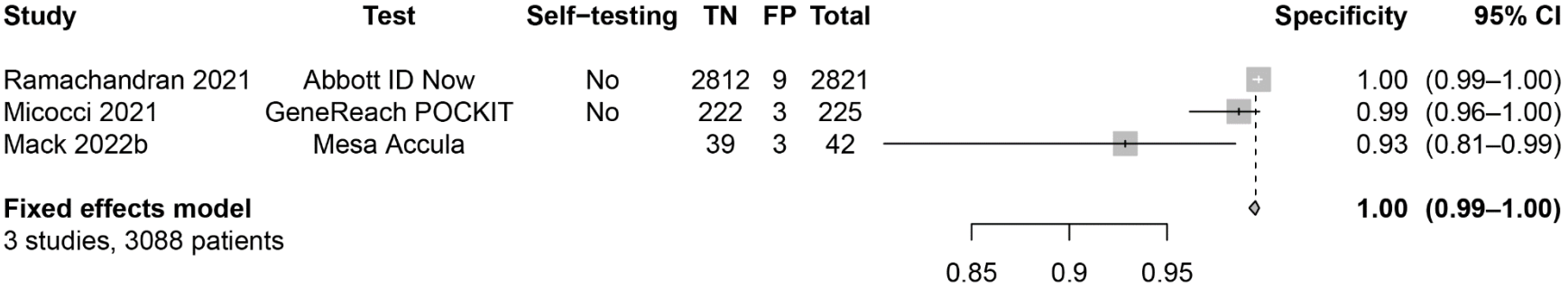


Figure s16b. Specificity of Rapid vs Standard Laboratory-Based Naats Accuracy in Asymptomatic Individuals Only



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