Table s3. PICO 2: Should NAAT alone vs. NAAT plus serology (when initial NAAT is negative) be used to diagnose COVID-19 in symptomatic patients?

Study	Suspicion criteria	PCR	Serology test	PCR vs Serology
Guo **China** **Case-Control**	**N: 208** **Hospitalized:** All patients were inpatients from Wuhan hospitals. **Inclusion**: Confirmed cases (82); all cases with PCR (+) **Inclusion**: Probable cases: 58; cases presenting with high clinical suspicion, typical CT scan findings and epidemiological factors, for COVID-19, but PCR (-) **Exclusion**: NR **Age**: NR **Gender**: NR **Disease severity: NR** **Asymptomatic: NR**	**Timing:** Samples were collected between 1 and 39 days after symptoms onset. **1. NR** - Platform: NR - Gene target: - Approval: NR **Positive rate: 51.9% (in a single PCR test)**	**Timing:** Samples were collected between 1 and 39 days after symptoms onset. **1. Locally developed assay** - Platform: Elisa - Antibody type: IgM, IgG, IgA - Antibodies target: Nucleocapsid protein - Approval: NR **- Positive rate: IgM: 188/208 (90.4 %), IgA: 194/208 (93.3 %) IgM or IgG:**	N: 208 **PCR +, IgM +: 62/82 (75.6%)** **PCR -, IgM +: 54/58 (93.1%)** **Overall: PCR alone: 51.9%, PCR + IgM: 98.6%**

Study	Suspicion criteria	PCR	Serology test	PCR vs Serology
Pan **China** **Case-Control**	**N: 39** **Inclusion**: Patients hospitalized at the Zhongnan hospital, between February 6 and February 21, 2020 with clinical diagnosis of COVID-19 with radiological signs of viral pneumonia and negative PCR. **Exclusion**: NR **Age**: Median 58 (20-96) years **Gender**: Males (46%) **Disease severity: NR** **Asymptomatic: NR**	**Timing:** data presented as days since onset of symptoms **1. BioGerm PCR kit** - Platform: PCR - Gene target: NR - Approval: NR - Sample: Throat	**Timing:** data presented as days since onset of symptoms **1. Zhuhai Livzon Colloidal gold-based immunochromatographic (ICG) strip assay** - Platform: LF - Antibody type: IgM, IgG - Antibodies target: NR - Approval: CE	**Overall N: 39** -PCR (-), IgM (+): 9/39 (23.1%) -PCR (-), IgG (+): 15/39 (38.5%) -PCR (-), IgM or IgG (+): 17/39 (43.6%) **At different times N: 22** **1-7 days: (N:9)** -PCR (-), IgM (+): 2/9 (22.2%) -PCR (-), IgG (+): 4/9 (44.4%) -PCR (-), IgM or IgG (+): 4/9 (44.4%) **8-14 days (N: 6)** -PCR (-), IgM (+): 2/6 (33.3%) -PCR (-), IgG (+): 4/6 (66.7%) -PCR (-), IgM or IgG (+): 5/6 (83.3%) **≥15 days (N:7)** -PCR (-), IgM (+): 4/7 (57.1%) -PCR (-), IgG (+): 5/7 (71.4%) -PCR (-), IgM or IgG (+): 5/7 (71.4%)
Perez Garcia **Spain** **Case-Control**	**N: 61** **Inclusion**: Patients hospitalized for at least 5 days between February 9 and April 2, 2020, with clinical and radiological symptoms of viral pneumonia and negative PCR. **Exclusion**: NR **Age**: 67 (57–73) years **Gender**: 73.8% males **Disease severity:** Non-severe	**Timing:** data presented as days since onset of symptoms median: 17 days **1. VIASURE SARS-CoV-2 Real Time PCR Detection Kit** **2. Allplex 2019-nCoV assay** - Platform: NR - Gene target: NR - Approval: NR - Sample: NR	**Timing:** data presented as days since onset of symptoms median: 17 days **1. AllTest COV-19 IgG/IgM kit** - Platform: LF - Antibody type: IgM, IgG - Antibodies target: NR - Approval: NR	**Overall: (N: 61)** PCR (-) IgM (+): 23/61 (37.7 %) PCR (-) IgG (+): 54/61 (88.5%) PCR (-) IgM or IgG (+): 54/61 (88.5%) **0-7 days (N:0)** No patients screened at this time **8-14 days (N:15)** -PCR (-), IgM (+): 5/15 (33.3%) -PCR (-), IgG (+): 13/15 (86.7 %) -PCR (-), IgM or IgG (+): 13/15 (86.7%)

Study	Suspicion criteria	PCR	Serology test	PCR vs Serology
	pneumonia (65.6%), severe pneumonia (32.8%), ARDS (4.9%) **Asymptomatic: NR**			**15-21 days (N:31):** -PCR (-), IgM (+): 14/31 (45.2%) -PCR (-), IgG (+): 30/31 (96.8 %) -PCR (-), IgM or IgG (+): 30/31 (96.8%) **22–28 days (N:14):** -PCR (-), IgM (+): 4/14 (28.6%) -PCR (-), IgG (+): 10/14 (71.4%) -PCR (-), IgM or IgG (+): 10/14 (71.4%) **> 28 days (N:1):** -PCR (-), IgM (+): 0/1 (0%) -PCR (-), IgG (+): 1/1 (100.0%) -PCR (-), IgM or IgG (+): 100.0 %
Xiang **China** **Case-Control**	**N: 39** **Inclusion**: All patients presenting to Wuhan Jinyintan Hospital suspected of having COVID-19 based on clinical and radiologic criteria and PCR negative. **Exclusion**: NR **Age**: NR **Gender**: NR **Disease severity: NR** **Asymptomatic: NR**	**Timing:** NR **1. Shanghai ZJ Bio-Tech PCR kit** - Platform: NR - Gene target: ORF1ab, N gene. - Approval: NR - Samples: Throat, sputum, alveolar lavage samples.	**Timing:** Serology sampling was done 0-3 days prior PCR testing. **1. ZhuHai LivZon Colloidal gold-based immunochromatographic (ICG) strip assay** - Platform: LF - Antibody type: IgM, IgG - Antibodies target: - Approval: CE	PCR (-), IgM (+): 16/39 (41.0%) PCR (-), IgG (+): 33/39 (84.6%)
Zhang **China** **Case-Control**	**N: 15** **Inclusion**: Patients with clinical and radiological signs of COVID-19 (PCR	**Timing:** Repeat PCR was done during hospitalization **1. BioGerm PCR kit**	**Timing:** NR **1. Shenzhen Yahuilong Biotechnology antibodies detection kit**	PCR (-), IgM (+): 13/15 (87%) PCR (-), IgG (+): 15/15 (100%)

Study	Suspicion criteria	PCR	Serology test	PCR vs Serology
	confirmed once during hospitalization) who had negative results on repeat PCR. **Exclusion**: NR **Age**: NR **Gender**: NR **Disease severity: NR** **Asymptomatic: NR**	- Platform: NR - Gene target: ORF1ab and nucleocapsid protein - Approval: NR - Sample: nasopharynx and oropharynx.	- Platform: CIA - Antibody type: IgM, IgG - Antibodies target: E and N protein - Approval: NR	
Zhao **China** **Case-Control**	**N: 172** **Inclusion**: Patients admitted to Shenzhen Third People's Hospital between Jan 11 and Feb 9, 2020 with clinical and radiological criteria for COVID-19 and PCR confirmed at least once during hospitalization) who had negative results on repeat PCR. **Exclusion**: NR **Age**: median 48 years **Gender**: 51.7% females **Disease severity: NR** **Asymptomatic: NR**	**Timing:** data presented as days since onset of symptoms **1. PCR test (not specified)** - Platform: NR - Gene target: NR - Approval: NR	**Timing:** data presented as days since onset of symptoms **1. Wantai SARS-COV-2 Ab ELISA** - Platform: Elisa - Antibody type: IgM, IgG, Total antibodies - Antibodies target: S, N protein - Approval:	**Total:** RNA (+): 112/173 (64.7%) RNA (+) or Serology (+): 172/173 (99.4%) **1 to 7 days** RNA (+): 58/87 (66.7%) RNA (+) or Serology (+): 74/94 (78.7%) **8 to 14 days** RNA (+): 67/124 (54.0%) RNA (+) or Serology (+): 131/135 (97.0%) **15 to 39 days** RNA (+): 25/55 (45.5%) RNA (+) or Serology (+): 90/90 (100%)
Liu L **China** **Case-Control**	**N: 85** **Inclusion**: All consecutive patients with high clinical suspicion of COVID-19 but with negative PCR. Diagnosis is based on the presence of 1 epidemiological factor (travel or	**Timing:** data presented as days between onset of symptoms and sample collection **1. Daan, Guangzhou, China, PCR testing Kit** - Platform: PCR - Gene target: ORF1ab, N gene	**Timing:** data presented as days between onset of symptoms and sample collection **1. Lizhu Zhuhai COVD-19 Elisa** - Platform: Elisa - Antibody type: IgM,IgG - Antibodies target: S, N proteins	**0 to 5 days** RNA (-) or Serology (+): 0/8 (0%) **6 to 10 days** RNA (-) or Serology (+): 9/16 (56.2%) **More or equal to 11 days:**

Study	Suspicion criteria	PCR	Serology test	PCR vs Serology
	resident in a hotspot (Wuhan), or contact with a confirmed or a suspected case, and at least 2 of the following clinical criteria; fever, radiological features of viral pneumonia, and/or normal/ decreased WBC count. **Exclusion**: NR **Age**: median 55 y.o **Gender**: 52.3% males **Disease severity:** **Asymptomatic: NR**	- Approval: NR - Samples: Pharyngeal swab	- Approval:	RNA (-) or Serology (+): 58/61(95.1%)