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RECOMMENDATIONS FOR SARS-CoV-2/COVID-19 TESTING: A SCOPING REVIEW OF CURRENT GUIDANCE

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RECOMMENDATIONS FOR SARS-CoV-2/COVID-19 TESTING: A SCOPING REVIEW OF CURRENT GUIDANCE

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ABSTRACT (word count = 243)

BACKGROUND and OBJECTIVE: There is a plea of recommendations worldwide about testing for COVID-19. We aimed to collate, delineate and appraise current recommendations on tests for SARS-CoV-2/COVID-19.

METHODS: We searched for documents providing recommendations for COVID-19 testing on electronic databases, guideline repositories, and websites of organizations on June 26th 2020. Two reviewers applied the eligibility criteria without language or geographic restrictions. We extracted data in duplicate and assessed methodological quality of included documents using the AGREE-II tool.

RESULTS: We included 38 relevant documents and 265 recommendations. Among them 46% focused on diagnosis of symptomatic cases and 13% in staging of confirmed cases. The most frequently recommended test was the reverse transcription-polymerase chain reaction (RT-PCR) assay (80 recommendations), followed by Chest Computed Tomography (31 recommendations), and chest US (21 recommendations). There were 21 areas of agreement including the use of RT-PCR for SARS-Cov-2 detection, the limited role of bronchoscopy, the use chest CT and chest x-rays for grading severity, when to repeat RT-PCR in cases of high suspicion of infection and negative findings, the collection of lower respiratory specimens to confirm an initial undetermined diagnosis, and the co-assessment for other respiratory pathogens.

INTERPRETATION:. A high proportion of documents with recommendations scored at the lowest end of the AGREE-II instrument in several key domains. Only ten documents reported the methodology used. Future guidance documents should incorporate a minimum set of key characteristics, particularly methodological aspects and conflict of interests, to warrant their applicability for decision-making.

REGISTRATION: Study protocol available on OSF website: https://osf.io/yqv54/.

KEYWORDS: Diagnosis, COVID-19, SARS-CoV-2 infection, recommendations, systematic review

ARTICLE SUMMARY

Strengths and limitations

- Testing strategies for screening, diagnosis and follow-up of COVID-19 is a subject of debate.
- We systematically reviewed worldwide documents for guidance on the use of tests for COVID-19, and we appraised all collated documents using AGREE-II.
- There were significant areas of agreement among documents.
- The limited level of evidence of the documents analysed hampers the conclusions drawn from our work of synthesis.
- Future guidance documents should incorporate formal strategies for identification and assessment of the evidence to support recommendations about testing for COVID-19.

INTRODUCTION

Coronavirus disease 2019 (COVID–19), a human respiratory disease pandemic caused by a new coronavirus (severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2) since March 2020, has been reported in 3,175,207 cases including 224,172 deaths worldwide. (1, 2) Its peak quickly saturated the response capacity of healthcare organizations, even in high-performing systems, seriously affecting medical provision. (3) Effective infection control should rely on accurate tests. Initial strategies have focused on case identification and contact tracing, as in previous coronavirus epidemics, (4-6) although testing on a massive scale has been also suggested as a key public health strategy. (6-8) Testing all patients with suspected infection is the ideal method for infection control, but several countries have limited testing capacity unrealistic and a prioritizing process is applied. (9-11)

Testing used in screening, diagnosis and follow up of COVID-19 has been a subject of debate. Besides symptoms and signs, tests such as RT-PCR assays, antibody and serology tests (including IgG and IgM) as well as imaging (chest computed tomography, ultrasound and chest X-ray), have been considered for this condition. (12-14) However, there are variations in the evidence evaluating the properties of COVID-19 tests in different public health and clinical scenarios. (15-17) In a pandemic, there is a need for timely guidance to direct the testing of suspected, probable and confirmed COVID-19 cases. To efficiently use available resources to control the spread of the disease, several organizations have developed formal advice about testing for COVID-19. (18-21) In this scoping review, we collated and categorized current guidance about the role and applications of tests for SARS-CoV-2/COVID-19, to provide an overview of the recommended testing strategies.

METHODS

We searched for updated guidance documents about the use of tests in the diagnosis and management of COVID-19 patients. A document or report was eligible if it was self-declared as a guideline, guidance or protocol, if it provided recommendations about testing in sentences or paragraphs, and if it stated that recommendations were developed by a team of experts, by a panel of experts, or if it provided a list of authors/ experts involved in the process. We included documents providing recommendations about the use of any test, including symptoms and signs of COVID-19, laboratory-based molecular tests, antigen detection and serology tests. Guidance documents exclusively focused on special populations (such as patients with chronic obstructive pulmonary disease (COPD), critical care, pregnant women, cancer patients or children), specific settings (workplaces, nursing homes), and those developed for local use (such as those developed by healthcare institutions) were excluded. A detailed structured research question (PICO format: Population, index tests, outcomes) can be consulted in Appendix 1.

Data sources and searches

We searched guideline repositories and websites of government agencies, scientific societies and international organizations related to COVID-19 management, such as the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), as well as manual searching of 28 websites (Appendix 2). In addition, we searched MEDLINE (Ovid SP, 1946 to June 26th, 2020), Embase (Ovid SP, 1982 to June 26th, 2020), and LILACS (iAH English) (BIREME, 1982 to June 26th, 2020). We also search on internet for documents from the 30 countries more affected by COVID-19 confirmed cases, as reported by the WHO in the situation report #153 (22) (see list of countries in appendix 3). We did not apply any language, geographic or publication status restrictions. We used EndNote X9 software to create a database for the management of the search results.

Study selection and quality assessment

Two reviewers applied the eligibility criteria and extracted relevant data on main characteristics from potentially relevant documents, registering reasons for exclusion. An additional reviewer checked all the extracted information for accuracy (non-independent verification). For the quality assessment of included documents, two reviewers independently rated each document using the AGREE-II tool. (23) This tool consisted of 23 key items organized in six domains: scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability, editorial independence and two overall evaluation items. Each item was graded using a scale of 7 points: from 1, meaning "Strongly disagree", to 7, meaning "Strongly agree". The total was presented as a percentage of the maximum possible score for that domain (from 0 to 100%). Discrepancies were resolved by a consensus.

Data extraction and data synthesis

For each eligible document, we extracted information about the country and region where the document was developed, the date of last update, the main institution developing the guidance, the methodology used to produce the guidance document and the recommendations, as well as the assessment of conflict of interest. All recommendations provided by the included guidance documents were extracted in an Excel spreadsheet. We classified each recommendation according to their application, following the disease pathway suggested by Chen et al.,(24) as follow:

- *Incubation period with screening asymptomatic patients and monitoring contacts*: Those recommendations about the assessment of at-risk individuals without symptoms and their likelihood of a current SARS-Cov-2 infection, as well as those recommendations about contact tracing and monitoring of contacts of suspected, possible and confirmed cases of COVID-19.

- *Symptomatic illness with testing of symptomatic cases:* Those recommendations about the triage of symptomatic individuals with a reasonable likelihood of COVID-19.
- *Symptomatic illness needing diagnosis:* Those recommendations about the confirmation of COVID-19 disease in an individual infected with SARS-CoV-2 after triage testing.
- *Symptomatic illness exploring competitive diagnosis:* Those recommendations about rule-out competing diagnosis (i.e. influenza-like illness) of symptomatic individuals with a reasonable likelihood of a SARS-Cov-2 infection/ COVID-19.
- *Symptomatic illness grading disease severity:* Those recommendations about the classification of confirmed cases and the assessment of severity to treatment decisions.
- *Symptomatic illness monitoring*: Those recommendations about the follow-up of confirmed COVID-19 case for further treatment modifications.
- *Convalescence or de-isolation-discharge*: Those recommendations about the end of de-isolation or the hospital discharge of institutionalized patients.

We extracted the test(s) covered by each recommendation in a standardized format, as well as the direction of the recommendation (for/ against), and their strength (weak, strong), if available. We generated tables and figures summarizing the role of tests during the COVID-19 testing, as well as the areas of consensus and recommendations supported by two or more documents. All descriptive analyses were performed in STATA 16.0. We followed the PRISMA guidelines for reporting scoping reviews. (25)

RESULTS

Electronic searches yielded 2102 citations from Medline, Embase and LILACS databases. In addition, we obtained 2803 documents from other resources (Figure 1). Our initial screening of titles and abstracts identified 179 documents for assessment in full text, of which 31 were excluded due to

they did not provide recommendations for clinical practice, 28 documents did not provide recommendations about COVID-19 testing, and 17 addressed adult patients with other main pathologies excluded to our review (Appendix 4). Finally, 38 documents were included in evidence synthesis. (19, 20, 26-61)

Characteristics and quality of included guidance documents

Most of the included documents (n=26, 68%) were published de novo or have an updated version during April to June 2020 (Table 1). Thirty-one documents were developed by institutions in America (n=13), Europe (n=9) and Asia (n=9). A considerable number of documents were developed by governmental agencies (n=18, 47%). Ten documents reported a methodology to their development, including search of primary evidence and use of other guidelines (30-32, 39, 40, 42, 47, 49, 54, 59), while nine of them added a specific method to develop the recommendations, mostly based on expert consensus (30-32, 39, 40, 42, 47, 54, 59). Ten documents did not present the recommendation in a clear format, such as a bullet list or a table, instead they present the recommended actions in paragraphs along with other epidemiological information (19, 20, 32, 36, 41, 43, 45, 50, 56, 60). In addition, only 15 documents reported the assessment of conflict of interest among the members of the expert panel producing the recommendations (30, 31, 33, 38, 40-44, 47, 49, 54, 56, 58, 59).

Regarding the quality of included documents, we found that the domains with the highest scores were "Scope and purpose" (Median= 49%; IQR= 28 to 61) and "Clarity of presentation" (Median= 49%; IQR= 31 to 65) (Appendix 5). Domains with the lowest scores were “Applicability” (Median= 4; IQR= 0 to 21) and “Editorial independence” (Median= 0; IQR= 0 to 19). Only five documents obtained at least 50% score for the "Rigor of development" domain. (30, 32, 40, 42, 59) Only nine documents obtained at least 50% scores for at least three AGREE-II domains. (19, 30, 32, 33, 40, 42, 45, 54, 59) (Appendix 5).

Table 1. Characteristics of the documents included in scoping review of guidance on SARS-CoV-2/COVID-19 testing.

Characteristic of documents or recommendations		Frequency
Date last version / update	February 2020 or earlier	2
	March 2020	8
	April 2020	9
	May 2020	10
	June 2020	7
Country / Region	America	13
	Europe	9
	Asia	9
	Africa	1
	International	6
Developer	World Health Organization	4
	Governmental agencies (local CDC, Ministries of Health)	18
	Scientific societies	16
Scenarios of recommendations' application	**Incubation**: Monitoring contacts/ Screening asymptomatic patients	12
	Symptomatic illness: Screening symptomatic cases	6
	Symptomatic illness: Diagnosis	123
	Symptomatic illness: Competitive diagnosis	25
	Symptomatic illness: Staging / grading severity	35
	Symptomatic illness: Monitoring	25
	Convalescence: De-isolation / discharge	28
	Other applications	11

Characteristics of the recommendations

The 38 documents included provided a total of 265 recommendations about testing for COVID-19 (Table 1). One-hundred twenty four recommendations focused on the diagnosis of suspected cases (46%), while 35 recommendations addressed grading or staging the severity of confirmed COVID-19 cases (13%). Thirty-four recommendations were against the use of a test in a specific setting (12%). The strength of recommendations was reported in 52 statements (strong 30; weak 22).

The test most frequently recommended was the reverse transcription-polymerase chain reaction (RT-PCR) assays (80 recommendations), followed by chest CT (31 recommendations), and chest US (21 recommendations). The test was not described or was unclearly reported in 28 recommendations (i.e. "COVID testing", "laboratory testing"). In addition, 78 recommendations reported tests for the investigation of other diagnoses, monitoring of disease and assessment of severity, such as blood counts, biomarkers, cultures and kidney and liver functions, among others.

An overview of the recommendations collated according to their role and application is presented in Figures 2 and 3. Full-text of all recommendations and areas of agreement with supporting documents can be consulted in Appendix 6.

DISCUSSION

In this scoping review of recommendations about COVID-19 testing, we identified 38 guidance documents containing 265 recommendations for different stages of the disease, including SARS-Cov-2 detection, rule-out of competitive diagnosis, staging and monitoring of symptomatic cases and de-isolation-discharge of hospitalized patients. Most of the documents were developed without any search for primary evidence and relied on expert consensus. Only a small fraction of the documents obtained scores equal to or above 50% for at least three quality domains in the AGREE-II tool, and only 52 recommendations included an statement about their strength. Despite the methodological limitations, it was possible to map the role of RT-PCR assays, imaging and serological tests to guide the management of COVID-19. We found a predominant role for RT-PCR in several stages of the disease. Besides, we identified the role of imaging tests to grade the severity of the disease. We identified several areas of consensus about testing in different disease stages. These areas included the use of RT-PCR for SARS-Cov-2 detection, the limited role of bronchoscopy, and

the use chest CT and chest x-rays for grading severity. There was also consensus about when to repeat RT-PCR in cases of high suspicion of infection and negative findings, the collection of lower respiratory specimens to confirm an initial undetermined diagnosis, and the co-assessment for other respiratory pathogens.

This scoping review was based on a comprehensive search and assessment of the literature about COVID-19 testing. We included guidance about COVID-19 testing from different expert panels from various countries around the world. We also performed a regular update of searches and updated our findings to reflect the current recommended practice in this field. Our last searches were performed in June 26th, 2020 and we will consider updating this review with additional searches if new evidence modified our conclusions. However, our review has some limitations. We mostly relied on the search of guideline repositories, documents linked to scientific societies and publications in indexed journals to inform this scoping review. We considered that this strategy would identify documents with greater support given by experts and professional societies. Despite we conducted a specific search of guidance developed by experts based on the 30 countries more affected by the pandemic, it is possible that some such guidelines could be missing. Official agencies were probably not prepared to release their advice to governments in a sensitive political atmosphere.

When we used the AGREE-II tool to assess the quality of all included documents we did not expect full compliance in all domains, but we did considered that a minimum of key characteristics would be fulfilled in documents providing formal recommendations for testing. (62) Unfortunately, we noted many deficiencies, a feature that was disturbing given that the severity of the pandemic demanded the highest level of rigour. The lack of reporting concerning critical issues like conflict of interest, judgments about evidence quality, and the methods to formulate recommendations, could reduce the confidence stakeholders would have when implementing the recommended action in

daily practice. Development of formal clinical practice guidelines is a time consuming task. Even if the reason for these shortcomings was the need to provide quick guidance in response to the COVID-19 emergency, readers should be aware that there are quality standards expected in rapid guidelines. (63)

Timely and accurate testing is a key element for the control of COVID-19. (64, 65) This is, to our knowledge, the first scoping review focusing on recommendations exclusively for COVID-19 testing, with information current until June 2020. However, as new evidence about COVID-19 testing emerges, the recommended actions would need updating and a living systematic review could offer the best approach for addressing this issue timely.

STATEMENTS

AUTHOR CONTRIBUTIONS: IAR and JZ conceived the study. IAR, JZ, PS, DBG, AC, DSR, JPM and JZ designed the study. IAR, PS, DBG and PZA screened titles and abstracts for inclusion. IAR, PS, DBG, AC, AM, PZA, DSR, RDC and JPM extracted and analysed data. AC, RdC, JCGM, KSK and JPM helped interpret the findings from a clinical viewpoint. IAR, PS, KSK and JZ wrote the first draft, which all authors revised for critical content. All authors approved the final manuscript. IAR and JZ are the guarantors. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

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Legends of figures

Figure 1. Flow diagram of document selection for scoping review of guidance on SARS-CoV-2/COVID-19 testing.

Figure 1 footnote: Additional records identified through other sources: TRIP database= 1664 records; Members of the International Society of antimicrobial chemotherapy= 89 records; CMA Infobase/Clinical Practice Guidelines Database (CPGs) = 129 records; Living systematic review University of Bern= 266 records; WHO resources= 162 records; Fisterra= 38 records; other sources= 455 records.

Figure 2. Number of recommendations about COVID-19 testing: application of tests

Figure 3. Diagnostic testing of SARS-CoV-2/ COVID-19: areas of consensus

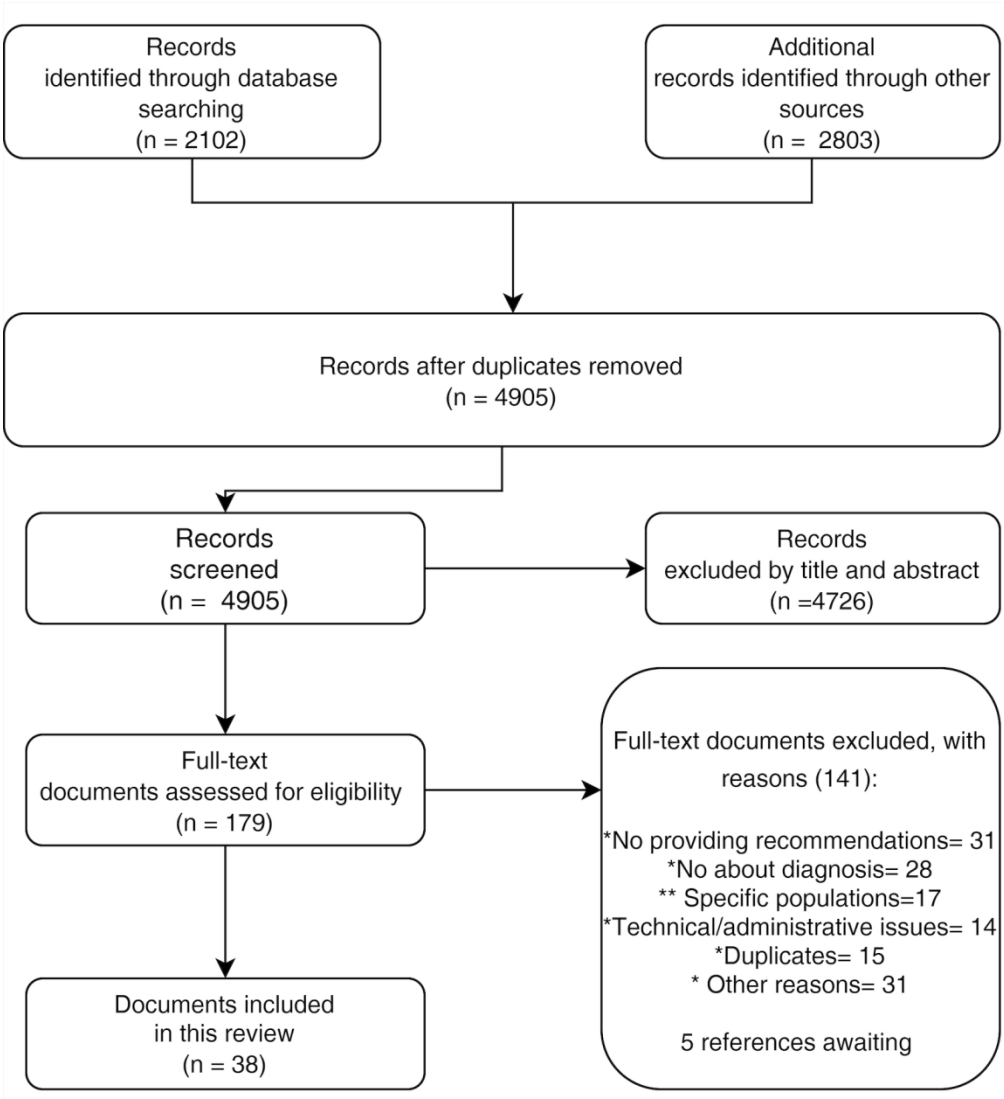
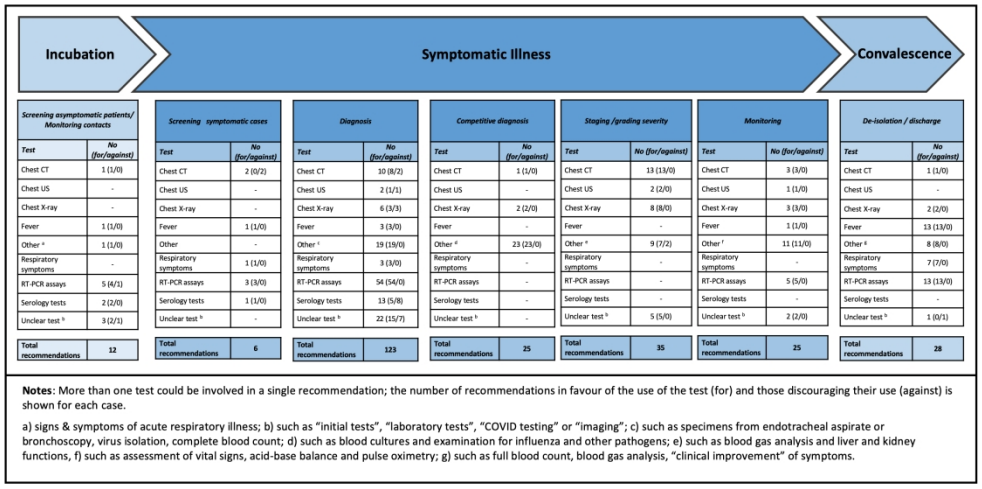


Figure 1. Flow diagram of document selection for scoping review of guidance on SARS-CoV-2/COVID-19 testing.



Screening asymptomatic patients/ Monitoring contacts

Test	No (for/against)
Chest CT	1 (1/0)
Chest US	-
Chest X-ray	-
Fever	1 (1/0)
Other [a]	1 (1/0)
Respiratory symptoms	-
RT-PCR assays	5 (4/1)
Serology tests	2 (2/0)
Unclear test [b]	3 (2/1)
Total recommendations	**12**

Screening symptomatic cases

Test	No (for/against)
Chest CT	2 (0/2)
Chest US	-
Chest X-ray	-
Fever	1 (1/0)
Other	-
Respiratory symptoms	1 (1/0)
RT-PCR assays	3 (3/0)
Serology tests	1 (1/0)
Unclear test [b]	-
Total recommendations	**6**

Diagnosis

Test	No (for/against)
Chest CT	10 (8/2)
Chest US	2 (1/1)
Chest X-ray	6 (3/3)
Fever	3 (3/0)
Other [c]	19 (19/0)
Respiratory symptoms	3 (3/0)
RT-PCR assays	54 (54/0)
Serology tests	13 (5/8)
Unclear test [b]	22 (15/7)
Total recommendations	**123**

Competitive diagnosis

Test	No (for/against)
Chest CT	1 (1/0)
Chest US	-
Chest X-ray	2 (2/0)
Fever	-
Other [d]	23 (23/0)
Respiratory symptoms	-
RT-PCR assays	-
Serology tests	-
Unclear test [b]	-
Total recommendations	**25**

Staging /grading severity

Test	No (for/against)
Chest CT	13 (13/0)
Chest US	2 (2/0)
Chest X-ray	8 (8/0)
Fever	-
Other [e]	9 (7/2)
Respiratory symptoms	-
RT-PCR assays	-
Serology tests	-
Unclear test [b]	5 (5/0)
Total recommendations	**35**

Monitoring

Test	No (for/against)
Chest CT	3 (3/0)
Chest US	1 (1/0)
Chest X-ray	3 (3/0)
Fever	1 (1/0)
Other [f]	11 (11/0)
Respiratory symptoms	-
RT-PCR assays	5 (5/0)
Serology tests	-
Unclear test [b]	2 (2/0)
Total recommendations	**25**

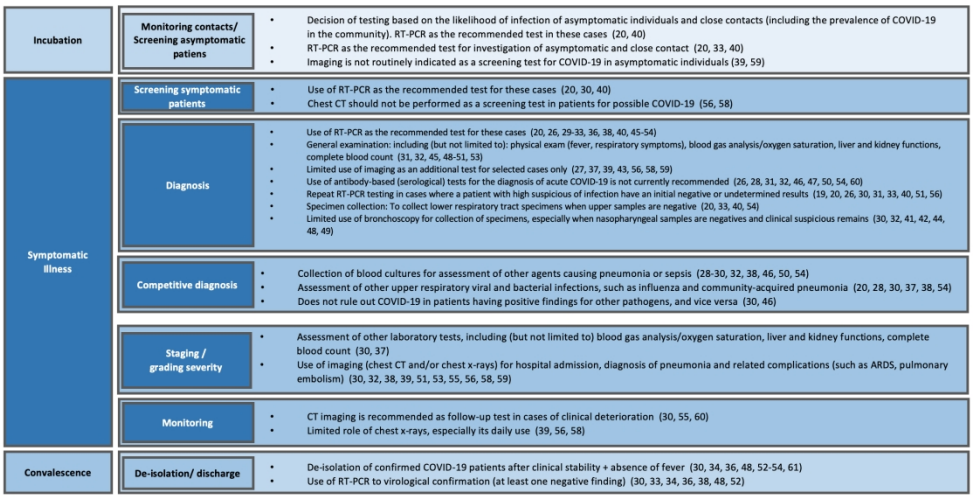
De-isolation / discharge

Test	No (for/against)
Chest CT	1 (1/0)
Chest US	-
Chest X-ray	2 (2/0)
Fever	13 (13/0)
Other [g]	8 (8/0)
Respiratory symptoms	7 (7/0)
RT-PCR assays	13 (13/0)
Serology tests	-
Unclear test [b]	1 (0/1)
Total recommendations	**28**

Notes: More than one test could be involved in a single recommendation; the number of recommendations in favour of the use of the test (for) and those discouraging their use (against) is shown for each case.

a) signs & symptoms of acute respiratory illness; b) such as "initial tests", "laboratory tests", "COVID testing" or "imaging"; c) such as specimens from endotracheal aspirate or bronchoscopy, virus isolation, complete blood count; d) such as blood cultures and examination for influenza and other pathogens; e) such as blood gas analysis and liver and kidney functions, f) such as assessment of vital signs, acid-base balance and pulse oximetry; g) such as full blood count, blood gas analysis, "clinical improvement" of symptoms.

Figure 2. Number of recommendations about COVID-19 testing: application of tests



Note: *Two or more expert panels supported the areas of consensus detailed above. Due to information on COVID-19 virus is rapidly evolving, some of these actions would be modified when new evidence become available.*

Figure 3. Diagnostic testing of SARS-CoV-2/ COVID-19: areas of consensus

APPENDIX 1. PICO QUESTION

	Inclusion criteria	Exclusion criteria
Population	Adults (general population) under clinical management (in a health care facility) by COVID-19 suspected or confirmed	• Pediatric population (<16 years of age) • Pregnant women • Critically ill patients • Healthcare workers • People with other main diagnosis (such as oncological conditions, COPD, asthma, etc) • People undergoing surgical procedures or radiological interventions • People isolated or self-isolated at home for COVID19 suspicious • Elderly people living in nursing homes
Index tests	• General symptoms/signs (i.e. fever, cough) • RT-PCR assays for SARS-CoV-2 • Rapid/Point-of-care, antibody and serology tests (including IgG and IgM serology) • Imaging (Chest CT, ultrasound and Chest X-ray) • Other ancillary tests used during COVID-19 management	• Interventional radiology • Bronchoscopy for non-COVID diagnosis • Other diagnostic procedures for other pathologies no related with COVID-19
Outcomes	Recommendations about the use of diagnostic tests	• Technical and/or administrative requirements for the use of the test (i.e. resources needed, laboratory capacity, strategies for batch analysis) • Recommendations about reporting findings (for example, findings from CT scans) • Recommendations for quarantine periods • Recommendations about infection prevention and control • Public health recommendations, including return to schools and work, public transportations and similar • Recommendations about population screening
Type of documents	• Documents developed by Ministries of Health, Public Health agencies or National institutions for healthcare. • Documents developed by scientific societies • Consensus statements providing recommendations for the use of a test • Formal clinical practice guidelines	• Documents developed by one person only • Documents no providing recommendations as sentences o (for example, algorithms, figures and tables) • Documents developed by individual hospitals, healthcare institutions or individual states/cities. • Rapid responses or rapid reviews produced by HTA agencies • Commentaries of other documents providing recommendations

APPENDIX 2. SEARCH STRATEGIES (MANUAL SEARCH AND ELECTRONIC DATABASES)

Manual search	• ECRI Guidelines Trust (https://guidelines.ecri.org/) • TRIP Database (https://www.tripdatabase.com/) • NeLH Guidelines Finder (https://www.semfyc.es/biblioteca/national-electronic-library-for-health-nelh/) • Guía Salud GPCs en España (https://portal.guiasalud.es/) • CMA Infobase: Clinical Practice Guidelines Database (CPGs) (https://joulecma.ca/cpg/homepage) • New Zealand Guidelines (https://www.health.govt.nz/publications?f%5B0%5D=im_field_publication_type%3A26) • Scottish Clinical Guidelines (https://www.sign.ac.uk/our-guidelines) • EBM Guidelines (https://www.ebm-guidelines.com/dtk/ebmg/home) • Health Services/Technology Assessment Text (HSTAT) (https://www.semfyc.es/biblioteca/health-servicestechnology-assessment-text-hstat/) • National Institute for Health and Clinical Excellence (NICE) (https://www.nice.org.uk/covid-19) • Guideline International Network (https://g-i-n.net/library/international-guidelines-library) • AHRQ (https://www.ahrq.gov/research/publications/search.html) • Guideline Central (https://www.guidelinecentral.com/summaries/) • Infectious Disease Society of America (IDSA) (https://www.idsociety.org/) • Members of the International Society of antimicrobial chemotherapy (89 members) • China (http://www.chinacdc.cn/en/), USA (https://www.cdc.gov/) and European Centers for Disease Control and Prevention (https://www.ecdc.europa.eu/en) • WHO resources for COVID-19 pandemic (https://www.who.int/emergencies/diseases/novel-coronavirus-2019) • The Living systematic review developed by the Institute of Social and Preventive Medicine-ISPM from the University of Bern (available on https://ispmbern.github.io/covid-19/)

Medline-Pubmed	#1 Add Search (\"Wuhan coronavirus\" [Supplementary Concept] OR \"COVID-19\" OR \"2019 ncov\"[tiab] OR ((\"novel coronavirus\"[tiab] OR \"new coronavirus\"[tiab]) AND (wuhan[tiab] OR 2019[tiab])) OR 2019-nCoV[All Fields] OR (wuhan[tiab] AND coronavirus[tiab]))))) #2 Add Search Clinical pathway[mh] OR Clinical protocol[mh] OR Consensus[mh] OR Consensus development conferences as topic[mh] OR Critical pathways[mh] OR Guidelines as topic [Mesh:NoExp] OR Practice guidelines as topic[mh] OR Health planning guidelines[mh] OR guideline[pt] OR practice guideline[pt] OR consensus development conference[pt] OR consensus development conference, NIH[pt] OR position statement*[tiab] OR policy statement*[tiab] OR practice parameter*[tiab] OR best practice*[tiab] OR standards[ti] OR guideline[ti] OR guidelines[ti] OR ((practice[tiab] OR treatment*[tiab]) AND guideline*[tiab]) #3 Add Search ((((\"Wuhan coronavirus\" [Supplementary Concept] OR \"COVID-19\" OR \"2019 ncov\"[tiab] OR ((\"novel coronavirus\"[tiab] OR \"new coronavirus\"[tiab]) AND (wuhan[tiab] OR 2019[tiab])) OR 2019-nCoV[All Fields] OR (wuhan[tiab] AND coronavirus[tiab])))))) AND (Clinical pathway[mh] OR Clinical protocol[mh] OR Consensus[mh] OR Consensus development conferences as topic[mh] OR Critical pathways[mh] OR Guidelines as topic [Mesh:NoExp] OR Practice guidelines as topic[mh] OR Health planning guidelines[mh] OR guideline[pt] OR practice guideline[pt] OR consensus development conference[pt] OR consensus development conference, NIH[pt] OR position statement*[tiab] OR policy statement*[tiab] OR practice parameter*[tiab] OR best practice*[tiab] OR standards[ti] OR guideline[ti] OR guidelines[ti] OR ((practice[tiab] OR treatment*[tiab]) AND guideline*[tiab])
EMBASE -OVID	1 (nCoV or 2019-nCoV or ((new or novel or wuhan) adj3 coronavirus) or covid19 or covid-19 or SARS-CoV-2).mp. 2 exp clinical pathway/ 3 exp clinical protocol/ 4 exp consensus development conference/ 5 exp consensus development conferences as topic/ 6 critical pathways/ 7 guideline (Ohne verwandte Begriffe) 8 guidelines as topic/ 9 exp practice guideline/ 10 practice guidelines as topic/ 11 health planning guidelines/ 12 treatment guidelines (Ohne verwandte Begriffe) 13 recommendat*.ti,kw. 14 or/2-13 15 1 and 14
LILACS	tw:((tw:((tw:((tw:(wuhan coronavirus)) OR (tw:(covid-19)) OR (tw:(2019 ncov)) OR (tw:(novel coronavirus)) OR (tw:(new coronavirus)) OR (tw:(wuhan OR "2019")) OR (tw:(wuhan AND coronavirus)))))) AND (tw:((tw:(guideline OR guidelines OR recommendati* OR consensus development OR critical pathways))))) AND (type of study:("guideline"))

APPENDIX 3. TOP 30 OF COUNTRIES MORE AFFECTED FOR COVID-19 (ACCORDING TO WHO- SITUATION REPORT # 153)

Country	Number of COVId-19 confirmed cases
United States of America	2208829
Brazil	1032913
Russian Federation	584680
India	410461
The United Kingdom	303114
Peru	247925
Spain	245938
Italy	238275
Chile	236748
Iran (Islamic Republic of)	202584
Germany	189822
Turkey	186493
Pakistan	176617
Mexico	170485
France	154562
Saudi Arabia	154233
Bangladesh	108775
Canada	100629
South Africa	92681
Qatar	86488
China	84997
Colombia	63276
Belgium	60550
Belarus	57936
Sweden	56043
Egypt	53758
Ecuador	50183
Netherlands	49502
Indonesia	45029
United Arab Emirates	44533

APPENDIX 4. CHARACTERISTICS OF EXCLUDED-AWAITING STUDIES

Title	Reason for exclusion
The Australian and New Zealand Intensive Care Society (ANZICS) COVID-19 Guidelines (1)	Specific population (ICU patients)
Initial Public Health Response and Interim Clinical Guidance for the 2019 Novel Coronavirus Outbreak — United States, December 31, 2019–February 4, 2020 (2)	No guideline/ recommendations
Infection Prevention and Control guidance for Long-Term Care Facilities in the context of COVID-19 (3)	Specific setting (long term care facilities)
COVID-19 Guidance for sampling and laboratory investigations (4)	No expert panel reported
Novel coronavirus (COVID-19) Guidance for primary care (5)	No recommendations about diagnostic issues
Novel coronavirus (COVID-19) Guidance for secondary care (6)	No recommendations about diagnostic issues
Testing for SARS CoV 2 in Scotland (7)	No recommendations about diagnostic issues
COVID-19 Guidance: Primary Care Providers in a Community Setting (8)	No recommendations about diagnostic issues
Interim Guidance: Public Health Management of cases and contacts associated with novel coronavirus (COVID-19)in the community (9)	No recommendations about diagnostic issues
Choosing Wisely: COVID-19 recommendations (10)	No recommendations about diagnostic issues
Prince Edward Island Guidelines for the Management and Control of COVID-19 (11)	No recommendations about diagnostic issues
Australian Health sector emergency response plan for novel coronavirus (12)	No guideline/ recommendations
Clinical guide for the management of respiratory patients during the coronavirus pandemic (13)	No guideline/ recommendations
INTERIM CLINICAL GUIDANCE FOR ADULTS WITH SUSPECTED OR CONFIRMED COVID-19 IN BELGIUM (14)	No recommendations about diagnostic issues
Midwives ordering testing for COVID-19 (15)	No guideline/ recommendations
Statement from RCPath's Immunology Specialty Advisory Committee on COVID-19 / SARS CoV2 antibody evaluation (16)	No guideline/ recommendations
Algorithm for symptomatic staff, symptomatic household testing and further actions (17)	Specific setting (long term care facilities)
American Association for Respiratory Care: SARS-CoV-2 (18)	No recommendations about diagnostic issues
Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19 (19)	No recommendations about diagnostic issues
MANAGEMENT OF PATIENTS WITH SEVERE TO CRITICAL COVID-19 DISEASE (20)	No recommendations about diagnostic issues
Interim infection prevention and control guidelines for the management of COVID-19 in healthcare settings (21)	No recommendations about diagnostic issues
NATIONAL SUPPORTING GUIDANCE FOR SCOTTISH GENERAL PRACTICE - COVID-19 (22)	No recommendations about diagnostic issues
RCPath advice on histopathology frozen sections and cytology fine needle aspiration during infectious disease outbreaks (23)	No recommendations about diagnostic issues
Guidance for remote reporting of digital pathology slides during periods of exceptional service pressure (24)	No recommendations about diagnostic issues
Infection prevention and control during health care when COVID-19 is suspected (25)	No recommendations about diagnostic issues
COVID-19 Guidance: Acute Care (26)	Specific population

GUIDE TO INFECTION CONTROL IN THE HOSPITAL (27)	No recommendations about diagnostic issues
Policies and Guidelines for COVID-19 Preparedness: Experiences from the University of Washington (28)	No guideline/ recommendations
COVID-19: An ACP physicians guide (29)	No guideline/ recommendations
Laboratory testing for COVID-19. Emergency Response Technical Centre, NIVD under China CDC (30)	No guideline/ recommendations
Guidelines for Investigation and Management of Close Contacts of COVID-19 Cases Training Kit from Chinese Center for Disease Control and Prevention (31)	No recommendations about diagnostic issues
Guide technique pour les tests de laboratoire la pneumonie du nouveau coronavirus (32)	No recommendations about diagnostic issues
COVID-19: Laboratory Testing Guideline (33)	No guideline/ recommendations
Partie du diagnostic et traitement. COVID-19 prévention et le contrôle des (Updated) (34)	No guideline/ recommendations
Diagnosis and treatment. COVID-19 Prevention and Control (35)	No guideline/ recommendations
Evaluating and Testing Persons for Coronavirus Disease 2019 (COVID-19) (36)	No expert panel reported
CDC Viral Test for COVID-19 (37)	No guideline/ recommendations
Serology Testing for COVID-19 (38)	No guideline/ recommendations
An overview of the rapid test situation for COVID-19 diagnosis in the EU/EEA (39)	No guideline/ recommendations
Considerations in the investigation of cases and clusters of COVID-19. Interim guidance. 2 April 2020 (40)	No guideline/ recommendations
Operational considerations for COVID-19 surveillance using GISRS Interim guidance 26 March 2020 (41)	No recommendations about diagnostic issues
Global surveillance for COVID-19 caused by human infection with COVID-19 virus Interim guidance 20 March 2020 (42)	No recommendations about diagnostic issues
Enfermedad por coronavirus 2019 (COVID-19) (43)	No expert panel reported
Care of the Adult Critically Ill COVID-19 Patient (44)	Specific population
GUIDANCE FROM THE CCS COVID-19 RAPID RESPONSE TEAM (45)	Specific population
D-19 Testing Guidelines for British Columbia (46)	No expert panel reported
Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (Trial Version 7) (47)	No expert panel reported
COVID-19: Kriterien zur Entlassung aus dem Krankenhaus bzw. aus der häuslichen Isolierung 2020 (48)	No guideline/ recommendations
Instructions for discharge from the hospital and for the cessation of precautionary measures against the transmission of patients with COVID-19 who are hospitalized or remain for home care (49)	No guideline/ recommendations
Communication of the CTS on the definition of a cured patient (50)	No guideline/ recommendations
Perinatal-Neonatal Management of COVID-19 Infection – Guidelines of the Federation of Obstetric and Gynecological Societies of India (FOGSI), National Neonatology Forum of India (NNF), and Indian Academy of Pediatrics (IAP) (51)	Specific population
Recommendation for the diagnosis and treatment of novel coronavirus infection in children in Hubei (Trial version 1) (52)	Specific population
Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection (53)	Specific population
Diagnosis and treatment recommendations for pediatric respiratory infection caused by the 2019 novel coronavirus (54)	Specific population

Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19) (55)	Specific population
Diagnosis and prevention of new coronavirus infection in children in 2019 (56)	Specific population
Treatment of patients with nonsevere and severe coronavirus disease 2019: an evidence-based guideline (57)	No recommendations about diagnostic issues
The Canadian Association for Interventional Radiology (CAIR) and Canadian Association of Radiologists (CAR) Guidelines for Interventional Radiology Procedures for Patients With Suspected or Confirmed COVID-19 (58)	No recommendations about diagnostic issues
Sometimes Less Is Worse: A Recommendation Against Nonintubated Video-Assisted Thoracoscopy During the COVID-19 Pandemic (59)	No recommendations about diagnostic issues
SARS CoV-2/COVID-19: Evidence-Based Recommendation on Diagnosis and Therapy (60)	No guideline/ recommendations
Nasal, pharyngeal and laryngeal endoscopy procedures during COVID-19 pandemic: available recommendations from national and international societies (61)	No guideline/ recommendations
Recommendations to the government following the declaration of COVID-19 pandemic (62)	No guideline/ recommendations
Molecular testing for acute respiratory tract infections: clinical and diagnostic recommendations from the IDSA's Diagnostics Committee (63)	Specific population
Recommendation of a practical guideline for safe tracheostomy during the COVID-19 pandemic (64)	No recommendations about diagnostic issues
Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group (65)	No recommendations about diagnostic issues
Emergency tracheal intubation in 202 patients with COVID-19 in Wuhan, China: lessons learnt and international expert recommendations (66)	No recommendations about diagnostic issues
Tracheostomy during COV-SARS-CoV-2 pandemic: Recommendations from the New York Head and Neck Society (67)	No recommendations about diagnostic issues
Biosafety measures for preventing infection from COVID-19 in clinical laboratories: IFCC Taskforce Recommendations (68)	No recommendations about diagnostic issues
Radiological diagnosis of COVID-19: expert recommendation from the Chinese Society of Radiology (First edition) (69)	Awaiting
Infection prevention in radiological examination of COVID-19: expert recommendation from the Chinese Society of Imaging Technology (First edition) (70)	Awaiting
Please do not embrace!: Important recommendations of the Robert Koch Institute, authorities and expert associations on COVID-19 (71)	Awaiting
Information from the AG Thorax Diagnostik der Deutschen Röntgengesellschaft (72)	No guideline/ recommendations
Covid-19 diagnostic imaging recommendations (73)	No guideline/ recommendations
Recommendations for Minimal Laboratory Testing Panels in Patients with COVID-19: Potential for Prognostic Monitoring (74)	No guideline/ recommendations
Clinical Insights and Management Recommendations for COVID-19 Patients Hospitalized in Internal Medicine Departments: Recommendations by the Corona Department Heads in Israel (75)	No recommendations about diagnostic issues

CT and COVID-19: Chinese experience and recommendations concerning detection, staging and follow-up (76)	No guideline/ recommendations

APPENDIX 5. AGREE II Domain-Standardized Scores

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
5	Laboratory testing for coronavirus disease (COVID-19) in suspected human cases (77)	19/03/2020	International	44	42	14	50	4	0
24	Infection prevention and control for coronavirus disease (COVID-19): Interim guidance for acute healthcare settings (78)	24/02/2020	Canada	56	50	7	50	0	8
35	Coronavirus infections (79)	09/04/2020	Finland	8	6	2	19	0	0
36	ACR Recommendations for the use of Chest Radiography and Computed Tomography (CT) for Suspected COVID-19 Infection (80)	22/03/2020	USA	61	11	7	44	6	0
38	Clinical Management of Patients with Moderate to Severe COVID-19 - Interim Guidance (81)	02/04/2020	Canada	47	42	28	56	0	0
39	RECOMENDACIONES MANEJO CLÍNICO DE INFECCION RESPIRATORIA POR NUEVO CORONAVIRUS 2019 (2019 n-COV) (82)	07/02/2020	Chile	42	17	3	39	0	0
40	Consenso colombiano de atención, diagnóstico y manejo de la infección por SARS-COV-2/COVID-19 en establecimientos de atención de la salud (83)	12/04/2020	Colombia	64	78	74	56	33	79
42	CLINICAL MANAGEMENT OF SUSPECTED OR CONFIRMED COVID-19 DISEASE (84)	18/05/2020	South Africa	44	14	5	61	0	0
44	DIRETRIZES PARA DIAGNÓSTICO E TRATAMENTO DA COVID-19 (85)	07/05/2020	Brazil	56	22	70	67	2	0
48	Guidelines for Laboratory Diagnosis of Coronavirus Disease 2019 (COVID-19) in Korea (86)	17/03/2020	Korea	72	6	4	53	0	79
61	Guidance for discharge and ending isolation in the context of widespread community transmission of COVID-19 – first update (87)	08/04/2020	Europe	67	33	7	72	21	4
69	Advice on the use of point-ofcare immunodiagnostic tests for COVID-19 (88)	08/04/2020	International	28	0	0	22	0	0
84	Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (Trial Version 7) (47)	03/03/2020	China	17	0	0	17	0	0
88	Manejo clínico del COVID-19: atención hospitalaria (89)	18/06/2020	Spain	78	47	3	61	2	4
91	Recommendations of management in SARS-CoV-2 infection of the Polish Association of Epidemiologists and Infectiologists (90)	30/03/2020	Poland	28	11	3	50	4	0

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
98	The Role of Chest Imaging in Patient Management during the COVID-19 Pandemic (91)	07/04/2020	International	69	39	20	81	13	0
102	Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19 (92)	06/05/2020	USA	86	47	74	81	46	79
103	Recomendaciones de consenso SEPAR y AEER sobre el uso de la broncoscopia y la toma de muestras de la vía respiratoria en pacientes con sospecha o con infección confirmada por COVID-19 (93)	19/03/2020	Spain	42	28	4	31	23	13
104	The Use of Bronchoscopy During the COVID-19 Pandemic(94)	01/05/2020	USA	72	42	54	78	6	21
113	Imaging of coronavirus disease 2019: A Chinese expert consensus statement (95)	02/04/2020	China	61	47	8	39	4	13
114	Performing Bronchoscopy in Times of the COVID-19 Pandemic: Practice Statement from an International Expert Panel (96)	14/04/2020	International	58	36	4	33	2	13
119	TEMPORARY METHODICAL RECOMMENDATIONS PREVENTION, DIAGNOSTICS AND TREATMENT OF NEW CORONAVIRAL INFECTION (97)	03/06/2020	Russia	61	50	21	78	38	0
120	CLINICAL MANAGEMENT PROTOCOL: COVID-19. Government of India Ministry of Health and Family Welfare Directorate General of Health Services (EMR Division) (98)	13/06/2020	India	8	3	0	31	2	0
122	COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. USA.(99)	16/06/2020	USA	42	31	20	83	0	50
123	LINEAMIENTOS DE MANEJO HOSPITALARIO DEL PACIENTE CON COVID-19 V1,0 Comité de Trabajo COVID-19 Sociedad Peruana de Neumología (100)	28/03/2020	Peru	19	3	2	36	0	0
125	EsSalud. Recomendaciones de Manejo clínico para los casos de COVID 19. Perú, Marzo 2020 (101)	26/03/2020	Peru	39	31	2	50	0	83
129	Information on the detection, diagnosis and therapy of patients with COVID-19 (102)	18/06/2020	Germany	67	33	23	78	42	0
130	Guidelines on Management of Patients with COVID-19. Pakistan Chest Society (PCS) Guidelines. March 2020 (103)	28/03/2020	Pakistan	17	8	0	36	4	0
131	COVID-19-Coronavirus-Disease-Guidelines. Saudi Arabia (104)	01/05/2020	Saudi Arabia	50	11	2	28	13	0
140	National Guidelines on Clinical Management of Coronavirus Disease 2019 (COVID-19) Version 7.0 28 May 2020 (105)	28/05/2020	Bangladesh	28	17	2	28	8	0

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
149	Clinical Management of COVID-19 (106)	27/05/2020	International	56	56	38	78	38	67
151	Imagerie thoracique au déconfinement Positionnement de la SIT 07/05/2020 (107)	07/05/2020	France	17	0	0	22	0	0
153	COVID-19 patients and the radiology department – advice from the European Society of Radiology (ESR) and the European Society of Thoracic Imaging (ESTI) (108)	02/04/2020	Europe	53	31	10	39	35	46
156	Coronavirus Diseases 2019 - Interim Guidelines for COVID-19 Antibody Testing (109)	23/05/2020	USA	28	0	6	28	29	0
159	Canadian Society of Thoracic Radiology/ Canadian Association of Radiologists Consensus Statement Regarding Chest Imaging in Suspected and Confirmed COVID-19 (110)	08/05/2020	Canada	53	33	11	47	21	42
164	Use of chest imaging in COVID-19 (111)	11/06/2020	International	97	89	70	81	58	67
173	COVID-19 (SARS-CoV-2 ENFEKSİYONU) GENEL BİLGİLER, EPİDEMİOLOJİ VE TANI (112)	01/06/2020	Turkey	22	0	0	28	0	0
174	Relatif aux critères cliniques de sortie d'isolement des patients ayant été infectés par le SARS-CoV-2 (113)	16/03/2020	France	17	0	0	22	0	0
			Median	49	29	6	49	4	0
			P25	28	6	2	31	0	0
			P75	61	42	20	65	21	19

APPENDIX 6. RECOMMENDATIONS BY APPLICATION (KEY USE CASES)

Incubation: Screening asymptomatic patients/ Monitoring contacts

ID document	Recommendation
5	The decision to test should be based on clinical and epidemiological factors and linked to an assessment of the likelihood of infection. PCR testing of asymptomatic or mildly symptomatic contacts can be considered in the assessment of individuals who have had contact with a COVID-19 case. Screening protocols should be adapted to the local situation. The case definitions are being regularly reviewed and updated as new information becomes available. For the WHO suspected case definition see: Global Surveillance for human infection with coronavirus disease (COVID-2019)
24	Accompanying individuals should be screened for signs and symptoms of acute respiratory illness, referred for medical assessment where appropriate, and managed as per this document. If the accompanying individuals are asymptomatic, contact information should be collected so that local public health authorities can follow-up with them should the ill patient becomes a probable or confirmed case.
40	Se sugiere realizar pruebas serológicas IgG/IgM a personas asintomáticas con historia de contacto estrecho con casos sospechosos o confirmados de COVID 19, como mecanismo de gestión de riesgo, al cumplir los 14 días de aislamiento o cuarentena, donde estas se encuentren disponibles. (Débil a favor)
48	COVID-19 real-time RT-PCR may be performed for the purposes of: Screening asymptomatic individuals in close contact with confirmed COVID-19 patients
48	Specimen selection/ Asymptomatic or mild patients: The collection of both nasopharyngeal swabs and oropharyngeal swabs is recommended; these should be placed together in the same viral transport medium (VTM) to increase the sensitivity [14, 19]. However, the currently available VTM-swab systems are often designed for one swab. Therefore, specimen packaging and shipping should be conducted carefully, as there is a risk of leakage during transportation. When collecting only one specimen, a nasopharyngeal swab is recommended first. It may be necessary to collect lower respiratory tract specimens, such as sputum; however, sputum induction is not indicated.
91	In the course of an epidemic, mass serological testing with rapid tests “on request”, especially for detecting IgM class antibodies, can be used to identify asymptomatic infections once other means of reducing the epidemic have been exhausted.
98	Imaging is not routinely indicated as a screening test for COVID-19 in asymptomatic individuals
98	COVID-19 testing is indicated in patients incidentally found to have findings suggestive of COVID-19 on a CT scan
102	The IDSA panel suggests SARS-CoV-2 RNA testing in asymptomatic individuals who are either known or suspected to have been exposed to COVID-19 (conditional recommendation, very low certainty of evidence).
102	The IDSA panel suggests against SARS-CoV-2 RNA testing in asymptomatic individuals with no known contact with COVID-19 who are being hospitalized in areas with a low prevalence of COVID-19 in the community (conditional recommendation, very low certainty of evidence).
102	The IDSA panel recommends direct SARS-CoV-2 RNA testing in asymptomatic individuals with no known contact with COVID-19 who are being hospitalized in areas with a high prevalence of COVID-19 in the community (i.e., hotspots) (conditional recommendation, very low certainty of evidence).
164	For asymptomatic contacts of patients with COVID-19, WHO suggests not using chest imaging for the diagnosis of COVID-19 (Conditional recommendation, based on expert opinion)

Symptomatic illness: Screening symptomatic cases

ID document	Recommendation
5	Rapid collection and testing of appropriate specimens from patients meeting the suspected case definition for COVID-19 is a priority for clinical management and outbreak control and should be guided by a laboratory expert. Suspected cases should be screened for the virus with nucleic acid amplification tests (NAAT), such as RT-PCR
24	Patients with fever (over 38 degrees Celsius) and/or new onset of (or exacerbation of chronic) cough presenting to triage/reception should be asked about: 1. Travel to an affected area within 14 days before the onset of their illness; 2. Close contact with a probable or confirmed case of COVID-19 within 14 days before the onset of their illness; 3. Close contact with a person with acute respiratory illness who has been to an affected area within 14 days prior to onset of their illness; 4. Laboratory exposure to biological material (e.g., primary clinical specimens, virus culture isolates) known to contain SARS-CoV-2.
40	Se recomienda en personas con contacto estrecho noprotegido que presenten síntomas durante los 14 días iniciales de aislamiento, realizar algoritmo diagnóstico (RT PCR o serología IgG/IgM). Si esta es positiva debe ir a 14 días más de aislamiento si presenta síntomas leves o 28 días si presenta síntomas moderados a severos. Si es negativa se descarta caso.(Fuerte a favor)
102	The IDSA panel recommends a SARS-CoV-2 nucleic acid amplification test (NAAT) in symptomatic individuals in the community suspected of having COVID-19, even when the clinical suspicion for COVID-19 is low (strong recommendation, very low certainty of evidence).
159	Computed tomography should not be used to routinely screen patients for possible COVID-19.
153	CT should not be performed as a screening test in patients with mild or no symptoms.

Symptomatic illness: Diagnosis

ID document	Recommendation
5	At minimum, respiratory material should be collected:· upper respiratory specimens: nasopharyngeal and oropharyngeal swab or wash in ambulatory patients · and/or lower respiratory specimens: sputum (if produced) and/or endotracheal aspirate or bronchoalveolar lavage in patients with more severe respiratory disease. (Note high risk of aerosolization; adhere strictly to infection prevention and control procedures).
5	Additional clinical specimens may be collected as COVID-19 virus has been detected in blood and stool, as had the coronaviruses responsible for SARS and MERS
5	To consider a case as laboratory-confirmed by NAAT in an area with no COVID-19 virus circulation, one of the following conditions need to be met: · A positive NAAT result for at least two different targets on the COVID-19 virus genome, of which at least one target is preferably specific for COVID-19 virus using a validated assay (as at present no other SARS-like coronaviruses are circulating in the human population it can be debated whether it must be COVID-19 or SARS-like coronavirus specific); OR · One positive NAAT result for the presence of betacoronavirus, and COVID-19 virus further identified by sequencing partial or whole genome of the virus as long as the sequence target is larger or different from the amplicon probed in the NAAT assay used.
5	When there are discordant results, the patient should be resampled and, if appropriate, sequencing of the virus from the original specimen or of an amplicon generated from an appropriate NAAT assay, different from the NAAT assay initially used, should be obtained to provide a reliable test result.
5	In areas where COVID-19 virus is widely spread a simpler algorithm might be adopted in which, for example, screening by rRT-PCR of a single discriminatory target is considered sufficient.
5	One or more negative results do not rule out the possibility of COVID-19 virus infection. A number of factors could lead to a negative result in an infected individual, including: · poor quality of the specimen, containing little patient material (as a control, consider determining whether there is adequate human DNA in the sample by including a human target in the PCR testing). · the specimen was collected late or very early in the infection. · the specimen was not handled and shipped appropriately. technical reasons inherent in the test, e.g. virus mutation or PCR inhibition.
5	If a negative result is obtained from a patient with a high index of suspicion for COVID-19 virus infection, particularly when only upper respiratory tract specimens were collected, additional specimens, including from the lower respiratory tract if possible, should be collected and tested.
5	Virus isolation is not recommended as a routine diagnostic procedure.

ID document	Recommendation
24	An indeterminate result on a real-time PCR assay is defined as a late amplification signal in a real-time PCR reaction at a predetermined high cycle threshold value. This may be due to low viral target quantity in the clinical specimen approaching the limit of detection (LOC) of the assay, or may represent nonspecific reactivity (false signal) in the specimen. When clinically relevant, indeterminate samples should be investigated further in the laboratory (e.g. by testing for an alternate gene target using a validated real-time PCR or nucleic acid sequencing that is equally or more sensitive than the initial assay or method used) or by collection and testing of another sample from the patient with initial indeterminate result.
38	In admitted patients with suspected COVID-19, the diagnosis should be first attempted with an upper respiratory specimen, preferably a nasopharyngeal swab. However, a nasal and/or throat swab can be collected as an alternative if nasopharyngeal swabs are not available.
38	For admitted patients with suspected COVID-19, if the upper respiratory swab is negative and there remains a high degree of clinical suspicion a repeat swab should be collected.
38	In severely ill patients whose upper respiratory tract specimen is negative but a COVID-19 diagnosis is still suspected, a lower respiratory tract specimen consisting of sputum, or closed system suctioned endotracheal aspirate should also be collected when possible (e.g., if the patient is producing sputum or they are already ventilated).
38	Once a patient has a positive laboratory test, further testing for diagnostic purposes is not necessary (23).
38	Serology for COVID-19 is not routinely available at this time.
39	b. Exámenes para el diagnóstico etiológico (debe cumplir definición de caso): i. Muestras respiratorias obtenidas por hisopado nasofaríngeo y orofaríngeo para búsqueda 2019-nCoV por RPC específica y secuenciación, en cualquier momento de evolución de la enfermedad, especialmente durante la fase inicial; ii. Otras muestras factibles de evaluar caso a caso: LBA, aspirado endotraqueal; iii. En caso de fallecimiento, obtener muestras de tejidos (biopsia o autopsia): incluyendo pulmón. iv. Las muestras de pacientes sospechosos deben ser rotuladas indicando sospecha de 2019 n-CoV
40	Se recomienda la realización de RT- PCR de SARS-CoV-2/COVID-19 para hacer diagnóstico de COVID-19 a personas sintomáticas. (Fuerte a favor)
40	Se recomienda la realización de una segunda prueba de RT-PCR a las 48 horas (según disponibilidad), en pacientes con la primera prueba negativa con alta sospecha de neumonía por SARS Cov2 / COVID-19 (Fuerte a favor)
40	Se recomienda la realización de RT-PCR de SARS-CoV-2/COVID-19 a muestras de aspirado traqueal o aspirado nasofaríngeo u orofaríngeo, o hisopado nasofaríngeo u orofaríngeo.(Fuerte a favor)
40	Se recomienda no usar el uso del esputo inducido por el alto riesgo de formación de aerosoles (Fuerte en contra)
40	Se recomienda antes del día 10 de síntomas realizar pruebas moleculares (RT-PCR), para el diagnóstico de infección por SARS-CoV-2 (Fuerte a favor)
40	Se recomienda después del día 10 de síntomas realizar pruebas moleculares (RT-PCR), si estas son negativas realizar al día 14 pruebas de detección de IgM/IgG (ELISA o Inmunocromatográficas). En este escenario sería un caso probable de infección por SARS-CoV-2 (Fuerte a favor)
40	Las pruebas invasivas recomendadas para el diagnóstico de la infección por SARS-CoV-2/COVID-19 serán mini lavado bronquial y aspirado traqueal a ciegas con sistema cerrado.(Fuerte a favor)
40	Punto de buena práctica: Se sugiere restringir la broncoscopia y solo realizarla cuando los resultados no son concluyentes, se sospeche un diagnóstico alternativo o se espera que los resultados permiten modificar la conducta.
44	Exame Físico: Os pacientes podem apresentar febre (com ou sem calafrio), tosse e/ou dificuldade para respirar. A auscultação pulmonar pode revelar estertores inspiratórios, estertores e/ou respiração brônquica em pacientes com pneumonia ou dificuldade respiratória. Pacientes com dificuldade respiratória podem apresentar taquicardia, taquipneia ou cianose acompanhada de hipóxia (17,62–64). Dessa forma, recomenda-se que o exame físico seja composto de: • Avaliação do padrão respiratório: tosse e/ou dispneia; • aferição de temperatura axilar; frequência cardíaca, frequência respiratória e oximetria de pulso; • auscultação pulmonar: presença de estertores inspiratórios, estertores e/ou respiração brônquica em pacientes com pneumonia ou dificuldade respiratória, e • avaliação de sinais de cianose e hipóxia.
44	Testes diagnósticos: O teste recomendado para o diagnóstico laboratorial de COVID-19 é o teste PCR (Polymerase Chain Reaction), que amplifica sequências de RNA do vírus, possibilitando sua identificação

ID document	Recommendation
48	COVID-19 real-time RT-PCR may be performed for the purposes of: Confirming cases of suspected COVID-19
48	COVID-19 real-time RT-PCR may be performed for the purposes of: Differential diagnosis of cases with unknown respiratory syndromes
48	As of March 11, 2020, KSLM and the KCDC recommend a positive result determination only when all the genes are detected, even for tests using different genes from those mentioned in the above two guidelines. This recommendation is based on the opinions of numerous experts who observed nonspecific and weak amplification in the clinical specimens of patients who received final results of COVID-19 as negative.
48	Repetitive testing may be necessary to confirm COVID-19 in suspected cases or PUIs. As the clinical significance of co-infection caused by the causative agent of COVID-19 and other infectious diseases remains unclear, the collection of a sufficient quantity of clinical specimens with proper methods is recommended.
48	As the current knowledge on COVID-19 is limited, it is difficult to rule out infection based on a single negative test result, especially when the test is performed using an upper respiratory tract specimen. Even if the upper respiratory tract specimen tests negative, the collection and testing of lower respiratory tract specimens are strongly recommended, especially in cases of severe or progressive disease
48	The collection of specimens for diagnosis is recommended within seven days of symptom onset.
48	Specimen selection/Patients with severe symptoms, patients with a productive cough, and intubated patients: Lower respiratory tract specimens, such as sputum, bronchoalveolar lavage, and tracheal aspirates, should be collected. If possible, the collection of nasopharyngeal and oropharyngeal swabs can be considered.
48	Specimen selection/ Patients referred for additional testing by a physician (e.g., patients who tested negative using nasopharyngeal or oropharyngeal swabs, but show an indication of pneumonia): Lower respiratory tract specimens, such as sputum, bronchoalveolar lavage, and tracheal aspirates, should be collected.
48	Criteria for final test interpretation: All kits currently available in Korea can detect two or more genes. According to the interpretation criteria of some manufacturers, detection of only one of multiple genes is interpreted as COVID-19 positive. However, based on results from actual clinical specimens, KSLM recommends a determination of a positive result only when all genes are detected. When only one gene is detected, retesting or consulting the reference laboratory is recommended.
48	Among the reagents with EUA, some kits with three target genes use one target gene for the screening test and the other two target genes for the confirmatory test. For these kits, the confirmatory test result is deemed positive only if both confirmatory genes are detected. If one gene is not detected, the result cannot be interpreted as positive.
48	If the upper respiratory tract specimens test negative, lower respiratory tract specimens should be collected and tested.
48	Patient specimens, a positive control, and a negative control should be examined together, and internal controls should be examined and verified together in all reactions.
48	If a patient with an epidemiological correlation and COVID-19 symptoms repeatedly tests negative, the tested specimen should be submitted to the KCDC for further testing.
88	En el caso de que se determine que se cumplen los criterios de realización de test diagnóstico para la detección de infección por SARS-CoV-2 es necesaria la toma de las siguientes muestras: - Tracto respiratorio superior: exudado nasofaríngeo/orofaríngeo. o - Tracto respiratorio inferior: esputo (si es posible) o aspirado endotraqueal, lavado broncoalveolar, o broncoaspirado, especialmente en pacientes con enfermedad respiratoria grave.
88	Si las pruebas iniciales son negativas en un paciente con una alta sospecha clínica y epidemiológica (especialmente cuando solo se han recogido muestras de tracto respiratorio superior o la muestra recogida inicialmente no estaba tomada adecuadamente) se repetirá el diagnóstico con nuevas muestras del tracto respiratorio.

ID document	Recommendation
88	Tras la confirmación del caso se enviarán también las siguientes muestras: Dos muestras de suero: la serología es útil para la confirmación de la respuesta a la infección por coronavirus. La primera muestra debe recogerse durante la primera semana del cuadro clínico (fase aguda) y la segunda muestra entre 14-30 días después.
88	Si al paciente es preciso realizarle una radiografía de tórax (con proyecciones postero-anterior y lateral) se utilizará un aparato portátil para evitar traslados. El aparato deberá estar protegido por plásticos desechables y lavado posteriormente con una solución de hipoclorito de sodio al 1% o del desinfectante aprobado para superficies en su centro.
91	Real-time PCR (RT PCR) is the basis for the diagnosis of active SARS-CoV-2 infection. Persons meeting the criteria of the COVID-19 suspected case (see 4.1) should be tested for the detection of virus genetic material.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Imaging: · not necessary
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
98	Imaging is not indicated for patients with mild features of COVID-19 unless they are at risk for disease progression (Scenario 1)
102	The IDSA panel suggests collecting nasopharyngeal, or mid-turbinate, or nasal swabs rather than oropharyngeal swabs or saliva alone for SARS-CoV-2 RNA testing in symptomatic individuals with upper respiratory tract infection (URTI) or influenza like illness (ILI) suspected of having COVID-19 (conditional recommendation, very low certainty of evidence).
102	The IDSA panel suggests that nasal and mid-turbinate (MT) swab specimens may be collected for SARS-CoV-2 RNA testing by either patients or healthcare providers, in symptomatic individuals with upper respiratory tract infection (URTI) or influenza like illness (ILI) suspected of having COVID-19 (conditional recommendation, low certainty of evidence).
102	The IDSA panel suggests a strategy of initially obtaining an upper respiratory tract sample (e.g., nasopharyngeal swab) rather than a lower respiratory sample for SARS-CoV-2 RNA testing in hospitalized patients with suspected COVID-19 lower respiratory tract infection. If the initial upper respiratory sample result is negative, and the suspicion for disease remains high, the IDSA panel suggests collecting a lower respiratory tract sample (e.g., sputum, bronchoalveolar lavage fluid, tracheal aspirate) rather than collecting another upper respiratory sample (conditional recommendations, very low certainty of evidence).
102	The IDSA panel suggests performing a single viral RNA test and not repeating testing in symptomatic individuals with a low clinical suspicion of COVID-19 (conditional recommendation, low certainty of evidence).
102	The IDSA panel suggests repeating viral RNA testing when the initial test is negative (versus performing a single test) in symptomatic individuals with an intermediate or high clinical suspicion of COVID-19 (conditional recommendation, low certainty of evidence).
103	Broncoscopia: La toma de muestras del tracto respiratorio superior (nasofaríngea y orofaríngea) mediante el frotis con hisopo es el método diagnóstico primario y de elección en la infección por COVID-19.
103	Broncoscopia: Solamente si resultan negativas 2 muestras y persiste la sospecha clínica se tomarán las muestras del tracto respiratorio inferior para COVID-19 por RT-PCR y tinciones/cultivos bacterianos (esputo expectorado, aspirado endotraqueal [BAS] o lavado broncoalveolar [BAL] no reglado)7.
103	Broncoscopia: Si finalmente se precisa broncoscopia para la toma de muestras de COVID-19, se tomarán al menos 2-3 mL de un BAS o un mini-BAL con o sin catéter telescopado, mejor que un BAL reglado, debido al alto riesgo para el personal sanitario9.
103	Broncoscopia:No se recomienda el esputo inducido por el mayor riesgo de transmisión de aerosoles.

ID document	Recommendation
104	2. In patients suspected of having COVID-19 infection, we suggest that a nasopharyngeal specimen be obtained first. In the setting of severe or progressive disease requiring intubation, if additional specimen is needed to establish a diagnosis of COVID-19 or other diagnosis that will change clinical management, lower respiratory specimens from endotracheal aspirate or bronchoscopy with Q11 bronchoalveolar lavage (BAL) can be performed (Ungraded Consensus-Based Statement).
36	CT should not be used to screen for or as a first-line test to diagnose COVID-19
36	CT should be used sparingly and reserved for hospitalized, symptomatic patients with specific clinical indications for CT. Appropriate infection control procedures should be followed before scanning subsequent patients.
36	Facilities may consider deploying portable radiography units in ambulatory care facilities for use when CXRs are considered medically necessary. The surfaces of these machines can be easily cleaned, avoiding the need to bring patients into radiography rooms.
36	As an interim measure, until more widespread COVID-19 testing is available, some medical practices are requesting chest CT to inform decisions on whether to test a patient for COVID-19, admit a patient or provide other treatment. The ACR strongly urges caution in taking this approach. A normal chest CT does not mean a person does not have COVID-19 infection - and an abnormal CT is not specific for COVID-19 diagnosis. A normal CT should not dissuade a patient from being quarantined or provided other clinically indicated treatment when otherwise medically appropriate. Clearly, locally constrained resources may be a factor in such decision making
113	Chest X-ray examination is convenient and fast, and has been proven effective in diagnosing other coronaviruses, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) [23-26]. However, the sensitivity and specificity for mild type patients are relatively low [27]. It is not recommended for patients with early COVID-19 stage.
113	Chest CT is the most valuable imaging tool for the clinical diagnosis of early stage COVID-19 pneumonia when patients' symptoms are aspecific, especially in Wuhan with insufficient PCR tests in the early pandemic period
113	It is recommended to use volume CT with a maximum acquisition slice thickness of 5 mm (≥16 slice multi-detector CT) and a reconstruction slice thickness of 1.0 to 1.5 mm[30]. Multi-planar reformats (transverse, sagittal, and coronal planes) are beneficial for the early detection of lesions in patients with negative nucleic acid tests[9].
114	The indication for bronchoscopy in the case of confirmed or suspected COVID-19 disease should be made very strict and should only be considered if: Diagnostic reason: the nasopharyngeal smear is negative two times and clinically there is still diagnostic uncertainty of COVID-19 infection.
114	If bronchoscopy is performed for diagnostic reason, tracheobronchial lavage using a few milliliters or bronchoalveolar lavage (BAL) only is recommended. No other diagnostic procedures such as transbronchial biopsy or needle aspiration should be performed in the same procedure.
164	For symptomatic patients with suspected COVID-19, WHO suggests not using chest imaging for the diagnostic workup of COVID-19 when RT-PCR testing is available with timely results (Conditional recommendation, based on low certainty evidence)
164	For symptomatic patients with suspected COVID-19, WHO suggests using chest imaging for the diagnostic workup of COVID-19 when: (1) RT-PCR testing is not available; (2) RT-PCR testing is available, but results are delayed; and (3) initial RT-PCR testing is negative, but with high clinical of suspicion of COVID-19 (Conditional recommendation, based on low certainty evidence)
159	A chest X-ray is not recommended in individuals presenting with mild symptoms because imaging is often normal2 and this may be falsely reassuring.
159	In a patient with concerning symptoms, when the RTPCR assay is not yet available, a chest radiograph is useful. Although the imaging features of COVID-19 pneumonia are nonspecific, when present, they increase the pretest probability of the patient having the disease. Findings suggestive of an alternative diagnosis (pneumothorax, large pleural effusions, lung mass, etc) that requires treatment are also extremely useful.
159	Lung ultrasound should not be used to diagnose or exclude COVID-19 pneumonia.
156	Serologic testing can be o□ered as a method to support diagnosis of acute COVID-19 illness for persons who present late.* For persons who present 9-14 days after illness onset, serologic testing can be o□ered in addition to recommended direct detection methods such as polymerase chain reaction. This will maximize sensitivity as the sensitivity of nucleic acid detection is decreasing and serologic testing is increasing during this time period.

ID document	Recommendation
156	Serologic testing should be o□ered as a method to help establish a diagnosis when patients present with late complications of COVID-19 illness, such as multisystem in□ammatory syndrome in children.
153	Chest radiography is not sensitive for the detection of ground glass opacities, which are the main imaging features of COVID-19 pneumonia. It should not be used as the first-line technique and should be restricted to the follow-up of patients admitted to intensive care units, who are too fragile to be sent for CT
153	In the case of an initially negative RT-PCR and CT changes highly suggestive of COVID-19, the RT-PCR should be repeated to determine if it had been a false-negative result.
35	An acute COVID-19 infection is diagnosed with a PCR test of a nasopharyngeal sample. The time required to obtain the result may currently take 2 days, but more rapid tests are entering the market.
35	New rapid tests to detect antibodies against coronavirus in the blood are becoming available. They provide the result within a few hours after the sample is taken. These tests cannot be used to diagnose an acute infection, due to the delay between the onset of the infection and the formation of antibodies. Instead, they will provide an answer to the question whether a person has had a COVID-19 infection.
120	Real time or Conventional RT-PCR test is recommended for diagnosis.
120	SARS-CoV-2 antibody tests are not recommended for diagnosis of current infection with COVID-19.
122	The Panel recommends that a molecular or antigen test for SARS-CoV-2 should be used to diagnose acute SARS-CoV-2 infection (AIII).
122	The Panel Recommends against the use of serologic testing as the sole basis for diagnosis of acute SARS-CoV-2 infection (AIII).
123	De tener un Caso Sospechoso: · Realizar toma de muestra para diagnóstico de COVID-19 mediante: Hisopado nasofaríngeo para detección de SARS-CoV-2 mediante rt-PCR u otra prueba aceptada
123	Para la hospitalización se debe realizar lo siguiente: Obtener Tomografía de Tórax basal en todos los casos; Radiografía de Tórax basal; Pruebas de Laboratorio basales: o Gases arteriales: Para valoración objetiva del estado oxigenatorio y ventilatorio. o Hemograma: puede encontrarse leucopenia, linfopenia y trombocitopenia. o Glucosa. o Urea. o Creatinina. o Proteína C reactiva. o Perfil hepático: TGO, TGP, GGTP, FA, Bilirrubinas totales y fraccionadas. o Proteínas totales y fraccionadas. o Deshidrogenasa Láctica. o Dímero D. o Ferritina sérica. o Procalcitonina. o Electrolitos séricos. o Electrocardiograma (ECG).
123	Broncofibroscopía: este procedimiento genera una gran cantidad de aerosoles por lo que se debe restringir su realización, en caso de necesidad debe realizarse sólo en pacientes con intubación endotraqueal. Sólo podría evaluarse su realización en las siguientes situaciones: · Cuando pruebas menos invasivas son inconclusas para COVID-19 en pacientes con necesidad de confirmación diagnóstica.
123	Ultrasonografía torácica: puede realizarse al ingreso hospitalario y como medio de monitoreo no invasivo de las lesiones pulmonares (al menos cada 48 horas).
125	Diagnósticos consignados en COVID-19: a) Diagnóstico clínico: El cuadro clínico más frecuente está caracterizado por un síndrome gripal, que inicia con fiebre leve, con evolución progresiva de la temperatura, y persistencia entre 3 a 4 días, con un posterior descenso, como ha sido observado en casos de influenza9. El diagnóstico depende de la evaluación clínica-epidemiológica y del examen físico. Se recomienda que en todos los casos con síndrome gripal se pregunte por el antecedente de viaje en el interior y exterior del país, así como contacto cercano con personas que haya viajado, dentro de los 14 días antes del inicio de síntomas. Esta información debe escribirse en la historia clínica para una eventual investigación epidemiológica.
125	Diagnósticos consignados en COVID-19: b) Diagnóstico laboratorial: Se realiza a través de la identificación del virus SARS-CoV-2 por técnica de Reacción en Cadena de la Polimerasa en tiempo real (RT-PCR), mediante el secuenciamiento parcial o total del genoma viral.
130	Diagnosis of COVID-19: After initial evaluation of patients who meet the criteria for suspect cases, the following diagnostic interventions should be considered: Complete Blood Count (CBC), Serum Biochemistry & Inflammatory Markers (lactate dehydrogenase (LDH) and ferritin levels, aminotransferase levels, renal functions, CRP and procalcitonin levels, D-dimer, prothrombin time)

ID document	Recommendation
130	Diagnosis of COVID-19: After initial evaluation of patients who meet the criteria for suspect cases, the following diagnostic interventions should be considered: SARS-CoV-2 RNA detection by reverse-transcription polymerase chain reaction (RT-PCR): Can be done in any of the following respiratory specimens: a) Nasopharyngeal swab specimen (preferable as viral RNA levels may be higher in nasal compared with oral specimens). b) Oropharyngeal swab can be collected but is not essential; if collected, it should be placed in the same container as the nasopharyngeal specimen. c) Sputum collected only from patients with productive cough. d) Tracheal aspirate/bronchial washings/bronchoalveolar lavage: Can be evaluated from patients who are admitted in critical care and require intubation. Specimen can also be utilized to diagnose concomitant infection by other viruses/bacteria/fungi.
130	A positive RT-PCR test for SARS-CoV-2 confirms the diagnosis of COVID-19 although falsepositive and false negative tests are possible. If initial testing is negative but the suspicion for COVID-19 is high, it is recommended to resample and analyze specimen from multiple respiratory tract sites as above.
131	To provide diagnostic testing for COVID-19, the laboratory should perform RT-PCR testing using confirmatory test approved by the National Health Laboratory.
131	In the current time laboratories should NOT attempt viral isolation and culture from samples collected from patients suspected to have COVID-19.
131	Samples to be collected: a. Lower respiratory tract samples: including endotracheal aspirate, bronchoalveolar lavage fluid or sputum. b. Upper respiratory tract samples: i. Nasopharyngeal swab (with or without oropharyngeal swab) in viral transport medium in a single tube. ii. Nasopharyngeal wash/aspirate
131	Repeat testing should be performed if initial testing is negative and there is a high index of suspicion. Patients should be retested using a lower respiratory sample or, if not possible, repeat collection of a nasopharyngeal sample.
131	Negative RT-PCR results must be interpreted in correlation with clinical findings, history, and other diagnostic procedures.
131	Positive RT-PCR for COVID-19 indicate infection with SARS-CoV-2. However, it does not rule out co-infection with other viruses.
140	Testing for COVID-19: Whom to test: All Suspected cases (according to the case definition). Detection of virus ➢ Specimen- Specimen type include: Upper airway specimens: Oropharyngeal swabs, nasal swabs, nasopharyngeal secretions, • Lower airway specimens: sputum, bronchoalveolar lavage fluid, airway secretions
140	Nucleic acid testing is the preferred method for diagnosing COVID-19. In our country viral nucleic acid is detected by RT-PCR.
140	Supportive investigations: CBC, CRP and procalcitonin, Blood culture, Liver and Renal function test, Arterial blood gas analysis. Serum Ferritin, S.LDH, D-dimer (D-dimer levels and Ferritin are significantly elevated in severe cases, which is a potential risk factor for poor prognosis). Treating clinician may order other relevant investigations if required.
119	1. Laboratory diagnosis etiological: • Detection of SARS-CoV - 2 RNA using nucleic acid amplification methods (for information, see Section 4.2). Instructions for the etiological laboratory diagnosis of coronavirus infection are presented in Appendix 3.
119	1. Laboratory diagnosis etiological: • Detection of class M and class G immunoglobulins to SARS-CoV - 2.
119	2. Laboratory diagnostics general (optional): In the case of hospitalization for moderate, severe and extremely severe course, the following studies should be performed: General (clinical) blood test with determination of the level of red blood cells, hemoglobin, hematocrit, white blood cells, platelets, white blood cells.
119	2. Laboratory diagnostics general (optional): Blood biochemical analysis (urea, creatinine, electrolytes, glucose, alanine aminotransferase, aspartate aminotransferase, bilirubin, albumin, lactate, lactate dehydrogenase, troponin, ferritin, procalcitonin, brain sodium-uretic peptide - NT - proBNP / BNP).

ID document	Recommendation
119	1. Instrumental diagnostics general: Pulse oximetry with SpO2 measurement for detecting respiratory failure and assessing the severity of hypoxemia is a simple and reliable screening method that allows you to identify patients with hypoxemia who need respiratory support and evaluate its effectiveness
119	2. The use of radiation diagnostic methods is not recommended in the absence of symptoms of a respiratory infection in patients with positive laboratory results for SARS-CoV-2 RNA, as well as in the presence of epidemiological data indicating the possibility of infection.
129	The serological test options do not play a role in the initial diagnosis, but can be useful as additional information in the later course of the disease and should be further investigated in terms of their significance, e.g. also for epidemiological questions.
129	1. For diagnostics on SARS-CoV-2 (www.rki.de/covid-19-diagnostik): - Detect the pathogen by means of PCR from a deep nasopharyngeal / oropharyngeal smear, (possibly induced) sputum and / or tracheobronchial secretion, if necessary, repeat if the result is negative and persistent suspicion (see above), if necessary, additional stool diagnostics
129	3. Further diagnostics: - Regular blood sampling with differential blood count, clinical chemistry depending on the course of the disease with control of CRP, LDH, kidney and liver function parameters, electrolytes, and, depending on the course of the disease, procalcitonin, troponin, D-Dimer, IL-6
149	We recommend, for all suspect cases, collection of upper respiratory tract (URT) specimens (nasopharyngeal and oropharyngeal) for testing by reverse transcription polymerase chain reaction (RT-PCR) and, where clinical suspicion remains and URT specimens are negative, to collect specimens from the lower respiratory tract (LRT) when readily available (expectorated sputum, or endotracheal aspirate/bronchoalveolar lavage in ventilated patient).
149	SARS-CoV-2 antibody tests are not recommended for diagnosis of current infection with COVID-19.
84	Novel coronavirus nucleic acid can be detected in nasopharyngeal swabs, sputum, lower respiratory tract secretions, blood, feces and other specimens using RT-PCR and/or NGS methods. It is more accurate if specimens are obtained from lower respiratory tract (sputum or air tract extraction). The specimens should be submitted for testing as soon as possible after collection
173	Routine confirmation of COVID-19 cases is based on real-time reverse transcription polymerase chain reaction (rRT-PCR) with a NAAT test to detect specific sequences of virus RNA and, if necessary, verify by nucleic acid sequence analysis.
173	When a negative result is obtained from a patient with a high suspicion of COVID-19, additional samples containing lower respiratory tract samples should be obtained and studied, if possible, especially if only the upper respiratory tract samples have been collected.
173	serological tests cannot be used for diagnosis in the early period of the disease
173	Thorax computed tomography (CT) is a sensitive diagnostic approach in the early period in PCV test negative COVID-19 patients. Thorax CT is recommended to support the faster triage of these patients.
42	Testing for acute COVID-19 infection should be by means of polymerase chain reaction (PCR) assays. Samples to be sent are: · Upper respiratory tract samples – A sample from the upper respiratory tract should be sent from all patients. A single site is sufficient. Currently, a nasopharyngeal swab is the preferred specimen, but in patients where this is not possible (e.g. recent nasal surgery, or severe coagulopathy), an oropharyngeal, nasal mid-turbinate, or anterior nares swab can be collected instead. Lower respiratory tract samples – send when available. Lower respiratory tract samples may have a higher sensitivity than upper respiratory tract samples.25, 30 Sputum, tracheal aspirates, or bronchoalveolar lavage fluid are all acceptable samples to send. Sputum induction should not be performed however.
42	If a high clinical suspicion for COVID-19 persists despite an initial negative test, repeat testing should be considered in consultation with an infectious diseases expert, particularly in hospitalised patients for whom management might be significantly altered.
42	For patients with severe disease who require admission, appropriate tests may include: § HIV test (if status unknown); § Full blood count + differential; § Blood culture; § Nasopharyngeal and/or oropharyngeal swabs for detection of viral and atypical pathogens; § Chest radiography; § Sputum for MCS and Mycobacterium tuberculosis detection (GeneXpert MTB/RIF Ultra); § Urine for lipoarabinomannan (LAM) if HIV positive; § Beta-D-glucan and expectorated sputum/tracheal aspirate for PJP if HIV positive and clinically suspicious of PJP (don't induce sputum though)

ID document	Recommendation
42	Currently, we do not recommend using antibody-based (serological) tests for the diagnosis of acute COVID-19. These tests are insufficiently sensitive early in the disease course (before sufficient antibodies have been produced).
44	Dessa forma, recomenda-se realizar investigações iniciais e o exame físico para verificar as condições fisiológicas do paciente, de forma a dar o suporte adequado (19,83–85):● avaliação do padrão respiratório: tosse e/ou dispneia; ● aferição de temperatura axilar, frequência cardíaca, frequência respiratória e oximetria de pulso; ● ausculta pulmonar: presença de estertores inspiratórios ou expiratórios, respiração brônquica ou dificuldade respiratória em pacientes com pneumonia; e ● avaliação de sinais de cianose e hipóxia. O paciente com a forma grave da doença requer internação em unidades hospitalares (e UTIs se necessário) com terapia e monitoramento precoces de suporte.
44	Os testes imunológicos para identificação de anticorpos IgM e IgG contra o SARS-CoV-2, aplicados como testes rápidos ou processados em laboratório, não são recomendados para a confirmação diagnóstica de pacientes com sintomas de início recente (há menos de sete dias), mas apenas para finalidade de vigilância por meio de estudos de inquéritos populacionais e também como auxílio diagnóstico (18).
88	La indicación de TC torácico debe individualizarse. La realización de TC tórax de baja dosis para la detección de infección por SARS-CoV-2 puede valorarse, especialmente en las áreas geográficas más afectadas por el COVID-19, y para pacientes con radiografía de tórax normal con elevada sospechosa clínica.

Symptomatic illness: competitive diagnosis

ID document	Recommendation
5	If case management requires, patients should be tested for other respiratory pathogens using routine laboratory procedures, as recommended in local management guidelines for community-acquired pneumonia. Additional testing should not delay testing for COVID-19. As co-infections can occur, all patients that meet the suspected case definition should be tested for COVID-19 virus regardless of whether another respiratory pathogen is found.
38	Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. DO NOT delay antimicrobial therapy to collect blood cultures. Blood cultures should be done in children if clinically indicated.
38	Dual infections with other respiratory viral and bacterial infections have been found in COVID-19 patients. As a result, a positive test for a non-COVID-19 pathogen, such as another respiratory virus, does not rule out COVID-19 and vice versa.
39	a. Exámenes generales a casos sospechosos:i. Hemograma y VHS y Proteína C reactiva (PCR); ii. Hemocultivos periféricos; iii. Muestra de hisopado o aspirado nasofaríngeo para la detección de virus respiratorios con la finalidad de descartar los principales virus respiratorios circulantes, panel molecular de virus respiratorios si está disponible; iv. Radiografía de tórax en dos proyecciones.; v. Oximetría de pulso, gases arteriales; vi. Serologías para Chlamydia pneumoniae, Mycoplasma pneumoniae (si están disponible); vii. Antígeno urinario para Streptococcus pneumoniae y Legionella pneumophila. (si están disponible)
40	Se recomienda realizar hemocultivos en pacientes con enfermedad grave que presenten SDRA, sepsis o choque séptico.(Fuerte a favor)
40	Se recomienda realizar PCR múltiple anidada en todos los pacientes con neumonía grave, SDRA, sepsis o choque séptico.para evaluar diagnóstico diferencial de SARS- CoV-2/COVID-19 e identificar coinfecciones virales o bacterianas (Fuerte a favor)
40	Punto de buena práctica: Se recomienda la realización de TC de tórax simple en los siguientes escenarios: pacientes con presentación severa de la enfermedad, con sospecha de neumonía por COVID-19 y radiografía de tórax normal o con alteraciones radiológicas inespecíficas a quien se desea descartar un diagnóstico alterno. (Fuerte a favor)
44	Culturas de sangue e escarro: Recomenda-se coletar amostras de sangue e escarro para cultura em todos os pacientes para descartar outras causas de infecção do trato respiratório inferior, especialmente em pacientes com histórico epidemiológico atípico.
88	En caso de neumonía y, por su implicación en el manejo, conviene considerar: - Realización de cultivos de muestras de vías respiratorias que ayuden a descartar otras causas de infección, coinfección o sobreinfección, como PCR para virus respiratorios comunes (incluida la gripe) o cultivos bacterianos y/o fúngicos.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Diagnostics:Examination for influenza and/or other pathogens responsible for upper respiratory tract infections
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: · Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.

ID document	Recommendation
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: In case of persistent fever >38°C, perform blood cultures test
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: In case of persistent fever >38°C, perform blood cultures test
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Echocardiography indicated in case of suspected acute heart failure due to respiratory failure
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: In case of persistent fever >38°C, perform blood cultures test
103	Indicaciones de realización de broncoscopia: 1. Cuando hay una sospecha diagnóstica alternativa o a˜nadida que tenga relevancia clínica o terapéutica para el paciente. Esta circunstancia puede ocurrir especialmente en pacientes inmunocomprometidos.
114	The indication for bronchoscopy in the case of confirmed or suspected COVID-19 disease should be made very strict and should only be considered if: Diagnostic reason: Other diagnoses are considered that would significantly change clinical management.
120	Dual infections with other respiratory infections (viral, bacterial and fungal) have been found in COVID-19 patients. Depending on local epidemiology and clinical symptoms, test for other potential etiologies (e.g. Influenza, other respiratory viruses, malaria, dengue fever, typhoid fever) as appropriate.
120	For COVID-19 patients with severe disease, also collect blood cultures, ideally prior to initiation of antimicrobial therapy
129	2. For differential diagnostic bacteriological examination:- Collection of several blood cultures (each aerobic + anaerobic) on E + R; - Sputum, BAL, tracheobronchial secretion on E + R; - Urine diagnostics on pneumococci, legionella
149	In addition, testing for other respiratory viruses and bacteria should be considered when clinically indicated.
149	Depending on local epidemiology and clinical symptoms, test for other potential etiologies (e.g. malaria, dengue fever, typhoid fever) as appropriate.
149	For COVID-19 patients with severe or critical disease, also collect blood cultures, ideally prior to initiation of antimicrobial therapy (3).

Symptomatic illness: Staging/grading severity

ID document	Recommendation
40	Se recomienda no solicitar exámenes de apoyo en ausencia de alteración de signos vitales o de la oxigenación y sin factores de riesgo.(Fuerte en contra)
40	En pacientes con alteración de signos vitales, de la oxigenación y/o con factores de riesgo, se recomienda la realización de hemograma, Proteína c reactiva, enzimas hepáticas, bilirrubinas, función renal, LDH, CK, troponinas, EKG y dímero D con sospecha de infección o infección confirmada por SARS-CoV-2 para definir criterio de gravedad y definir hospitalización.(Fuerte a favor)
40	Se recomienda solicitar gases arteriales al ingreso al servicio de hospitalización y en el seguimiento del paciente con infección por SARS-CoV-2 en el contexto de índices de oxigenación y score de severidad (CURB 65, qSOFA, SOFA).(Fuerte a favor)
40	Se sugiere que un nivel de LDH > 350 ui/L en paciente con sospecha o infección confirmada por SARS-CoV-2 con factores de riesgo permite definir necesidad de hospitalización (Débil a favor)
40	Se considera que la presencia de anormalidad en el hemograma (Linfocitos < 800, Neutrófilos >10.000, plaquetas < 150.000) linfopenia, neutrofilia o trombocitopenia al ingreso del paciente con sospecha e infección confirmada por SARS-CoV-2 en pacientes con factores de riesgo permite definir hospitalización (Fuerte a favor)

ID document	Recommendation
40	Se considera que la presencia de anormalidad en la función renal al ingreso del paciente con sospecha e infección confirmada por SARS-CoV-2/COVID-19 que tengan factores de riesgo permite definir hospitalización.(Fuerte a favor)
40	Se recomienda evitar el uso rutinario de procalcitonina para evaluar severidad ni para definir inicio de antibioticoterapia ante la sospecha de coinfección bacteriana (Fuerte en contra)
40	Se recomienda en los pacientes con sospecha clínica de neumonía por SARS-CoV-2/COVID-19 realizar una radiografía portátil de tórax.(Fuerte a favor)
40	Punto de buena práctica: Se considera que la presencia de opacidades parenquimatosas (vidrio esmerilado / consolidación) de distribución periférica y predominio basal pueden sugerir el diagnóstico de neumonía por COVID-19, en un contexto clínico apropiado.
44	Raio-X do tórax: Recomenda-se solicitar radiografia de tórax em todos os pacientes com suspeita de pneumonia. Infiltrados pulmonares unilaterais são encontrados em 25% dos pacientes e infiltrados pulmonares bilaterais em 75% dos pacientes (17,73).
44	Tomografia computadorizada (TC) do tórax: • Recomenda-se solicitar uma tomografia computadorizada do tórax em todos aqueles pacientes com acometimento do trato respiratório inferior (Figura 1). Achados anormais de tomografia computadorizada do tórax foram relatados em até 97% dos pacientes (17,62–64).
88	Se recomienda una valoración analítica completa para valorar la función de órganos y detectar sepsis: - Hemograma y Hemostasia. - Bioquímica que incluya función renal, hepática. - Si se sospecha insuficiencia respiratoria, gasometría arterial y lactato.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Imaging: in case of persistent coughing and/or symptoms indicating lung occupation, a routine lung X-ray or lung CT scan is advised.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Lung X-ray is the basis for identification of lung lesions and can be performed with the use of portable devices.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Computer tomography (without contrast) has a high sensitivity to detect interstitial lesions, valuable together with the assessment of the acid-base balance in predicting deterioration.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Pulmonary ultrasound can be an easy method for early detection of pneumonia directly at the Admissions Room.
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging:Lung X-ray is the basis for identification of lung lesions and can be performed with the use of portable devices.
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Computer tomography (without contrast) has a high sensitivity in detecting interstitial lesions and evaluating their dynamics. It should be performed for every patient at this stage of the disease. Contrast radiology should only be performed in case of differentiation (e.g. with pulmonary embolism).
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Pulmonary ultrasound can be an easy method for early detection of pneumonia directly at the Admissions Room.
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Imaging: Computer tomography (without contrast) has a high sensitivity in detecting interstitial lesions and evaluating their dynamics. It should be performed for every patient at this stage of the disease. Contrast radiology should only be performed in case of differentiation (e.g. with pulmonary embolism).
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Imaging: Echocardiography indicated in case of suspected acute heart failure due to respiratory failure
98	Imaging is indicated for patients with moderate to severe features of COVID-19 regardless of COVID-19 test results (Scenarios 2 and 3)
98	Imaging is indicated for patients with COVID-19 and evidence of worsening respiratory status (Scenarios 1, 2, and 3)
98	In a resource constrained environment where access to CT is limited, CXR may be preferred for patients with COVID-19 unless features of respiratory worsening warrant the use of CT (Scenarios 2 and 3)
164	For patients with suspected or confirmed COVID-19, not currently hospitalized and with mild symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to decide on hospital admission versus home discharge (Conditional recommendation, based on expert opinion)
164	For patients with suspected or confirmed COVID-19, not currently hospitalized and with moderate to severe symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to decide on regular ward admission versus intensive care unit (ICU) admission (Conditional recommendation, based on very low certainty evidence)

ID document	Recommendation
159	In patients presenting with moderate to severe symptoms, CXR, if available, may be useful in addition to clinical judgment to determine whether there is a need for additional assessment in a hospital setting.
159	If a patient with an initial negative RT-PCR result returns to the emergency department with worsening symptoms, a chest X-ray may be useful to detect COVID-19 pneumonia and complications. As the number of days increases from initial symptom onset, the chest radiograph has an increased likelihood of being abnormal
159	Similar to CXR, CT should only be performed if the results are expected to influence patient management (…) The following is a list of potential indications or clinical scenarios for which CT chest may be warranted (Figure 5). It is not meant to be prescriptive.: a) Detection of Intrathoracic Complications; b) Immunosuppressed or High-Risk Patients With Suspected Respiratory Infection and a Negative Chest Radiograph; c) Initial Negative RT-PCR Result but Ongoing High Clinical Suspicion or Clinical Deterioration After a Normal Chest Radiograph; d)
153	CT is indicated after the clinical evaluation of patients with respiratory symptoms such as dyspnoea and desaturation, the degree of severity justifying investigation being left to clinical judgement and depending on local resources.
153	CT allows evaluation of disease extent at baseline, which may help to predict a poor outcome and the need for ventilation. If supplementary oxygen is needed in patients with limited disease extension, other diagnoses, especially pulmonary embolism, should be suspected and an additional contrastenhanced CT acquisition may be indicated.
153	CT allows for the identification of signs of pulmonary oedema, raising the suspicion of COVID-19 related myocarditis, in which case troponin measurement and echocardiography may be required.
130	Chest CT, low dose non-contrast,may be helpful in making the diagnosis/follow-up and can also reveal presence of complications like ARDS and pleural effusions. No finding can completely rule in or rule out the possibility of COVID-19 pneumonia.
140	CT is better than Chest Xray for diagnosis early. Bilateral pneumonia is a common finding of COVID-19 pneumonia
151	QUESTION 3: Is there a place for the thoracic CT scan in a symptomatic patient suspected of Covid-19 or proven? UNCHANGED RECOMMENDATIONS The chest scanner is the only recommended imaging test, to be performed only for moderate to severe respiratory symptoms. The use of a systematic angiogram is not validated. In pauci-symptomatic patients without the need for oxygenation and without risk factors (obesity, hypertension, immunosuppression), there is no place for chest imaging.

Symptomatic illness: Monitoring

ID document	Recommendation
40	Se sugiere la realización de TC de tórax simple para la valoración de pacientes con curso clínico no esperado, para detectar complicaciones y se considera que debería implicar cambios en la conducta terapéutica. (Débil a favor)
91	5. Clinical image: 5.1. Asymptomatic or mild type: Clinical monitoring in the place of isolation: · Physician advice at least once a day (can be by phone),· General clinical evaluation and temperature measurement by nurse at least twice a day.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: · Nose and throat swab testing for SARS-CoV-2 with the use of RT PCR after at least 14 days from the onset of symptoms, and in asymptomatic patients after at least 14 days from collecting the swab signalling initial infection.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: If the first control test is negative, a second control test is carried out after at least 24 hours.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Clinical evaluation and assessment of vital signs (temperature, blood pressure, heart rate, respiratory count, Glasgow scale) 2-3 times a day
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Pulse oximetry 2-3 times a day; the objective is to maintain SpO2 >94%.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Virological monitoring: as per asymptomatic and mild conditions
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Close clinical monitoring and evaluation of vital signs (temperature, blood pressure, heart rate, respiratory count, Glasgow scale, SpO2)
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Monitoring of D-dimers, ferritin, fibrinogen, C-reactive protein, triacylglycerol, lactate dehydrogenase, IL-6.
91	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Virological monitoring: as per asymptomatic and mild conditions

ID document	Recommendation
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Nose and throat swab testing for SARS-CoV-2 with RT PCR technique until negative.
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Monitoring of D-dimers, ferritin, fibrinogen, C-reactive protein, triacylglycerol, lactate dehydrogenase, IL-6.
98	Daily chest radiographs are NOT indicated in stable intubated patients with COVID-19
103	Broncoscopia:En pacientes hospitalizados con COVID-19 confirmado, se pueden recoger muestras repetidas de vía aérea superior e inferior para demostrar el aclaramiento viral, cuya frecuencia dependerá de las características y los recursos de la epidemia local10
103	Indicaciones de realización de broncoscopia: 2. Si se presenta una atelectasia lobar o pulmonar total. 3. Ante una hemoptisis crítica con inestabilidad hemodinámica que precise maniobras endoscópicas para controlar la hemorragia. 4. Para la extracción de un cuerpo extra˜no. 5. Para el tratamiento de una obstrucción, de origen benigno o maligno, de la vía aérea central grave que sea sintomática o dificulte el manejo terapéutico del paciente. 6. Como ayuda a las medidas de soporte ventilatorio, como son la necesidad de una intubación endotraqueal o la realización de una traqueotomía percutánea y el manejo de sus complicaciones. 7. La ocupación pleural sintomática, bien por aire —como complicación por iatrogenia o espontánea— o por líquido pleural. 8. El resto de las indicaciones, cuando no exista repercusión clínica ni dificulte o imposibilite el manejo terapéutico del paciente, se debe de posponer a que el paciente esté libre de la enfermedad.
164	For patients with suspected or confirmed COVID-19, currently hospitalized and with moderate to severe symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to inform the therapeutic management (Conditional recommendation, based on very low certainty evidence)
159	Chest X-rays are useful in clinically worsening patients, but daily chest X-rays in stable patients are not necessary and may increase the risk of viral transmission6,7 to health care workers.
153	Chest radiography is not sensitive for the detection of ground glass opacities, which are the main imaging features of COVID-19 pneumonia. It should be restricted to the follow-up of patients admitted to intensive care units, who are too fragile to be sent for CT
153	Chest ultrasound does not allow differentiation between bacterial and viral pneumoniae, nor between pulmonary oedema and infection. Ultrasound is used at the bedside to diagnose complications such as a pneumothorax under mechanical ventilation or pleural effusions and can help in adjusting mechanical ventilation or monitoring pulmonary fluid load.
130	ECG is required for all hospitalized patients to measure baseline QT interval as some subjects may require drugs like chloroquine and/or azithromycin which may cause QT interval prolongation and cardiovascular events.
151	QUESTION 6: For which patient and with what delay should a control image be made to a patient who has had Covid-19? 1 / Patient who is no longer symptomatic: 1.1 / For those who have made a "light" Covid-19 (ambulatory forms), the control scanner is not indicated. 1.2 / For those who have had a larger Covid-19 with the need for hospitalization, a chest CT scan without injection is useful, in search of a fibrotic evolution. It should not be done too early: recommendation around 3 months. This point remains to be clarified, however, because the data are non-existent. 2 / Patient who remains or becomes symptomatic again: Imaging is recommended, to be decided between non-injected CT and angiography, depending on the clinic and biology, and knowing that a threshold of D-dimers a little higher than usual can probably be tolerated in these patients.
173	in cases of clinical deterioration, CT imaging is recommended to assess COVID-19 progression, secondary cardiopulmonary abnormalities such as pulmonary embolism or bacterial pneumonia attached to it, or heart failure secondary to possible COVID-19 myocardial damage

Convalescence: De-isolation

ID document	Recommendation
39	Condiciones para el alta: a) Clínica: Mejoría del estado general: i. Evolución sin fiebre por al menos 48 horas. ii. Gasometría normal, y sin necesidad de 02 adicional; b) Resultados de Laboratorio: (en normalización si previamente estuvieron alterados) i. Recuento de leucocitos y linfocitos ii. Recuento de plaquetas iii. CK iv. Función hepática v. Sodio plasmático vi. Proteína C reactiva. vii. Radiografía de tórax: mejoría de imágenes radiológicas
39	Seguimiento post alta de casos: i. Indicar control de temperatura dos veces al día. Si se presenta alza en más de dos mediciones reportar inmediatamente al centro donde estuvo hospitalizado.

ID document	Recommendation
39	Seguimiento post alta de casos: iii. Si el paciente persiste con tos en su domicilio deberá usar mascarilla quirúrgica hasta la resolución del síntoma o en su defecto sus contactos domiciliarios.
39	Seguimiento post alta de casos: iv. Control a los 7 días de alta con radiografía de tórax, hemograma y exámenes de laboratorio si se mantuvo alguno alterado al alta. De acuerdo con condición del paciente indicar nuevos exámenes en 7 días.
40	Se recomienda que los pacientes con infección SARSCoV- 2/ COVID-19 pueden ser dados de alta y continuar aislamiento en casa si cumplen los siguientes criterios: ► Ausencia de fiebre >48 horas sin antipiréticos y ► Mejoría clínica de los síntomas respiratorios y la hipoxemia y ► No requiere hospitalización por otras patologías y ► Tolerancia a la vía oral (Fuerte a favor)
40	Si no es posible controlar con RT-PCR, se recomienda extender el aislamiento de pacientes infectados con SARS-CoV-2/COVID-19 confirmados hasta completar el periodo máximo registrado de diseminación viral de 14 a 28 días, de acuerdo con la gravedad de los síntomas y la resolución de estos. (Débil a favor)
40	Se sugiere, en caso de disponibilidad, mantener el aislamiento de pacientes infectados con SARS-CoV-2/COVID- 19 hasta la obtención de una (1) RT-PCR para SARSCoV-2/COVID-19 negativa.(Fuerte a favor)
40	Se recomienda para pacientes inmunocomprometidos, hemato-oncológicos, y receptores y donantes de trasplantes, mantener el aislamiento de pacientes infectados con SARS-CoV-2/COVID-19 hasta la obtención de dos (2) RTPCR para SARS-CoV-2/COVID-19 negativas consecutivas. (Fuerte a favor)
48	COVID-19 real-time RT-PCR may be performed for the purposes of: Deciding on the release of confirmed COVID-19 patients from quarantine
61	Guidance on discharge and ending isolation in the context of widespread community transmission: Hospitalised suspected or confirmed COVID-19 cases: This category refers to: · Patients who are hospitalised with suspected or laboratory confirmed COVID-19 (mild, severe and critically ill) [27] · Confirmed COVID-19 patients discharged early, due to clinical improvement. If testing and hospitalisation capacity allows, · For a clinically recovered patient, two negative RT-PCR tests from respiratory specimens at 24 hours interval at least eight days after onset of symptoms [4] If limited/no testing capacity, · Patient can be discharged based on clinical criteria, per evaluation of the treating physician, AND · the discharged patient should self-isolate at home or in a safe place until resolution of fever for at least three days and clinical improvement of other symptoms AND · until eight days after the onset of symptoms for mild cases or for 14 days (severe cases) if these criteria have not been fulfilled in hospital. · Follow-up visits, or monitoring via phone or other electronic device can be considered. · These patients should be prioritised for testing.
61	Guidance on discharge and ending isolation in the context of widespread community transmission: Immunocompromised patients: Self-isolation should last until all of the following criteria are fulfilled: at least 14 days after symptom onset AND resolution of fever for at least three days AND clinical improvement of symptoms other than fever.
61	Guidance on discharge and ending isolation in the context of widespread community transmission: Mild suspected or confirmed COVID-19 cases: This category refers to: · Confirmed COVID-19 patients never hospitalised due to mild symptoms or asymptomatic presentation · Suspected or probable COVID-19 patients in the community, who adhered to the stay-at-home advice by the national authorities. These patients can end self-isolation eight days after the onset of symptoms AND resolution of fever AND clinical improvement of other symptoms for at least for three days.
61	Guidance on discharge and ending isolation in the context of widespread community transmission: Critical infrastructure responders (e.g. heathcare workers, law enforcement, firefighters etc.). End isolation after resolution of fever for at least three days AND after eight days from the onset of symptoms have passed. Healthcare workers can return to work immediately after that, using a surgical mask during work hours until 14 days after the onset of symptoms have passed*. · If testing capacity allows, for a clinically recovered patient, two negative RT-PCR tests from respiratory specimens at 24 hours interval, at least eight days after onset of symptoms. Critical infrastructure responders, especially HCWs, should be considered a priority group for testing during the pandemic.
61	Guidance on discharge and ending isolation in the context of widespread community transmission: Family members and other categories of contacts of COVID-19 patients: This category refers to: · Partners and spouses · Family members and other persons sharing housing or taking care of COVID- 19 patients: For guidance on household care of a COVID-19 case, refer to the relevant ECDC guidance [28]. Caretakers of COVID-19 patients should self-quarantine for 14 days after last contact with sick spouse/relative. Caretakers or family members that develop symptoms in the 14-day quarantine period, should stay in home isolation for eight days after onset of symptoms AND until resolution of fever for at least three days AND clinical improvement of other symptoms, or seek medical care, if symptoms worsen.
88	Los casos probables y confirmados que han requerido ingreso hospitalario podrán recibir el alta si su situación clínica lo permite aunque su PCR siga siendo positiva, pero deberán mantener aislamiento domiciliario con monitorización de su situación clínica al menos 14 días desde el alta hospitalaria o hasta que se obtenga un resultado de laboratorio negativo. Los casos ingresados que al alta tengan un resultado de laboratorio negativo podrán ir a su domicilio sin aislamiento.

ID document	Recommendation
91	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: After a double negative result, the patient can be released from isolation or hospitalisation if his/her clinical condition permits.
91	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: If any of the two control results is positive, the test should be repeated at intervals of 7 days until negative.
98	CT is indicated in patients with functional impairment and/or hypoxemia after recovery from COVID-19
164	For hospitalized patients with COVID-19 whose symptoms are resolved, WHO suggests not using chest imaging in addition to clinical and/or laboratory assessment to inform the decision regarding discharge (Conditional recommendation, based on expert opinion)
123	SEGUIMIENTO HOSPITALARIO Y VALORACIÓN DE ALTA: Evaluar resultados de hisopado nasofaríngeo: 1. Resultado positivo: mantener hospitalización y manejo de COVID-19 establecido. 2. Resultado negativo: evaluar según sospecha clínica de infección COVID-19: · Sospecha clínica alta: repetir hisopado nasofaríngeo. · Sospecha clínica baja: suspender terapia para COVID-19 y valorar posibilidad de alta precoz. 3. Segundo resultado negativo: ampliar evaluación sobre todo en pacientes ingresados en cuidados críticos: · Repetir tomografía de tórax. · Evaluar la posibilidad de toma de tercera muestra por aspirado bronquial o lavado broncoalveolar de ser necesaria la confirmación diagnóstica para cambio de conducta terapéutica.
123	Valorar Alta hospitalaria: Considerar los siguientes parámetros previos al Alta: 1. Mejora clínica evidente. 2. Ausencia de fiebre por más de 72 horas. 3. Retiro completo de soporte ventilatorio. 4. Baja o ninguna necesidad de soporte oxigenatorio. 5. Ausencia de necesidad de control de comorbilidades.
131	Criteria for Recovery and Discontinuing Isolation: For symptomatic confirmed patients: At least 3 days have passed since recovery (resolution of the fever without using fever reducing medication and respiratory symptom resolution (cough and SOB) AND followed by 2 negative respiratory samples ≥ 24 hours apart.
131	Criteria for Recovery and Discontinuing Isolation: For symptomatic confirmed patients: If PCR test not feasible, resolution of the fever without using fever reducing medication and respiratory symptom resolution for at least 3 days AND at least 10 days have passed since symptom first appeared (exclude HCWs and sever cases from this approach).
140	Discharge criteria: 1. Resolution of fever without the use of fever-reducing medications e.g paracetamol for at least 3 (three) days and 2. Significant improvement in the respiratory symptoms (e.g., cough, shortness of breath) for 3 days, and 3. After discharge, continue home or facility isolation for the duration which extends from the day of symptom onset to 21th day for hospitalized patients. 4. For severe or critical patients – physician's discretion
149	Criteria for discharging patients from isolation (i.e., discontinuing transmission-based precautions) without requiring retesting: • For symptomatic patients: 10 days after symptom onset, plus at least 3 additional days without symptoms (including without feverii and without respiratory symptoms) • For asymptomatic casesiv: 10 days after positive test for SARS-CoV-2. Countries can choose to continue to use a laboratory testing algorithm as part of the release criteria in (a subset of) infected individuals if their risk assessment gives reason to do so.
84	1.Discharge criteria: 1) Body temperature is back to normal for more than three days; 2) Respiratory symptoms improve obviously; 3) Pulmonary imaging shows obvious absorption of inflammation, 4) Nuclei acid tests negative twice consecutively on respiratory tract samples such as sputum and nasopharyngeal swabs (sampling interval being at least 24 hours). Those who meet the above criteria can be discharged.
174	Consequently, the HCSP recommends the lifting of containment: 1. In the general population: • From the 8th day from the onset of symptoms; • AND at least 48 hours from the disappearance of the fever verified by a rectal temperature below 37.8 ° C (measured with a thermometer twice a day, and in the absence of any antipyretic intake for at least 12 hours) ; • AND at least 48 hours from the disappearance of a possible dyspnea (respiratory rate less than 22 / min at rest); The disappearance of the cough is not a good criterion since an irritant cough may persist beyond healing. Within 7 days of the lifting of containment, it is recommended to avoid close contact with persons at risk of severe form.
42	Patients can be de-isolated 14 days after the onset of their symptoms (in mild cases), 14 days after achieving clinical stability (in severe cases), or 14 days after the positive test (in asymptomatic cases). It is not necessary to repeat PCR testing in order to de-isolate a patient. Patients can remain PCR positive even after they are no longer infectious. A positive PCR test does not equate to an infectious, viable virus.

Other recommendations

ID document	Recommendation
5	In case of patients who are deceased, consider autopsy material including lung tissue. In surviving patients, paired serum (acute and convalescent) can be useful to retrospectively define cases as serological assays become available.
5	Serological surveys can aid investigation of an ongoing outbreak and retrospective assessment of the attack rate or extent of an outbreak. In cases where NAAT assays are negative and there is a strong epidemiological link to COVID-19 infection, paired serum samples (in the acute and convalescent phase) could support diagnosis once validated serology tests are available. Serum samples can be stored for these purposes.
5	In addition to providing confirmation of the presence of the virus, regular sequencing of a percentage of specimens from clinical cases can be useful to monitor for viral genome mutations that might affect the performance of medical countermeasures, including diagnostic tests. Virus whole genome sequencing can also inform molecular epidemiology studies. Many public-access databases for deposition of genetic sequence data are available, including GISAID, which is intended to protect the rights of the submitting party.
40	Se sugiere realizar pruebas serológicas IgG/IgM siguiendo los patrones de seroconversión conocidos hasta el momento, al menos cada 4 semanas en aquellas personas con resultado inicial negativo y según evaluación individual de riesgo.(Débil a favor)
48	Other specimens: If necessary, additional specimens, such as blood, urine, and feces, may be collected on consultation with the physician taking care of the patient and a laboratory physician. However, the diagnostic value and clinical utility of these specimens remain unclear. The collection of blood specimens may be considered for public health purposes, such as serological surveys
102	The IDSA panel suggests against SARS-CoV-2 RNA testing in asymptomatic individuals without a known exposure to COVID-19 who are undergoing a time-sensitive aerosol generating procedure (e.g., bronchoscopy) when PPE is available (conditional recommendation, very low certainty of evidence).
102	The IDSA panel suggests SARS-CoV-2 RNA testing in asymptomatic individuals without a known exposure to COVID-19 who are undergoing a time-sensitive aerosol generating procedure (e.g., bronchoscopy) when PPE is limited, and testing is available (conditional recommendation, very low certainty of evidence).
122	The Panel Recommends against the use of serologic testing to determine whether a person is immune toSARS-CoV-2 infection (AIII).
69	WHO does not currently recommend the use of antigendetecting rapid diagnostic tests for patient care, although research into their performance and potential diagnostic utility is highly encouraged.
69	WHO does not recommend the use of antibody-detecting rapid diagnostic tests for patient care but encourages the continuation of work to establish their usefulness in disease surveillance and epidemiologic research
42	We do not currently recommend point of care antigen-based tests, due to concerns about poor sensitivity and specificity

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Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	4
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Appendix 1
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	3
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix 2
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	6
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	7
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	6

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	7
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	9 (flow diagram)
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Appendix 6
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Appendix 5
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Appendix 6
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	14 (fig.3)
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	15
Limitations	20	Discuss the limitations of the scoping review process.	15, 16
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	16
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	2

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

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RECOMMENDATIONS FOR SARS-CoV-2/COVID-19 TESTING: A SCOPING REVIEW OF CURRENT GUIDANCE

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ABSTRACT

BACKGROUND: Testing used in screening, diagnosis and follow-up of COVID-19 has been a subject of debate. Several organizations have developed formal advice about testing for COVID-19 to assist in the control of the disease. We collated, delineated and appraised current worldwide recommendations about the role and applications of tests to control SARS-CoV-2/COVID-19.

METHODS: We searched for documents providing recommendations for COVID-19 testing in PubMed, EMBASE, LILACS, the Coronavirus Open Access Project living evidence database and relevant websites such as TRIP database, ECRI Guidelines Trust, the GIN database, from inception to September 21th 2020. Two reviewers applied the eligibility criteria to potentially relevant citations without language or geographic restrictions. We extracted data in duplicate, including assessment of methodological quality using the AGREE-II tool.

RESULTS: We included 47 relevant documents and 327 recommendations about testing. Regarding the quality of the documents, we found that the domains with the lowest scores were “Editorial independence” (Median= 4%) and “Applicability” (Median= 6%). Only six documents obtained at least 50% score for the "Rigor of development" domain. An important number of recommendations focused on the diagnosis of suspected cases (48%), and de-isolation measures (11%). The most frequently recommended test was the reverse transcription-polymerase chain reaction (RT-PCR) assay (87 recommendations) and the chest Computed Tomography (CT) (38 recommendations). There were 22 areas of agreement among guidance developers, including the use of RT-PCR for SARS-Cov-2 confirmation, the limited role of bronchoscopy, the use chest CT and chest x-rays for grading severity and the co-assessment for other respiratory pathogens.

CONCLUSION: This first scoping review of recommendations for COVID-19 testing showed many limitations in the methodological quality of included guidance documents that could affect the confidence of clinicians in their implementation. Future guidance documents should incorporate a minimum set of key methodological characteristics to enhance their applicability for decision-making.

REGISTRATION: Study protocol available on OSF website: https://osf.io/yqv54/.

KEYWORDS: Diagnosis, COVID-19, SARS-CoV-2 infection, recommendations, systematic review

STRENGTHS AND LIMITATIONS OF THIS STUDY

- This scoping review focused on documents providing recommendations about COVID-19 testing, produced by global health agencies, scientific societies and government agencies worldwide.
- We applied the Appraisal of Guidelines for Research and Evaluation (AGREE)- II tool, to assess the quality of the documents providing recommendations about COVID-19 testing.
- We included the latest version of documents providing recommendations for adult populations, without language or publication status restrictions. Search is current up to September 21, 2020.
- We classified each recommendation according to its application, the index tests involved and the action recommended. We summarized the areas of agreement among developers about COVID-19 testing.

INTRODUCTION

Coronavirus disease 2019 (COVID–19), a human respiratory disease pandemic caused by a new coronavirus (severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2) since March 2020, has been reported in 3,175,207 cases including 224,172 deaths worldwide. [1 2] Its peak quickly saturated the response capacity of healthcare organizations, even in high-performing systems, seriously affecting medical provision. [3] Effective infection control should rely on provision of tests. Initial strategies have focused on case identification and contact tracing, as in previous coronavirus epidemics, [4-6] although testing on a massive scale has also been suggested as a key public health strategy. [6-8] Testing all patients with suspected infection is the ideal method for infection control, but several countries have limited testing capacity unrealistic, and a prioritizing process is applied. [9-11]

Testing used in screening, diagnosis and follow up of COVID-19 has been a subject of debate. Besides symptoms and signs, tests such as nucleic acid amplification tests (NAATs), serology tests (including IgG and IgM) as well as imaging (chest computed tomography, ultrasound and chest X-ray), have been considered for this condition. [12-14] However, there are variations in the evidence evaluating the properties of COVID-19 tests in different public health and clinical scenarios. [15-17] In a pandemic, there is a need for timely guidance to direct the testing of suspected, probable and confirmed COVID-19 cases. To efficiently use available resources to control the spread of the disease, several organizations have developed formal advice about testing for COVID-19. [18-21] In this scoping review, we collated and categorized guidance about the role and applications of tests for SARS-CoV-2/COVID-19, to provide an overview of the current recommended testing strategies, as well as their quality following the criteria of a standardized tool to assess documents providing clinical guidance. While other reviews have focused on guidance about COVID-19 treatments [22 23] or

selected populations [24-26], this is the first scoping review summarising COVID-19 testing recommendations along with a comprehensive assessment of the quality of their development.

METHODS

We searched for guidance documents about the use of tests in the diagnosis and management of adult COVID-19 patients, without language or publication status restrictions. A document or report was eligible if it was self-declared as a guideline, guidance or protocol (using keywords such as "practice guideline," "consensus," "guidance", "position statement" and "guideline"), and if it provided explicit recommendations about COVID-19 testing for adult healthier population. We included documents providing recommendations about the use of any test, including symptoms and signs of COVID-19, laboratory-based molecular tests, serology tests and imaging, and presented as sentences or paragraphs. Guidance documents exclusively focused on special populations (i.e. patients with chronic obstructive pulmonary disease (COPD), critical care, pregnant women, cancer patients or children), specific settings (i.e. workplaces, nursing homes), those developed for local use (i.e. those developed by individual healthcare institutions), as well as other evidence synthesis documents no providing explicit recommendations (i.e. rapid responses and rapid reviews) were excluded. A detailed PICO can be consulted in Appendix 1.

Data sources and searches

We searched guideline repositories and websites of government agencies, scientific societies and international organizations related to COVID-19 management, such as the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), as well as manual searching of 28 websites (Appendix 2). In addition, we searched MEDLINE (Ovid SP, 1946 to September 21, 2020), Embase (Ovid SP, 1982 to September 21, 2020), and LILACS (iAH English)

(BIREME, 1982 to September 21, 2020). We also search on the internet for documents from the 30 countries more affected by COVID-19 confirmed cases, as reported by the WHO in the situation report #153 [27] (Appendix 3). We did not apply any language or geographic restrictions. We used EndNote X9 software to create a database for the management of the search results.

Study selection and quality assessment

Two reviewers applied the eligibility criteria and extracted relevant data on main characteristics from potentially relevant documents, registering reasons for exclusion. An additional reviewer checked all the extracted information for accuracy (non-independent verification). For the quality assessment of included documents, two reviewers independently rated each document using the Appraisal of Guidelines, Research and Evaluation (AGREE)-II tool. [28] The AGREE-II tool is a validated tool for the assessment of the quality and reporting of practice guidelines. [29-31] In particular, this tools helps to stakeholders, clinicians and users in general in the evaluation of the quality of documents that are candidates for use in clinical practice, as well as those involved in policy-related decisions. [28] This tool consisted of 23 key items organized in six domains: scope and purpose, stakeholder involvement, the rigour of development, clarity of presentation, applicability, editorial independence and two overall evaluation items. Each item was graded using a scale of 7 points: from 1, meaning "Strongly disagree", to 7, meaning "Strongly agree". The total was presented as a percentage of the maximum possible score for that domain (from 0 to 100%). For further analysis, we highlighted those recommendations belonging to documents with a score of ≥50% in domain 3 of the AGREE-II tool ("Rigour of Development"), as indication of a sound methodology in their development. This domain involves questions about the use of systematic methods in search of evidence, the comprehensive evaluation of the strength and limitations of eligible studies, the methods for formulating the final recommendations and their external review by experts, among

other issues. [28] Discrepancies were resolved by a consensus.

Data extraction and data synthesis

For each eligible document, we extracted information about the country and region where the document was developed, the date of last update, the main institution developing the guidance, the methodologies to produce the guidance document and the recommendations, as well as the assessment of conflict of interest. All recommendations provided by the included guidance documents were extracted in an Excel spreadsheet. We classified each recommendation according to their application, following the disease pathway suggested by Chen et al.,[32] as follow:

- *Incubation period with screening asymptomatic patients and monitoring contacts*: Those recommendations about the assessment of at-risk individuals without symptoms and their likelihood of a current SARS-Cov-2 infection, as well as those recommendations about contact tracing and monitoring of contacts of suspected, possible and confirmed cases of COVID-19.
- *Symptomatic illness with testing of symptomatic cases:* Those recommendations about the triage of symptomatic individuals with a reasonable likelihood of COVID-19.
- *Symptomatic illness needing diagnosis:* Those recommendations about the confirmation of COVID-19 disease in an individual infected with SARS-CoV-2 after triage testing.
- *Symptomatic illness exploring competitive diagnosis:* Those recommendations about rule-out competing diagnosis (i.e. influenza-like illness) of symptomatic individuals with a reasonable likelihood of a SARS-Cov-2 infection/ COVID-19.
- *Symptomatic illness grading disease severity:* Those recommendations about the classification of confirmed cases and the assessment of severity to treatment decisions.

- *Symptomatic illness monitoring and treatment modification*: Those recommendations about the follow-up of confirmed COVID-19 case for further treatment modifications.
- *Convalescence or de-isolation-discharge*: Those recommendations about the end of de-isolation or the hospital discharge of institutionalized patients.

We extracted the test(s) covered by each recommendation in a standardized format, as well as the direction of the recommendation (for/ against), and their strength (weak, strong), if available. We generated tables and figures summarizing the role of tests during the COVID-19 testing, as well as the areas of consensus and recommendations supported by two or more documents. All descriptive analyses were performed in STATA 16.0. We followed the PRISMA extension for reporting scoping reviews to report the findings of our study. [33]

Patient and public involvement

Patients were not involved in this research.

RESULTS

Electronic searches yielded 4648 citations from Medline, Embase and LILACS databases. In addition, we obtained 4955 documents from other resources (Figure 1). Our initial screening of titles and abstracts identified 230 documents for assessment in full text, of which 45 were excluded due to they did not provide recommendations for clinical practice, 33 documents did not provide recommendations about COVID-19 testing, 27 addressed patients with other main pathologies or settings excluded to our review, and 16 were previous versions of included documents (Appendix 4). Finally, 47 documents were included in evidence synthesis. [34-80]

Characteristics and quality of included guidance documents

Most of the included documents (n=28, 59%) were published de novo or have an updated version from May to September 2020 (Table 1). Thirty-five documents were developed by institutions in America (n=15), Europe (n=10) and Asia (n=10). A considerable number of documents were developed by scientific societies alone (n=21, 44%), while nine were produced by global/international health institutions, such as WHO and local/regional CDCs (19%), and 16 remaining documents were developed by government agencies and Ministries of Health (34%). Fourteen documents reported a methodology to their development, including a search of primary evidence and experts meetings [36 37 44 45 47 53 58 59 64 68 69 72 75 78], while twelve of them added a specific method to develop the recommendations, mostly based on expert consensus. [36 37 44 45 47 58 59 64 68 69 72 75] Five documents explicitly stated that they followed the existing WHO/CDC guidelines to produce their own recommendations. [35 38 50 57 66] Fifteen documents did not present the recommendation in a clear format, such as a bullet list or a table; instead, they present the recommended actions in paragraphs along with other epidemiological information. [37 41 46 48 50 54 61 65 66 73 74 76-79] In addition, only 19 documents reported the assessment of conflict of interest among the members of the expert panel producing the recommendations. [36 38 43 45-49 53 58 59 61 63-65 68 69 75 80] Five documents providing only recommendations about selected settings, mostly about de-isolation. [39 40 58 60 67]

Regarding the quality of included documents, we found that the domains with the highest scores were "Scope and purpose" (Median= 50%; IQR= 32 to 61) and "Clarity of presentation" (Median= 49%; IQR= 33 to 67) (Appendix 5). Domains with the lowest scores were “Editorial independence” (Median= 4%; IQR= 0 to 43) and “Applicability” (Median= 6%; IQR= 0 to 21). Only six documents obtained at least 50% score for the "Rigor of development" domain. [36 37 45 47 64 68] Twelve documents obtained at least 50% scores for at least three AGREE-II domains. [36-38 45 47 50 58 59 64 65 68 72] (Appendix 5).

Table 1. Characteristics of the documents included in the scoping review of guidance on SARS-CoV-2/COVID-19 testing.

Characteristic of documents or recommendations		Frequency
Date last version / update	March 2020 or earlier	11
	April to May 2020	18
	June to July 2020	7
	August to September 2020	11
Country / Region	America	15
	Europe	10
	Asia	10
	Africa	2
	International	10
Developer	Global health agencies (i.e. World Health Organization and CDCs)	9
	Government agencies and Ministries of Health	16
	Scientific Societies	21
Scenarios of recommendations' application	**Incubation**: Screening asymptomatic patients/Monitoring contacts	15
	Symptomatic illness: Screening symptomatic cases	6
	Symptomatic illness: Diagnosis	157
	Symptomatic illness: competitive diagnosis	31
	Symptomatic illness: Staging/grading severity	36
	Symptomatic illness: Monitoring	28
	Convalescence: De-isolation / discharge	39
	Other applications	15

Characteristics of the recommendations

We included 47 documents providing 327 recommendations about the diagnosis of COVID-19 cases (Table 1). One-hundred fifty-seven recommendations were focused on the diagnosis of suspected cases (48%), while 39 sentences addressed de-isolation measures of confirmed cases (11%). Forty-eight recommendations were against the use of a test in a specific setting (14%). The strength of recommendations was reported in 62 statements (strong 33; weak 29).

The test most frequently recommended was the reverse transcription-polymerase chain reaction (RT-PCR) assays (87 recommendations), followed by chest CT (38 recommendations), and chest US (22 recommendations). The test was not described or was no clearly reported in 48 recommendations (i.e. "COVID testing", "laboratory testing"). In addition, 79 recommendations reported tests for the investigation of competitive diagnoses, monitoring of disease and assessment of severity, such as blood counts, biomarkers, cultures and kidney and liver functions, among others.

An overview of the recommendations collated according to their role and application is presented as follow. Full-text of all recommendations and areas of agreement with supporting documents can be consulted in Appendix 6.

Recommendations about incubation period (screening of asymptomatic and monitoring of contacts)

We identified 14 recommendations about the screening of asymptomatic patients and monitoring the contacts of confirmed cases, provided by four global health agencies, [59 64 72 79] five scientific societies, [36 43-45 71 79] and one government agency. [38] RT-PCR assays were recommended for testing of suspected cases, including those asymptomatic individuals in close contact with confirmed COVID-19 patients. [38 45 59] One document developed by a scientific society recommends against the use of RT-PCR in asymptomatic patients with a low probability of being infected. [45] Two documents recently published by global health agencies suggest the use of COVID-19 rapid antigen tests in cases of known exposure, even if individuals are asymptomatic. [72 79] In addition, two documents do not recommend the use of imaging (unclear which test) for the assessment of asymptomatic individuals. [44 64] We identified three areas of agreement among developers, supported by two documents with Domain 3/ AGREE-II Tool score ≥50 % [45 64], regarding the role of RT-PCR assays and antigen-based tests (in favour) and chest imaging (against) in this setting (Table 2).

Recommendations about Symptomatic illness: Screening symptomatic cases

We identified seven recommendations about case finding of symptomatic patients derived from six documents, including one global health agency, [59 72] four scientific societies [36 45 61 63] and one government agency [70]. Recommended test for the initial assessment of symptomatic individuals include the RT-PCR assays, rapid antigen tests and SARS-CoV-2 NAAT in general; this advice is supported by four documents, two of them with Domain 3/ AGREE-II Tool score ≥50 %. [36 45 59 72] Two documents developed by scientific societies do not recommend the use of Chest CT in the routinely screening of these patients. [61 63] (Table 2)

Recommendations about Symptomatic illness: Diagnosis

We identified 157 recommendations about ruling in/ruling out COVID-19 provided by 42 documents included in this scoping review. RT-PCR assays was the index test more recommended for the diagnosis of SARS-CoV-2 infection (56 recommendations), supported by three documents with Domain 3/ AGREE-II Tool score ≥50 %, among others. [36 37 45] One document clarifies that a single positive PCR result is proof of infection, and there is no need for a second test in these cases. [74] Twenty-one recommendations about RT-PCR assays addressing technical issues, including the sampling specimen and the positivity criteria (i.e. target genes). Seven documents recommend a second RT-PCR assessment when there are high suspicious of infection and initial negative results, two of these documents with Domain 3/ AGREE-II Tool score ≥50 %. [36 38 45 55 61 73 75]. Sampling specimen more recommended involving respiratory tract samples, especially nasopharyngeal samples. [35 36 38 41 42 45 47 50 54 56 57 59 70 71 73-75 78 79]

Fourteen documents recommend against the use of serological tests for the assessment of acute infection, [37 51 54 59 66 68-71 73-75] reserving their role for late cases. [36 62] This recommendation is supported by three documents with Domain 3/ AGREE-II Tool score ≥50 %, among others. [36 37 68] Support about

the use of Chest CT in this setting is unclear, with five documents supporting their use in selected cases, for example, lack of availability of molecular tests, [34 42 48 52 63 66] while other two documents clearly do not recommend their use. [50 55] In addition, eight documents suggest a restricted use of bronchoscopy (two of them with Domain 3/ AGREE-II Tool score ≥50 %), for example for intubated patients. [36 46 47 49 52 55 65 80]

We found a considerable number of recommendations which failed in the reporting of the index test (i.e. COVID-19 tests, chest imaging), and then there was no possible their classification in these analyses. Other areas of consensus are shown also in table 2.

Recommendations about Symptomatic illness: competitive diagnosis

We identified 31 recommendations about the assessment of competitive diagnosis derived from 17 documents, mainly scientific societies. [35-37 42 43 46 49-51 54 55 59 65 70 73 74 78] Twenty-eight recommendations state the need for exploration of alternative respiratory infections, such as influenza, tuberculosis or bacterial pneumonia, supported by two documents with Domain 3/ AGREE-II Tool score ≥50 %, among others. [36 37] Areas of agreement include the collection of blood cultures for assessment of other agents causing respiratory infections, [35-37 43 50 51 54 59 70 78] the assessment of other potential aetiologies depending on local epidemiology, such as streptococcus pneumoniae, haemophilus influenza and mycobacterium tuberculosis, [35 42 43 50 51 54 59 65 73 74 78] as well as the follow-up of COVID-19 diagnosis even if other infections are confirmed (Table 2). [51 59 73 74]

Recommendations about Symptomatic illness: Staging/grading severity

We identified 36 recommendations about staging/grading the severity of COVID-19 patients provided by 12 documents (three of them with Domain-3/AGREE-II Tool score ≥50 %), most of them produced by scientific societies. [36 37 42-44 50 55 57 60 61 63 64] Twenty-two recommendations addressed the

role of imaging tests, including chest CT in the evaluation of disease extent (i.e. signs of pulmonary oedema, ARDS, pleural effusions, need for ventilation) [37 43 50 55 57 60 61 63] and lung x-rays for the identification of lung lesions. [36 37 43 44 63] One document suggest the use of Chest X-rays as an alternative in resource-constrained scenarios, based on information current in April 2020. [44] Three documents, including one developed by a global health agency, recommend the use of chest imaging (unclear tests) in addition to other clinical and laboratory tests (Table 2). [36 44 64] One additional document recommend against the request of additional examinations in the absence of vital signs altered or risk factors. [36]

Recommendations about Symptomatic illness: Monitoring and therapeutic management

We identified 28 recommendations about monitoring/ follow-up of patients derived from 12 documents. [36 43 44 46 50 55 60 61 63-66] Chest CT imaging is recommended as a follow-up test by five documents, three of them with Domain-3/AGREE-II Tool score ≥50 %. [36 50 60 66] An additional three documents are against the use of daily chest x-ray in stable patients, [44 63] restricting its use to severe cases. [61] One document provides five recommendations about the use of RT-PCR in the virological monitoring of COVID-19 patients. [43] Other index tests involved in the monitoring of patients include vital signs measurement, oxygenation levels, acid-base balance assessment, D-dimer levels and ECG, according to three documents developed by scientific societies. [43 46 55] Areas of agreement supported by two or more documents are shown in Table 2.

Recommendations about Convalescence: De-isolation/discharge

We identified 39 recommendations about de-isolation/ discharge from hospitalization, derived from 18 documents: 4 developed by global/international health agencies, [39 56 59 64], 6 by scientific societies [35 36 43 44 52 71] and the remaining by government agencies. [38 41 42 57 58 67 74 75]. Absence of clinical

symptoms in the last 24-72 hours (i.e. fever and/or respiratory symptoms) are a common issue for most of the documents addressing hospital discharge/de-isolation. [35 36 39 41 52 56 57 59 67 71 75] RT-PCR negative results (including double negative results) are recommended by six documents, most of them developed before May 2020, [38 39 41 43 52 56] while four documents, including one developed by a global health agency, stated that this test is not required for all cases. [36 59 74 75] Duration of the quarantine is highly heterogeneous and based on several criteria; most common recommendations for asymptomatic or mild patients ranged from 10 days [59 75] or 14 days. [36 58 71 74]

Other recommendations

We identified 15 recommendations about other issues, provided by ten documents, most of them developed by global health and government agencies. [36 38 40 45 50 69 72 73 75 79]

Those recommendations addressed the unclear role of antigen-based tests in other scenarios outside diagnosis of symptomatic patients, [40 72 75 79] and the role of serological tests in surveillance studies, [36 40 50 69 73] among others. Full information is provided in Appendix 4.

Table 2. Testing of SARS-CoV-2/ COVID-19: areas of consensus by developers

			Global health Agencies	Scientific societies	Government institutions
Incubation	**Monitoring contacts-asymptomatic individuals**	RT-PCR as the recommended test for investigation of asymptomatic and close contact	59	45a	38
		Imaging is not routinely indicated as a screening test for COVID-19 in asymptomatic individuals	64[a]	44	
		COVID-19 rapid antigen tests as alternative tests in cases of known exposure, even if individuals are asymptomatic	72, 79		
Symptomatic illness	**Screening symptomatic patients**	Use of SARS-CoV-2 NAAT tests (including RT-PCR) as the recommended test for these cases	59, 72	45[a], 36a	
		Chest CT should not be performed as a screening test in patients for possible COVID-19		61, 63	
	Diagnosis	Use of RT-PCR as the recommended test for these cases	56, 59, 73	55, 36[a], 38, 43, 45[a], 52, 55, 71, 78, 65, 76	37[a], 41, 50, 51, 53, 54, 57, 69, 66, 75, 77, 74
		General examination: including (but not limited to): physical exam, blood gas analysis/oxygen saturation, liver and kidney functions, complete blood count, among others		52, 55, 78, 65	37[a], 50, 54, 57
		Use of antibody-based (serological) tests for the diagnosis of acute COVID-19 is not recommended	59, 73, 62	71, 68[a], 36	37[a], 51, 54, 66, 69, 75, 70, 74
		Repeat RT-PCR testing in cases where a patient with high suspicious of infection have an initial negative or undetermined results	73	36[a], 45[a], 61	38, 75
		Specimen collection: respiratory tract samples, especially nasopharyngeal samples	56, 59, 73, 79	55, 36[a], 45, 47[a], 71, 78	38, 41, 42, 50, 54, 57, 74, 75
		Restricted use of bronchoscopy for collection of specimens		36[a], 46, 47, 49, 52, 55, 80, 65	
	Competitive diagnosis	Collection of blood cultures for assessment of other agents causing pneumonia or sepsis	59	55, 36[a], 43, 78	37[a], 50, 51, 54, 70
		Assessment of alternative respiratory infections, depending of local epidemiology	59, 73	35, 36, 43, 55, 78	42, 50, 51, 54, 74
		Does not rule out COVID-19 in patients having positive findings for other pathogens, and vice versa	59, 73		74, 51
	Staging/grading severity	Use of chest CT and/or chest x-rays for hospital admission, diagnosis of pneumonia and related complications indicative of severity (such as ARDS, pulmonary embolism)	64 [a,b]	36[a], 43, 44, 55, 57, 60, 61, 63	37[a], 50
	Monitoring	Chest CT is recommended as follow-up test in cases of clinical deterioration and to detect complications	64 [a,b]	36[a], 60	50, 66
		Limited role of chest x-rays, especially for daily use in stable patients		44, 63, 61	
		Monitoring of hospitalized patients with additional tests, including (but not limited to) vital signs measurement, oxygenation levels, acid-base balance assessment, D-dimer levels and ECG, among others.		43, 46, 55	
Convalescence	**De-isolation/ discharge**	Absence of clinical symptoms in the last 24-72 hours as a criteria for discharging patients from isolation	59, 39, 56	35, 36[a], 52, 57	41, 57, 67
Other	**Active/Passive surveillance**	The role of serological tests in surveillance studies	40, 73	36[a]	69, 50

Note: a) Document with a score of 50% or more for the "Rigor of development" domain; b) Index test included in the "chest imaging" category. Two or more expert panels supported the areas of consensus detailed above. Due to information on COVID-19 virus is rapidly evolving, some of these actions would be modified when new evidence become available.

DISCUSSION

In this scoping review of recommendations about COVID-19 testing, we identified 47 guidance documents containing 327 recommendations for different stages of the disease, including SARS-Cov-2 detection, assessment of another competitive diagnosis, staging and monitoring of symptomatic cases and de-isolation-discharge of hospitalized patients. Our review included documents produced by global healthcare organizations (i.e. WHO, CDCs), scientific societies and government agencies (such as Ministries of Health) from several countries around the world. Although we included the last version of all documents to warrant the currency of the recommendations, we still found documents developed earlier at the beginning of the pandemic (before March 2020), which could have an impact in the content of the recommendations provided by these groups. The recommendations are current at the time our searches were conducted. Future updates may change the recommendations if new evidence about COVID-19 testing emerges. Despite these limitations, it was possible to map the role of well-known tests such as RT-PCR assays, imaging and serological tests in the comprehensive assessment of COVID-19. We found a predominant role for the nucleic acid amplification testing (NAAT) (i.e. RT-PCR test) in several stages of the disease. Besides, we identified the role of imaging tests to grade the severity of the disease. As a summary of the numerous recommendations provided by the different developers, we identified areas of consensus for testing actions in different disease stages. These areas included the use of RT-PCR for SARS-Cov-2 detection, the limited role of bronchoscopy, and the use of chest CT and chest x-rays for grading severity, among other recommended actions. Due to information on COVID-19 virus is rapidly evolving, some of these actions would be modified when new evidence become available.

The quality of the development of these documents was assessed by a standardized and well developed tool (AGREE-II tool), which evaluate key elements to warrant the transparency, adequacy and applicability of all recommended actions in the clinical setting. Unfortunately, we found several constraints during the development of these recommendations reflected in the AGREE-II scores. Most of the documents did not report the steps taken to develop either the full document or the recommendations; for those reporting a methodology, only a small fraction (6 out of 14 documents) obtained a score of at least 50% in the AGREE-II/ Domain 3 ("Rigor of development"), all of them developed after April 2020. Additional key issues addressed by the AGREE-II tool, such as the Editorial independence (to confirm that the formulation of recommendations was not biased with competing interests), also received lowest scores.

This scoping review was based on a comprehensive search and assessment of the literature about COVID-19 testing. Despite that some documents developed their recommendations with unclear methods, we were able to identify several areas of agreement for COVID-19 testing among all included studies; most of these areas are supported by documents whose reported a systematic search of the literature, a fair evaluation of the strengths and limitation of the evidence, and a clear methodology to reach consensus around the recommended actions, according to the AGREE-II tool. We also performed a regular update of searches and updated our findings to reflect the current recommended practice in this field. However, our review has some limitations. We mostly relied on the search of guideline repositories, documents linked to scientific societies and publications in indexed journals to inform this scoping review. We considered that this strategy would identify documents with greater support given by experts and professional societies. Although we conducted a specific search of guidance developed by experts based on the 30 countries more affected by the pandemic, it is possible that some such guidelines could be missing. Official agencies

were probably not prepared to release their advice to governments in a sensitive political atmosphere. In addition, some guidance documents developed by other countries not currently included in our scoping review were excluded, due to they did not provide recommendations for the diagnosis of COVID-19, focus their efforts in recommendations about treatments (See figure 1 for these exclusions).

Our scoping review also is limited to the assessment of adult healthier population, excluding the evaluation of special populations, including people in high-risk of having COVID-19. While a broader scope would have been of greater interest for readers, the multiplicity of sources and the particularities of recommendations are important constraints in order to warrant the comprehensiveness of a systematic review. We decided to be cautious in this issue, and rather prefer to reflect a comprehensive and complete overview of testing recommendations to be applied to the general population.

When we used the AGREE-II tool to assess the quality of all included documents, we did not expect full compliance in all domains, but we did consider that a minimum of key characteristics would be fulfilled in documents providing formal recommendations for testing. [81] Unfortunately, we noted many deficiencies, a feature that was disturbing, given that the severity of the pandemic demanded the highest level of rigour despite the pressure of time. The lack of reporting concerning critical issues like conflict of interest, judgments about evidence quality, and the methods to formulate recommendations, reduce the confidence stakeholders have when implementing the recommended action in daily practice. Development of formal clinical practice guidelines is a time-consuming task but with prioritisation and resource allocation quality need not be compromised. Even if the reason for these shortcomings was the need to provide quick guidance in response to

the COVID-19 emergency, readers should be aware that there are quality standards expected in rapid guidelines. [82]

Timely and accurate testing is a key element for the control of COVID-19. [83 84] This, to our knowledge, is the first scoping review focusing on recommendations exclusively for COVID-19 testing, with information current until September 21 2020. However, as new evidence about COVID-19 testing emerges, the recommended actions would need updating and a living systematic review could offer the best approach for addressing this issue timely.

STATEMENTS

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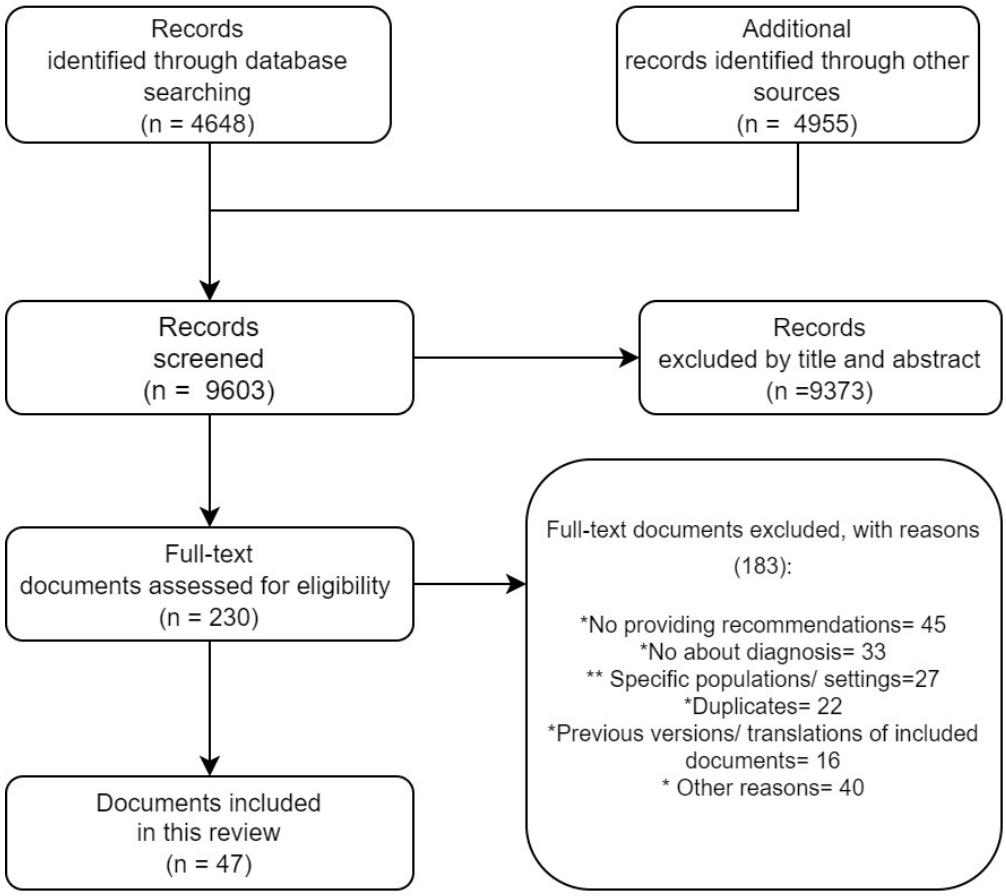

Figure 1. Flow diagram of document selection for the scoping review of guidance on SARS-CoV-2/COVID-19 testing.
Note: Additional records identified through other sources: TRIP database= 3876 records; Members of the International Society of antimicrobial chemotherapy= 89 records; CMA Infobase/Clinical Practice Guidelines Database (CPGs) = 151 records; WHO resources= 164 records; Fisterra= 38 records; other sources= 637 records.

311x286mm (72 x 72 DPI)

APPENDIX 1. PICO QUESTION

	Inclusion criteria	Exclusion criteria
Population	Adults (general population) under clinical management (in a health care facility) by COVID-19 suspected or confirmed	• Pediatric population (<16 years of age) • Pregnant women • Critically ill patients • Healthcare workers • People with other main diagnosis (such as oncological conditions, COPD, asthma, etc.) • People undergoing surgical procedures or radiological interventions • People isolated or self-isolated at home for COVID19 suspicious • Elderly people living in nursing homes
Index tests	• General symptoms/signs (i.e. fever, cough) • RT-PCR assays for SARS-CoV-2 • Rapid/Point-of-care, antibody and serology tests (including IgG and IgM serology) • Imaging (Chest CT, ultrasound and Chest X-ray) • Other ancillary tests used during COVID-19 management	• Interventional radiology • Bronchoscopy for non-COVID diagnosis • Other diagnostic procedures for other pathologies no related with COVID-19
Outcomes	Recommendations about the use of diagnostic tests	• Technical and/or administrative requirements for the use of the test (i.e. resources needed, laboratory capacity, strategies for batch analysis) • Recommendations about reporting findings (for example, findings from CT scans) • Recommendations about infection prevention and control • Public health recommendations, including return to schools and work, public transportations and similar • Recommendations about population screening
Type of documents	• Documents developed by Ministries of Health, Public Health agencies or National institutions for healthcare. • Documents developed by scientific societies • Consensus statements providing recommendations for the use of a test • Formal clinical practice guidelines	• Documents developed by one person only • Documents no providing recommendations as sentences o (for example, algorithms, figures and tables) • Documents developed by individual hospitals, healthcare institutions or individual states/cities. • Rapid responses or rapid reviews produced by HTA agencies • Commentaries of other documents providing recommendations

APPENDIX 2. SEARCH STRATEGIES (MANUAL SEARCH AND ELECTRONIC DATABASES)

Manual search	• ECRI Guidelines Trust (https://guidelines.ecri.org/) • TRIP Database (https://www.tripdatabase.com/) • NeLH Guidelines Finder (https://www.semfyc.es/biblioteca/national-electronic-library-for-health-nelh/) • Guía Salud GPCs en España (https://portal.guiasalud.es/) • CMA Infobase: Clinical Practice Guidelines Database (CPGs) (https://joulecma.ca/cpg/homepage) • New Zealand Guidelines (https://www.health.govt.nz/publications?f%5B0%5D=im_field_publication_type%3A26) • Scottish Clinical Guidelines (https://www.sign.ac.uk/our-guidelines) • EBM Guidelines (https://www.ebm-guidelines.com/dtk/ebmg/home) • Health Services/Technology Assessment Text (HSTAT) (https://www.semfyc.es/biblioteca/health-servicestechnology-assessment-text-hstat/) • National Institute for Health and Clinical Excellence (NICE) (https://www.nice.org.uk/covid-19) • Guideline International Network (https://g-i-n.net/library/international-guidelines-library) • AHRQ (https://www.ahrq.gov/research/publications/search.html) • Guideline Central (https://www.guidelinecentral.com/summaries/) • Infectious Disease Society of America (IDSA) (https://www.idsociety.org/) • Members of the International Society of antimicrobial chemotherapy (89 members) • China (http://www.chinacdc.cn/en/), USA (https://www.cdc.gov/) and European Centers for Disease Control and Prevention (https://www.ecdc.europa.eu/en) • WHO resources for COVID-19 pandemic (https://www.who.int/emergencies/diseases/novel-coronavirus-2019) • The Living systematic review developed by the Institute of Social and Preventive Medicine-ISPM from the University of Bern (available on https://ispmbern.github.io/covid-19/)

Medline-Pubmed	#1 Add Search (\"Wuhan coronavirus\" [Supplementary Concept] OR \"COVID-19\" OR \"2019 ncov\"[tiab] OR ((\"novel coronavirus\"[tiab] OR \"new coronavirus\"[tiab]) AND (wuhan[tiab] OR 2019[tiab])) OR 2019-nCoV[All Fields] OR (wuhan[tiab] AND coronavirus[tiab]))))) #2 Add Search Clinical pathway[mh] OR Clinical protocol[mh] OR Consensus[mh] OR Consensus development conferences as topic[mh] OR Critical pathways[mh] OR Guidelines as topic [Mesh:NoExp] OR Practice guidelines as topic[mh] OR Health planning guidelines[mh] OR guideline[pt] OR practice guideline[pt] OR consensus development conference[pt] OR consensus development conference, NIH[pt] OR position statement*[tiab] OR policy statement*[tiab] OR practice parameter*[tiab] OR best practice*[tiab] OR standards[ti] OR guideline[ti] OR guidelines[ti] OR ((practice[tiab] OR treatment*[tiab]) AND guideline*[tiab]) #3 Add Search (((\"Wuhan coronavirus\" [Supplementary Concept] OR \"COVID-19\" OR \"2019 ncov\"[tiab] OR ((\"novel coronavirus\"[tiab] OR \"new coronavirus\"[tiab]) AND (wuhan[tiab] OR 2019[tiab])) OR 2019-nCoV[All Fields] OR (wuhan[tiab] AND coronavirus[tiab])))))) AND (Clinical pathway[mh] OR Clinical protocol[mh] OR Consensus[mh] OR Consensus development conferences as topic[mh] OR Critical pathways[mh] OR Guidelines as topic [Mesh:NoExp] OR Practice guidelines as topic[mh] OR Health planning guidelines[mh] OR guideline[pt] OR practice guideline[pt] OR consensus development conference[pt] OR consensus development conference, NIH[pt] OR position statement*[tiab] OR policy statement*[tiab] OR practice parameter*[tiab] OR best practice*[tiab] OR standards[ti] OR guideline[ti] OR guidelines[ti] OR ((practice[tiab] OR treatment*[tiab]) AND guideline*[tiab])
EMBASE -OVID	1 (nCoV or 2019-nCoV or ((new or novel or wuhan) adj3 coronavirus) or covid19 or covid-19 or SARS-CoV-2).mp. 2 exp clinical pathway/ 3 exp clinical protocol/ 4 exp consensus development conference/ 5 exp consensus development conferences as topic/ 6 critical pathways/ 7 guideline (Ohne verwandte Begriffe) 8 guidelines as topic/ 9 exp practice guideline/ 10 practice guidelines as topic/ 11 health planning guidelines/ 12 treatment guidelines (Ohne verwandte Begriffe) 13 recommendat*.ti,kw. 14 or/2-13 15 1 and 14
LILACS	tw:((tw:((tw:((tw:(wuhan coronavirus)) OR (tw:(covid-19)) OR (tw:(2019 ncov)) OR (tw:(novel coronavirus)) OR (tw:(new coronavirus)) OR (tw:(wuhan OR "2019")) OR (tw:(wuhan AND coronavirus)))))) AND (tw:((tw:(guideline OR guidelines OR recommendati* OR consensus development OR critical pathways))))) AND (type_of_study:("guideline"))

APPENDIX 3. TOP 30 OF COUNTRIES MORE AFFECTED FOR COVID-19 (ACCORDING TO WHO- SITUATION REPORT # 153)

Country	Number of COVId-19 confirmed cases
United States of America	2208829
Brazil	1032913
Russian Federation	584680
India	410461
The United Kingdom	303114
Peru	247925
Spain	245938
Italy	238275
Chile	236748
Iran (Islamic Republic of)	202584
Germany	189822
Turkey	186493
Pakistan	176617
Mexico	170485
France	154562
Saudi Arabia	154233
Bangladesh	108775
Canada	100629
South Africa	92681
Qatar	86488
China	84997
Colombia	63276
Belgium	60550
Belarus	57936
Sweden	56043
Egypt	53758
Ecuador	50183
Netherlands	49502
Indonesia	45029
United Arab Emirates	44533

APPENDIX 4. CHARACTERISTICS OF EXCLUDED-AWAITING STUDIES

Title	Reason for exclusion
The Australian and New Zealand Intensive Care Society (ANZICS) COVID-19 Guidelines (1)	Specific population (ICU patients)
Initial Public Health Response and Interim Clinical Guidance for the 2019 Novel Coronavirus Outbreak — United States, December 31, 2019–February 4, 2020 (2)	No guideline/ recommendations
Infection Prevention and Control guidance for Long-Term Care Facilities in the context of COVID-19 (3)	Specific setting (long term care facilities)
COVID-19 Guidance for sampling and laboratory investigations (4)	No expert panel reported
Novel coronavirus (COVID-19) Guidance for primary care (5)	No recommendations about diagnostic issues
Novel coronavirus (COVID-19) Guidance for secondary care (6)	No recommendations about diagnostic issues
Testing for SARS CoV 2 in Scotland (7)	No recommendations about diagnostic issues
COVID-19 Guidance: Primary Care Providers in a Community Setting (8)	No recommendations about diagnostic issues
Interim Guidance: Public Health Management of cases and contacts associated with novel coronavirus (COVID-19)in the community (9)	No recommendations about diagnostic issues
Choosing Wisely: COVID-19 recommendations (10)	No recommendations about diagnostic issues
Prince Edward Island Guidelines for the Management and Control of COVID-19 (11)	No recommendations about diagnostic issues
Australian Health sector emergency response plan for novel coronavirus (12)	No guideline/ recommendations
Clinical guide for the management of respiratory patients during the coronavirus pandemic (13)	No guideline/ recommendations
INTERIM CLINICAL GUIDANCE FOR ADULTS WITH SUSPECTED OR CONFIRMED COVID-19 IN BELGIUM (14)	No recommendations about diagnostic issues
Midwives ordering testing for COVID-19 (15)	No guideline/ recommendations
Statement from RCPath's Immunology Specialty Advisory Committee on COVID-19 / SARS CoV2 antibody evaluation (16)	No guideline/ recommendations
Algorithm for symptomatic staff, symptomatic household testing and further actions (17)	Specific setting (long term care facilities)
American Association for Respiratory Care: SARS-CoV-2 (18)	No recommendations about diagnostic issues
Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19 (19)	No recommendations about diagnostic issues
MANAGEMENT OF PATIENTS WITH SEVERE TO CRITICAL COVID-19 DISEASE (20)	No recommendations about diagnostic issues
Interim infection prevention and control guidelines for the management of COVID-19 in healthcare settings (21)	No recommendations about diagnostic issues
NATIONAL SUPPORTING GUIDANCE FOR SCOTTISH GENERAL PRACTICE - COVID-19 (22)	No recommendations about diagnostic issues
RCPath advice on histopathology frozen sections and cytology fine needle aspiration during infectious disease outbreaks (23)	No recommendations about diagnostic issues
Guidance for remote reporting of digital pathology slides during periods of exceptional service pressure (24)	No recommendations about diagnostic issues
Infection prevention and control during health care when COVID-19 is suspected (25)	No recommendations about diagnostic issues
COVID-19 Guidance: Acute Care (26)	Specific population

GUIDE TO INFECTION CONTROL IN THE HOSPITAL (27)	No recommendations about diagnostic issues
Policies and Guidelines for COVID-19 Preparedness: Experiences from the University of Washington (28)	No guideline/ recommendations
COVID-19: An ACP physicians guide (29)	No guideline/ recommendations
Laboratory testing for COVID-19. Emergency Response Technical Centre, NIVD under China CDC (30)	No guideline/ recommendations
Guidelines for Investigation and Management of Close Contacts of COVID-19 Cases Training Kit from Chinese Center for Disease Control and Prevention (31)	No recommendations about diagnostic issues
Guide technique pour les tests de laboratoire la pneumonie du nouveau coronavirus (32)	No recommendations about diagnostic issues
COVID-19: Laboratory Testing Guideline (33)	No guideline/ recommendations
Partie du diagnostic et traitement. COVID-19 prévention et le contrôle des (Updated) (34)	No guideline/ recommendations
Diagnosis and treatment. COVID-19 Prevention and Control (35)	No guideline/ recommendations
Evaluating and Testing Persons for Coronavirus Disease 2019 (COVID-19) (36)	No expert panel reported
CDC Viral Test for COVID-19 (37)	No guideline/ recommendations
Serology Testing for COVID-19 (38)	No guideline/ recommendations
An overview of the rapid test situation for COVID-19 diagnosis in the EU/EEA (39)	No guideline/ recommendations
Considerations in the investigation of cases and clusters of COVID-19. Interim guidance. 2 April 2020 (40)	No guideline/ recommendations
Operational considerations for COVID-19 surveillance using GISRS Interim guidance 26 March 2020 (41)	No recommendations about diagnostic issues
Global surveillance for COVID-19 caused by human infection with COVID-19 virus Interim guidance 20 March 2020 (42)	No recommendations about diagnostic issues
Enfermedad por coronavirus 2019 (COVID-19) (43)	No expert panel reported
Care of the Adult Critically Ill COVID-19 Patient (44)	Specific population
GUIDANCE FROM THE CCS COVID-19 RAPID RESPONSE TEAM (45)	Specific population
D-19 Testing Guidelines for British Columbia (46)	No expert panel reported
Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (Trial Version 7) (47)	No expert panel reported
COVID-19: Kriterien zur Entlassung aus dem Krankenhaus bzw. aus der häuslichen Isolierung 2020 (48)	No guideline/ recommendations
Instructions for discharge from the hospital and for the cessation of precautionary measures against the transmission of patients with COVID-19 who are hospitalized or remain for home care (49)	No guideline/ recommendations
Communication of the CTS on the definition of a cured patient (50)	No guideline/ recommendations
Perinatal-Neonatal Management of COVID-19 Infection – Guidelines of the Federation of Obstetric and Gynecological Societies of India (FOGSI), National Neonatology Forum of India (NNF), and Indian Academy of Pediatrics (IAP) (51)	Specific population
Recommendation for the diagnosis and treatment of novel coronavirus infection in children in Hubei (Trial version 1) (52)	Specific population
Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection (53)	Specific population
Diagnosis and treatment recommendations for pediatric respiratory infection caused by the 2019 novel coronavirus (54)	Specific population

Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19) (55)	Specific population
Diagnosis and prevention of new coronavirus infection in children in 2019 (56)	Specific population
Treatment of patients with nonsevere and severe coronavirus disease 2019: an evidence-based guideline (57)	No recommendations about diagnostic issues
The Canadian Association for Interventional Radiology (CAIR) and Canadian Association of Radiologists (CAR) Guidelines for Interventional Radiology Procedures for Patients With Suspected or Confirmed COVID-19 (58)	No recommendations about diagnostic issues
Sometimes Less Is Worse: A Recommendation Against Nonintubated Video-Assisted Thoracoscopy During the COVID-19 Pandemic (59)	No recommendations about diagnostic issues
SARS CoV-2/COVID-19: Evidence-Based Recommendation on Diagnosis and Therapy (60)	No guideline/ recommendations
Nasal, pharyngeal and laryngeal endoscopy procedures during COVID-19 pandemic: available recommendations from national and international societies (61)	No guideline/ recommendations
Recommendations to the government following the declaration of COVID-19 pandemic (62)	No guideline/ recommendations
Molecular testing for acute respiratory tract infections: clinical and diagnostic recommendations from the IDSA's Diagnostics Committee (63)	Specific population
Recommendation of a practical guideline for safe tracheostomy during the COVID-19 pandemic (64)	No recommendations about diagnostic issues
Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group (65)	No recommendations about diagnostic issues
Emergency tracheal intubation in 202 patients with COVID-19 in Wuhan, China: lessons learnt and international expert recommendations (66)	No recommendations about diagnostic issues
Tracheostomy during COV-SARS-CoV-2 pandemic: Recommendations from the New York Head and Neck Society (67)	No recommendations about diagnostic issues
Biosafety measures for preventing infection from COVID-19 in clinical laboratories: IFCC Taskforce Recommendations (68)	No recommendations about diagnostic issues
Radiological diagnosis of COVID-19: expert recommendation from the Chinese Society of Radiology (First edition) (69)	Awaiting
Infection prevention in radiological examination of COVID-19: expert recommendation from the Chinese Society of Imaging Technology (First edition) (70)	Awaiting
Please do not embrace!: Important recommendations of the Robert Koch Institute, authorities and expert associations on COVID-19 (71)	Awaiting
Information from the AG Thorax Diagnostik der Deutschen Röntgengesellschaft (72)	No guideline/ recommendations
Covid-19 diagnostic imaging recommendations (73)	No guideline/ recommendations
Recommendations for Minimal Laboratory Testing Panels in Patients with COVID-19: Potential for Prognostic Monitoring (74)	No guideline/ recommendations
Clinical Insights and Management Recommendations for COVID-19 Patients Hospitalized in Internal Medicine Departments: Recommendations by the Corona Department Heads in Israel (75)	No recommendations about diagnostic issues

CT and COVID-19: Chinese experience and recommendations concerning detection, staging and follow-up (76)	No guideline/ recommendations

APPENDIX 5. AGREE II Domain-Standardized Scores

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
229	Diagnostic testing for SARS-CoV-2 (77)	11/09/2020	International	44	42	14	50	4	0
224	Coronavirus infections (78)	4/09/2020	Finland	8	6	2	19	0	0
36	ACR Recommendations for the use of Chest Radiography and Computed Tomography (CT) for Suspected COVID-19 Infection (79)	22/03/2020	USA	61	11	7	44	6	0
222	Clinical management of patients with COVID-19:Second interim guidance (80)	17/08/2020	Canada	47	42	28	56	0	0
39	RECOMENDACIONES MANEJO CLÍNICO DE INFECCION RESPIRATORIA POR NUEVO CORONAVIRUS 2019 (2019 n-COV) (81)	07/02/2020	Chile	42	17	3	39	0	0
40	Consenso colombiano de atención, diagnóstico y manejo de la infección por SARS-COV-2/COVID-19 en establecimientos de atención de la salud (82)	12/04/2020	Colombia	64	78	74	56	33	79
232	Clinical management of suspected or confirmed Covid-19 disease Version 5 (83)	24/08/2020	South Africa	44	14	5	61	0	0
44	DIRETRIZES PARA DIAGNÓSTICO E TRATAMENTO DA COVID-19 (84)	07/05/2020	Brazil	56	22	70	67	2	0
48	Guidelines for Laboratory Diagnosis of Coronavirus Disease 2019 (COVID-19) in Korea (85)	17/03/2020	Korea	72	6	4	53	0	79
61	Guidance for discharge and ending isolation in the context of widespread community transmission of COVID-19 – first update (86)	08/04/2020	Europe	67	33	7	72	21	4
69	Advice on the use of point-ofcare immunodiagnostic tests for COVID-19 (87)	08/04/2020	International	28	0	0	22	0	0
84	Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia (Trial Version 7) (88)	3/03/2020	China	17	0	0	17	0	0
88	Manejo clínico del COVID-19: atención hospitalaria (89)	18/06/2020	Spain	78	47	3	61	2	4
91	Recommendations of management in SARS-CoV-2 infection of the Polish Association of Epidemiologists and Infectiologists (90)	30/03/2020	Poland	28	11	3	50	4	0
98	The Role of Chest Imaging in Patient Management during the COVID-19 Pandemic (91)	07/04/2020	International	69	39	20	81	13	0

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
102	Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19 (92)	06/05/2020	USA	86	47	74	81	46	79
103	Recomendaciones de consenso SEPAR y AEER sobre el uso de la broncoscopia y la toma de muestras de la vía respiratoria en pacientes con sospecha o con infección confirmada por COVID-19 (93)	19/03/2020	Spain	42	28	4	31	23	13
104	The Use of Bronchoscopy During the COVID-19 Pandemic(94)	01/05/2020	USA	72	42	54	78	6	21
113	Imaging of coronavirus disease 2019: A Chinese expert consensus statement (95)	02/04/2020	China	61	47	8	39	4	13
114	Performing Bronchoscopy in Times of the COVID-19 Pandemic: Practice Statement from an International Expert Panel (96)	14/04/2020	International	58	36	4	33	2	13
119	TEMPORARY METHODICAL RECOMMENDATIONS PREVENTION, DIAGNOSTICS AND TREATMENT OF NEW CORONAVIRAL INFECTION (97)	3/09/2020	Russia	61	50	21	78	38	0
120	CLINICAL MANAGEMENT PROTOCOL: COVID-19. Government of India Ministry of Health and Family Welfare Directorate General of Health Services (EMR Division) (98)	3/07/2020	India	8	3	0	31	2	0
215	COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. USA (99)	1/09/2020	USA	42	31	20	83	0	50
123	LINEAMIENTOS DE MANEJO HOSPITALARIO DEL PACIENTE CON COVID-19 V1,0 Comité de Trabajo COVID-19 Sociedad Peruana de Neumología (100)	28/03/2020	Peru	19	3	2	36	0	0
125	EsSalud. Recomendaciones de Manejo clínico para los casos de COVID 19. Perú, Marzo 2020 (101)	26/03/2020	Peru	39	31	2	50	0	83
129	Information on the detection, diagnosis and therapy of patients with COVID-19 (102)	6/08/2020	Germany	67	33	23	78	42	0
130	Guidelines on Management of Patients with COVID-19. Pakistan Chest Society (PCS) Guidelines (103)	31/07/2020	Pakistan	17	8	0	36	4	0
131	COVID-19-Coronavirus-Disease-Guidelines. Saudi Arabia (104)	01/05/2020	Saudi Arabia	50	11	2	28	13	0
140	National Guidelines on Clinical Management of Coronavirus Disease 2019 (COVID-19) Version 7.0 28 May 2020 (105)	28/05/2020	Bangladesh	28	17	2	28	8	0
149	Clinical Management of COVID-19 (106)	27/05/2020	International	56	56	38	78	38	67

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
151	Imagerie thoracique au déconfinement Positionnement de la SIT 07/05/2020 (107)	07/05/2020	France	17	0	0	22	0	0
153	COVID-19 patients and the radiology department – advice from the European Society of Radiology (ESR) and the European Society of Thoracic Imaging (ESTI) (108)	02/04/2020	Europe	53	31	10	39	35	46
156	Coronavirus Diseases 2019 - Interim Guidelines for COVID-19 Antibody Testing (109)	23/05/2020	USA	28	0	6	28	29	0
159	Canadian Society of Thoracic Radiology/ Canadian Association of Radiologists Consensus Statement Regarding Chest Imaging in Suspected and Confirmed COVID-19 (110)	08/05/2020	Canada	53	33	11	47	21	42
164	Use of chest imaging in COVID-19 (111)	11/06/2020	International	97	89	70	81	58	67
173	COVID-19 (SARS-CoV-2 ENFEKSİYONU) GENEL BİLGİLER, EPİDEMİOLOJİ VE TANI (112)	01/06/2020	Turkey	22	0	0	28	0	0
174	Relatif aux critères cliniques de sortie d'isolement des patients ayant été infectés par le SARS-CoV-2 (113)	16/03/2020	France	17	0	0	22	0	0
247	Recomendaciones de colegios, sociedades médicas y grupos de trabajo mexicanos para el diagnóstico, tratamiento, prevención y control del SARS-CoV-2 (COVID-19) (114)	may-20	Mexico	50	44	4	39	17	17
243	COVID-19 Guideline (115)	19/09/2020	The Netherlands	33	17	8	33	4	25
234	DIRETRIZES AMB: COVID – 19 (116)	30/03/2020	Brazil	44	28	6	28	8	17
231	Coronavirus disease 2019 (COVID-19) caused by a Novel Coronavirus (SARS-CoV-2) (117)	25/06/2020	South Africa	56	39	19	39	13	25
226	Antigen-detection in the diagnosis of SARS-CoV-2 infection using rapid immunoassays (118)	11/09/2020	International	61	39	46	61	33	79
211	Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19: Serologic Testing (119)	18/08/2020	USA	72	50	82	81	58	83
255	Interim Guidance for Rapid Antigen Testing for SARS-CoV-2 Using Antigen Tests (120)	4/09/2020	USA	39	17	8	33	13	0

ID	TITLE	DATE OF UPDATE	REGION / COUNTRY	SCOPE AND PURPOSE	STAKEHOLDER INVOLVEMENT	RIGOR OF DEVELOPMENT	CLARITY OF PRESENTATION	APPLICABILITY	EDITORIAL INDEPENDENCE
260	Expert panel consensus statement on the applications and precaution strategies of bronchoscopy in patients with COVID-19 (121)	30/07/2020	China	39	28	8	67	13	42
145	CONSENSO MULTIDISCIPLINARIO INFORMADO EN LA EVIDENCIA SOBRE EL TRATAMIENTO DE COVID19 (122)	30/03/2020	Ecuador	81	58	45	78	29	67
171	Guideline for the management of COVID-19 patients during hospital admission in a nonintensive care setting (123)	3/04/2020	Denmark	61	33	8	56	17	75
			Median	50	31	7	47	6	4
			P25	31	11	3	32	0	0
			P75	61	42	20	67	22	44

APPENDIX 6. RECOMMENDATIONS BY APPLICATION (KEY USE CASES)

Incubation: Screening asymptomatic patients/ Monitoring contacts

ID document	Recommendation
	WHO-CDCs
226 (118)	2. Appropriate scenarios for use of COVID-19 Ag-RDTs include the following: ii) To support outbreak investigations (e.g. in closed or semi-closed groups including schools, care-homes, cruise ships, prisons, work-places and dormitories, etc.) In NAAT-confirmed COVID-19 outbreaks, Ag-RDTs could be used to screen at-risk individuals and rapidly isolate positive cases (and initiate other contact tracing efforts) and prioritize sample collection from RDT-negative individuals for NAAT.
226 (118)	2. Appropriate scenarios for use of COVID-19 Ag-RDTs include the following: v) Testing of asymptomatic contacts of cases may be considered even if the Ag-RDT is not specifically authorized for this use, since asymptomatic cases have been demonstrated to have viral loads similar to symptomatic cases (17), though in that situation, a negative Ag-RDT should not remove a contact from quarantine requirements.
164 (111)	For asymptomatic contacts of patients with COVID-19, WHO suggests not using chest imaging for the diagnosis of COVID-19 (Conditional recommendation, based on expert opinion)
255 (120)	Rapid antigen tests perform best when the person is tested in the early stages of infection with SARS-CoV-2 when viral load is generally highest. They also may be informative in diagnostic testing situations in which the person has a known exposure to a con□rmed case of COVID-19.
	Scientific Societies
224 (78)	Based on an assessment by a physician responsible for communicable diseases, a sample for COVID-19testing may be taken also from asymptomatic persons with exposure to COVID-19 and in situations associated with increased transmission risk or where the risk of the disease spreading is high and/orthe consequences of the infections would be serious.
98 (91)	COVID-19 testing is indicated in patients incidentally found to have findings suggestive of COVID-19 on a CT scan
98 (91)	Imaging is not routinely indicated as a screening test for COVID-19 in asymptomatic individuals
91 (90)	In the course of an epidemic, mass serological testing with rapid tests “on request”, especially for detecting IgM class antibodies, can be used to identify asymptomatic infections once other means of reducing the epidemic have been exhausted.
40 (82)	Se sugiere realizar pruebas serológicas IgG/IgM a personas asintomáticas con historia de contacto estrecho con casos sospechosos o confirmados de COVID 19, como mecanismo de gestión de riesgo, al cumplir los 14 días de aislamiento o cuarentena, donde estas se encuentren disponibles. (Débil a favor)
102 (92)	The IDSA panel recommends direct SARS-CoV-2 RNA testing in asymptomatic individuals with no known contact with COVID-19 who are being hospitalized in areas with a high prevalence of COVID-19 in the community (i.e., hotspots) (conditional recommendation, very low certainty of evidence).
102 (92)	The IDSA panel suggests against SARS-CoV-2 RNA testing in asymptomatic individuals with no known contact with COVID-19 who are being hospitalized in areas with a low prevalence of COVID-19 in the community (conditional recommendation, very low certainty of evidence).
102 (92)	The IDSA panel suggests SARS-CoV-2 RNA testing in asymptomatic individuals who are either known or suspected to have been exposed to COVID-19 (conditional recommendation, very low certainty of evidence).
	Government agencies
48 (85)	COVID-19 real-time RT-PCR may be performed for the purposes of: Screening asymptomatic individuals in close contact with confirmed COVID-19 patients
48 (85)	Specimen selection/ Asymptomatic or mild patients: The collection of both nasopharyngeal swabs and oropharyngeal swabs is recommended; these should be placed together in the same viral transport medium (VTM) to increase the sensitivity [14, 19]. However, the currently available VTM-swab systems are often designed for one swab. Therefore, specimen packaging and shipping should be conducted carefully, as there is a risk of leakage during transportation. When collecting only one specimen, a nasopharyngeal swab is recommended first. It may be necessary to collect lower respiratory tract specimens, such as sputum; however, sputum induction is not indicated.

Symptomatic illness: Screening symptomatic cases

ID document	Recommendation
	WHO-CDCs
226 (118)	2. Appropriate scenarios for use of COVID-19 Ag-RDTs include the following: iv) Where there is widespread community transmission, RDTs may be used for early detection and isolation of positive cases in health facilities, COVID-19 testing centres/sites, care homes, prisons, schools, front-line and health-care workers and for contact tracing. Note that the safe management of patients with RDT-negative samples will depend on the RDT performance and the community prevalence of COVID-19 (see Annex). A negative Ag-RDT result cannot completely exclude an active COVID-19 infection, and, therefore, repeat testing or preferably confirmatory testing (NAAT) should be performed whenever possible (Figure 1), particularly in symptomatic patients.
	Scientific Societies
40 (82)	Se recomienda en personas con contacto estrecho noprotegido que presenten síntomas durante los 14 días iniciales de aislamiento, realizar algoritmo diagnóstico (RT PCR o serología IgG/IgM). Si esta es positiva debe ir a 14 días más de aislamiento si presenta síntomas leves o 28 días si presenta síntomas moderados a severos. Si es negativa se descarta caso.(Fuerte a favor)
102 (92)	The IDSA panel recommends a SARS-CoV-2 nucleic acid amplification test (NAAT) in symptomatic individuals in the community suspected of having COVID-19, even when the clinical suspicion for COVID-19 is low (strong recommendation, very low certainty of evidence).
153 (108)	CT should not be performed as a screening test in patients with mild or no symptoms.
159 (110)	Computed tomography should not be used to routinely screen patients for possible COVID-19.
	Government agencies
222 (80)	Screening and triage to screen and isolate all patients with suspected COVID-19 at the firstpoint of contact with the health care system (such as the emergency department oroutpatient department/clinic). Consider COVID-19 as a possible etiology in patientspresenting with acute respiratory illness and place all patients suspected to have COVID-19under Droplet and Contact Precautions, with the addition of Airborne Precautions ifperforming any aerosol-generating medical procedures. Triage patients using standardizedtriage tools and manage initial presentations accordingly.

Symptomatic illness: Diagnosis

ID document	Recommendation
	WHO-CDCs
131 (104)	In the current time laboratories should NOT attempt viral isolation and culture from samples collected from patients suspected to have COVID-19.
131 (104)	Negative RT-PCR results must be interpreted in correlation with clinical findings, history, and other diagnostic procedures.
131 (104)	Positive RT-PCR for COVID-19 indicate infection with SARS-CoV-2. However, it does not rule out co-infection with other viruses.
131 (104)	Repeat testing should be performed if initial testing is negative and there is a high index of suspicion. Patients should be retested using a lower respiratory sample or, if not possible, repeat collection of a nasopharyngeal sample.
131 (104)	Samples to be collected: a. Lower respiratory tract samples: including endotracheal aspirate, bronchoalveolar lavage fluid or sputum. b. Upper respiratory tract samples: i. Nasopharyngeal swab (with or without oropharyngeal swab) in viral transport medium in a single tube. ii. Nasopharyngeal wash/aspirate
131 (104)	To provide diagnostic testing for COVID-19, the laboratory should perform RT-PCR testing using confirmatory test approved by the National Health Laboratory.
149 (106)	SARS-CoV-2 antibody tests are not recommended for diagnosis of current infection with COVID-19.
149 (106)	We recommend, for all suspect cases, collection of upper respiratory tract (URT) specimens (nasopharyngeal and oropharyngeal) for testing by reverse transcription polymerase chain reaction (RT-PCR) and, where clinical suspicion remains and URT specimens are negative, to collect specimens from the lower respiratory tract (LRT) when readily available (expectorated sputum, or endotracheal aspirate/bronchoalveolar lavage in ventilated patient).
156 (109)	Serologic testing can be offered as a method to support diagnosis of acute COVID-19 illness for persons who present late.* For persons who present 9-14 days after illness onset, serologic testing can be offered in addition to recommended direct detection methods such as polymerase chain reaction. This will maximize sensitivity as the sensitivity of nucleic acid detection is decreasing and serologic testing is increasing during this time period.

ID document	Recommendation
156 (109)	Serologic testing should be offered as a method to help establish a diagnosis when patients present with late complications of COVID-19 illness, such as multisystem in□ammatory syndrome in children.
164 (111)	For symptomatic patients with suspected COVID-19, WHO suggests not using chest imaging for the diagnostic workup of COVID-19 when RT-PCR testing is available with timely results (Conditional recommendation, based on low certainty evidence)
164 (111)	For symptomatic patients with suspected COVID-19, WHO suggests using chest imaging for the diagnostic workup of COVID-19 when: (1) RT-PCR testing is not available; (2) RT-PCR testing is available, but results are delayed; and (3) initial RT-PCR testing is negative, but with high clinical of suspicion of COVID-19 (Conditional recommendation, based on low certainty evidence)
226 (118)	1. SARS-CoV-2 Ag-RDTs that meet the minimum performance requirements of ≥80% sensitivity and ≥97% specificity compared to a NAAT reference assay1 can be used to diagnose SARS-CoV-2 infection in a range of settings where NAAT is unavailable or where prolonged turnaround times preclude clinical utility. To optimize performance, testing with Ag-RDTs should be conducted by trained operators in strict accordance with the manufacturer's instructions and within the first 5-7 days following the onset of symptoms.
229 (77)	At this time, WHO does not recommend the use of saliva as the sole specimen type for routine clinical diagnostics. If nonstandard collection methods are intended to be used to diagnose other respiratory pathogens, the detection of these pathogens needs to be part of the validation procedure.
229 (77)	Careful interpretation of weak positive NAAT results is needed, as some of the assays have shown to produce false signals at high Ct values. When test results turn out to be invalid or questionable, the patient should be resampled and retested. If additional samples from the patient are not available, RNA should be re-extracted from the original samples and retested by highly experienced staff. Results can be confirmed by an alternative NAAT test or via virus sequencing if the viral load is sufficiently high.
229 (77)	From the second week after symptom onset and onwards, NAAT can be considered for faecal specimens in cases where URT and LRT are negative and the clinical suspicion of a COVID-19 infection remains [126]. When testing faeces, ensure that the intended extraction method and NAAT has been validated for this type of sample.
229 (77)	If negative NAAT results are obtained from a patient in whom SARS-CoV-2 infection is strongly suspected, a paired serum specimen could be collected. One specimen taken in the acute phase and one in the convalescent phase 2-4 weeks later can be used to look for seroconversion or a rise in antibody titres. These two samples can be used retrospectively to determine whether the individual has had COVID-19, especially when the infection could not be detected using NAAT.
229 (77)	One or more negative results do not necessarily rule out the SARS-CoV-2 infection [40, 42, 58, 66-74]. A number of factors could lead to a negative result in an infected individual, including: - poor quality of the specimen, because it contains too little patient material; - the specimen was collected late in the course of the disease, or the specimen was taken from a body compartment that did not contain the virus at that given time; - the specimen was not handled and/or shipped appropriately; - technical reasons inherent in the test, e.g. PCR inhibition or virus mutation.
229 (77)	Serology should not be used as a standalone diagnostic to identify acute cases in clinical care or for contact tracing purposes. Interpretations should be made by an expert and are dependent on several factors including the timing of the disease, clinical morbidity, the epidemiology and prevalence within the setting, the type of test used, the validation method, and the reliability of the results.
229 (77)	Specimens to be collected: The optimal specimen depends on clinical presentation and time since symptom onset. At minimum, respiratory specimens should be collected.
229 (77)	The decision to test should be based on both clinical and epidemiological factors. See the interim guidance clinical management of COVID-19 [99], investigations of clusters [6] and public health surveillance [7].
229 (77)	Virus isolation is not recommended as a routine diagnostic procedure. All procedures involving viral isolation in cell culture require trained staff and BSL-3 facilities. A thorough risk assessment should be carried out when culturing specimens from potential SARS-CoV-2 patients for other respiratory viruses because SARS-CoV-2 has been shown to grow on a variety of cell lines [183].
229 (77)	Virus neutralization assays are considered to be the gold standard test for detecting the presence of functional antibodies. These tests require highly skilled staff and BSL-3 culture facilities and, therefore, are unsuitable for use in routine diagnostic testing.
229 (77)	When performance is acceptable, antigen RDTs could be implemented in a diagnostic algorithm to reduce the number of molecular tests that need to be performed and to support rapid identification and management of COVID-19 cases. How antigen detection would be incorporated into the testing algorithm depends on the sensitivity and specificity of the antigen test and on the prevalence of SARS-CoV-2 infection in the intended testing population. Higher viral loads are associated with improved antigen test performance; therefore test performance is expected to be best around symptom onset and in the initial phase of a SARS-CoV-2 infection.
229 (77)	Wherever possible, suspected active SARS-CoV-2 infections should be tested with NAAT, such as rRT-PCR. NAAT assays should target the SARS-CoV-2 genome. Since there is currently no known circulation of SARS-CoV-1 globally, a sarbecovirus-specific sequence is also a reasonable target. For commercial assays, interpretation of results should be done according to the instructions for use. Optimal diagnostics consist of a NAAT assay with at least two independent targets on the SARS-CoV-2 genome, however, in areas with widespread transmission of SARS-CoV-2, a simple algorithm might be adopted with one single discriminatory target.
255 (120)	Antigen tests are immunoassays that detect the presence of a speci□c viral antigen, which implies current viral infection. Antigen tests are currently authorized to be performed on nasopharyngeal or nasal swab specimens placed directly into

ID document	Recommendation
	the assay's extraction buffer or reagent. The currently authorized antigen tests are not restricted to use on persons of a certain age. See Table 2 for additional information about antigen tests.
	Scientific Societies
36 (79)	As an interim measure, until more widespread COVID-19 testing is available, some medical practices are requesting chest CT to inform decisions on whether to test a patient for COVID-19, admit a patient or provide other treatment. The ACR strongly urges caution in taking this approach. A normal chest CT does not mean a person does not have COVID-19 infection - and an abnormal CT is not specific for COVID-19 diagnosis. A normal CT should not dissuade a patient from being quarantined or provided other clinically indicated treatment when otherwise medically appropriate. Clearly, locally constrained resources may be a factor in such decision making
36 (79)	CT should be used sparingly and reserved for hospitalized, symptomatic patients with specific clinical indications for CT. Appropriate infection control procedures should be followed before scanning subsequent patients.
36 (79)	CT should not be used to screen for or as a first-line test to diagnose COVID-19
36 (79)	Facilities may consider deploying portable radiography units in ambulatory care facilities for use when CXRs are considered medically necessary. The surfaces of these machines can be easily cleaned, avoiding the need to bring patients into radiography rooms.
39 (81)	b. Exámenes para el diagnóstico etiológico (debe cumplir definición de caso): i. Muestras respiratorias obtenidas por hisopado nasofaríngeo y orofaríngeo para búsqueda 2019-nCoV por RPC específica y secuenciación, en cualquier momento de evolución de la enfermedad, especialmente durante la fase inicial; ii. Otras muestras factibles de evaluar caso a caso: LBA, aspirado endotraqueal; iii. En caso de fallecimiento, obtener muestras de tejidos (biopsia o autopsia): incluyendo pulmón. iv. Las muestras de pacientes sospechosos deben ser rotuladas indicando sospecha de 2019 n-CoV
40 (82)	Las pruebas invasivas recomendadas para el diagnóstico de la infección por SARS-CoV-2/COVID-19 serán mini lavado bronquial y aspirado traqueal a ciegas con sistema cerrado.(Fuerte a favor)
40 (82)	Punto de buena práctica: Se sugiere restringir la broncoscopia y solo realizarla cuando los resultados no son concluyentes, se sospeche un diagnóstico alternativo o se espera que los resultados permiten modificar la conducta.
40 (82)	Se recomienda antes del día 10 de síntomas realizar pruebas moleculares (RT-PCR), para el diagnóstico de infección por SARS-CoV-2 (Fuerte a favor)
40 (82)	Se recomienda después del día 10 de síntomas realizar pruebas moleculares (RT-PCR), si estas son negativas realizar al día 14 pruebas de detección de IgM/IgG (ELISA o Inmunocromatográficas). En este escenario sería un caso probable de infección por SARS-CoV-2 (Fuerte a favor)
40 (82)	Se recomienda la realización de RT- PCR de SARS-CoV-2/COVID-19 para hacer diagnóstico de COVID-19 a personas sintomáticas. (Fuerte a favor)
40 (82)	Se recomienda la realización de RT-PCR de SARS-CoV-2/COVID-19 a muestras de aspirado traqueal o aspirado nasofaríngeo u orofaríngeo, o hisopado nasofaríngeo u orofaríngeo.(Fuerte a favor)
40 (82)	Se recomienda la realización de una segunda prueba de RT-PCR a las 48 horas (según disponibilidad), en pacientes con la primera prueba negativa con alta sospecha de neumonía por SARS Cov2 / COVID-19 (Fuerte a favor)
40 (82)	Se recomienda no usar el uso del esputo inducido por el alto riesgo de formación de aerosoles (Fuerte en contra)
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Imaging: · not necessary
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: Swabs for bacterial infections in upper respiratory tract (avoid aerosol-generating procedures - risky for the personnel)
91 (90)	Real-time PCR (RT PCR) is the basis for the diagnosis of active SARS-CoV-2 infection. Persons meeting the criteria of the COVID-19 suspected case (see 4.1) should be tested for the detection of virus genetic material.
98 (91)	Imaging is not indicated for patients with mild features of COVID-19 unless they are at risk for disease progression (Scenario 1)
102 (92)	The IDSA panel suggests a strategy of initially obtaining an upper respiratory tract sample (e.g., nasopharyngeal swab) rather than a lower respiratory sample for SARS-CoV-2 RNA testing in hospitalized patients with suspected COVID-19 lower respiratory tract infection. If the initial upper respiratory sample result is negative, and the suspicion for disease remains high, the IDSA panel suggests collecting a lower respiratory tract sample (e.g., sputum, bronchoalveolar lavage fluid, tracheal aspirate) rather than collecting another upper respiratory sample (conditional recommendations, very low certainty of evidence).
102 (92)	The IDSA panel suggests collecting nasopharyngeal, or mid-turbinate, or nasal swabs rather than oropharyngeal swabs or saliva alone for SARS-CoV-2 RNA testing in symptomatic individuals with upper respiratory tract infection (URTI) or influenza like illness (ILI) suspected of having COVID-19 (conditional recommendation, very low certainty of evidence).
102 (92)	The IDSA panel suggests performing a single viral RNA test and not repeating testing in symptomatic individuals with a low clinical suspicion of COVID-19 (conditional recommendation, low certainty of evidence).
102 (92)	The IDSA panel suggests repeating viral RNA testing when the initial test is negative (versus performing a single test) in symptomatic individuals with an intermediate or high clinical suspicion of COVID-19 (conditional recommendation, low certainty of evidence).

ID document	Recommendation
102 (92)	The IDSA panel suggests that nasal and mid-turbinate (MT) swab specimens may be collected for SARS-CoV-2 RNA testing by either patients or healthcare providers, in symptomatic individuals with upper respiratory tract infection (URTI) or influenza like illness (ILI) suspected of having COVID-19 (conditional recommendation, low certainty of evidence).
103 (93)	Broncoscopia: La toma de muestras del tracto respiratorio superior (nasofaríngea y orofaríngea) mediante el frotis con hisopo es el método diagnóstico primario y de elección en la infección por COVID-19.
103 (93)	Broncoscopia: Si finalmente se precisa broncoscopia para la toma de muestras de COVID-19, se tomarán al menos 2-3 mL de un BAS o un mini-BAL con o sin catéter telescopado, mejor que un BAL reglado, debido al alto riesgo para el personal sanitario.
103 (93)	Broncoscopia: Solamente si resultan negativas 2 muestras y persiste la sospecha clínica se tomarán las muestras del tracto respiratorio inferior para COVID-19 por RT-PCR y tinciones/cultivos bacterianos (esputo expectorado, aspirado endotraqueal [BAS] o lavado broncoalveolar [BAL] no reglado)7.
103 (93)	Broncoscopia: No se recomienda el esputo inducido por el mayor riesgo de transmisión de aerosoles.
104 (94)	2. In patients suspected of having COVID-19 infection, we suggest that a nasopharyngeal specimen be obtained first. In the setting of severe or progressive disease requiring intubation, if additional specimen is needed to establish a diagnosis of COVID-19 or other diagnosis that will change clinical management, lower respiratory specimens from endotracheal aspirate or bronchoscopy with Q11 bronchoalveolar lavage (BAL) can be performed (Ungraded Consensus-Based Statement).
113 (95)	Chest CT is the most valuable imaging tool for the clinical diagnosis of early stage COVID-19 pneumonia when patients' symptoms are aspecific, especially in Wuhan with insufficient PCR tests in the early pandemic period
113 (95)	Chest X-ray examination is convenient and fast, and has been proven effective in diagnosing other coronaviruses, such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) [23-26]. However, the sensitivity and specificity for mild type patients are relatively low [27]. It is not recommended for patients with early COVID-19 stage.
113 (95)	It is recommended to use volume CT with a maximum acquisition slice thickness of 5 mm (≥16 slice multi-detector CT) and a reconstruction slice thickness of 1.0 to 1.5 mm[30]. Multi-planar reformats (transverse, sagittal, and coronal planes) are beneficial for the early detection of lesions in patients with negative nucleic acid tests[9].
114 (96)	If bronchoscopy is performed for diagnostic reason, tracheobronchial lavage using a few milliliters or bronchoalveolar lavage (BAL) only is recommended. No other diagnostic procedures such as transbronchial biopsy or needle aspiration should be performed in the same procedure.
114 (96)	The indication for bronchoscopy in the case of confirmed or suspected COVID-19 disease should be made very strict and should only be considered if: Diagnostic reason: the nasopharyngeal smear is negative two times and clinically there is still diagnostic uncertainty of COVID-19 infection.
123 (100)	Broncofibroscopía: este procedimiento genera una gran cantidad de aerosoles por lo que se debe restringir su realización, en caso de necesidad debe realizarse sólo en pacientes con intubación endotraqueal. Sólo podría evaluarse su realización en las siguientes situaciones: · Cuando pruebas menos invasivas son inconclusas para COVID-19 en pacientes con necesidad de confirmación diagnóstica.
123 (100)	De tener un Caso Sospechoso: · Realizar toma de muestra para diagnóstico de COVID-19 mediante: Hisopado nasofaríngeo para detección de SARS-CoV-2 mediante rt-PCR u otra prueba aceptada
123 (100)	Para la hospitalización se debe realizar lo siguiente: Obtener Tomografía de Tórax basal en todos los casos; Radiografía de Tórax basal; Pruebas de Laboratorio basales: o Gases arteriales: Para valoración objetiva del estado oxigenatorio y ventilatorio. o Hemograma: puede encontrarse leucopenia, linfopenia y trombocitopenia. o Glucosa. o Urea. o Creatinina. o Proteína C reactiva. o Perfil hepático: TGO, TGP, GGTP, FA, Bilirrubinas totales y fraccionadas. o Proteínas totales y fraccionadas. o Deshidrogenasa Láctica. o Dímero D. o Ferritina sérica. o Procalcitonina. o Electrolitos séricos. o Electrocardiograma (ECG).
123 (100)	Ultrasonografía torácica: puede realizarse al ingreso hospitalario y como medio de monitoreo no invasivo de las lesiones pulmonares (al menos cada 48 horas).
130 (103)	A positive RT-PCR test for SARS-CoV-2 confirms the diagnosis of COVID-19 although falsepositive and false negative tests are possible. If initial testing is negative but the suspicion for COVID-19 is high, it is recommended to resample and analyze specimen from multiple respiratory tract sites as above.
130 (103)	Bronchoscopy should have a limited role for the diagnosis of COVID-19 and is preferably performed when another diagnosis is being considered (eg, suspected super-infection like Pneumocystis jirovecii or invasive aspergillosis).
130 (103)	Chest CT should not be performed routinely and considered only if there is expected change in clinical management also keeping in consideration the risks of infection spread during patients' transport to radiology department.
130 (103)	Diagnosis of COVID-19: After initial evaluation of patients who meet the criteria for suspect cases, the following diagnostic interventions should be considered: Complete Blood Count (CBC), Serum Biochemistry & Inflammatory Markers (lactate dehydrogenase (LDH) and ferritin levels, aminotransferase levels, renal functions, CRP and procalcitonin levels, D-dimer, prothrombin time)
130 (103)	Diagnosis of COVID-19: After initial evaluation of patients who meet the criteria for suspect cases, the following diagnostic interventions should be considered: SARS-CoV-2 RNA detection by reverse-transcription polymerase chain reaction (RT-PCR): Can be done in any of the following respiratory specimens: a) Nasopharyngeal swab specimen (preferable as viral RNA levels may be higher in nasal compared with oral specimens). b) Oropharyngeal swab can be

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	collected but is not essential; if collected, it should be placed in the same container as the nasopharyngeal specimen. c) Sputum collected only from patients with productive cough. d) Tracheal aspirate/bronchial washings/bronchoalveolar lavage: Can be evaluated from patients who are admitted in critical care and require intubation. Specimen can also be utilized to diagnose concomitant infection by other viruses/bacteria/fungi.
153 (108)	Chest radiography is not sensitive for the detection of ground glass opacities, which are the main imaging features of COVID-19 pneumonia. It should not be used as the first-line technique and should be restricted to the follow-up of patients admitted to intensive care units, who are too fragile to be sent for CT
153 (108)	In the case of an initially negative RT-PCR and CT changes highly suggestive of COVID-19, the RT-PCR should be repeated to determine if it had been a false-negative result.
159 (110)	A chest X-ray is not recommended in individuals presenting with mild symptoms because imaging is often normal2 and this may be falsely reassuring.
159 (110)	In a patient with concerning symptoms, when the RTPCR assay is not yet available, a chest radiograph is useful. Although the imaging features of COVID-19 pneumonia are nonspecific, when present, they increase the pretest probability of the patient having the disease. Findings suggestive of an alternative diagnosis (pneumothorax, large pleural effusions, lung mass, etc) that requires treatment are also extremely useful.
159 (110)	Lung ultrasound should not be used to diagnose or exclude COVID-19 pneumonia.
171 (123)	Bronchoscopy should only be performed in exceptional cases and only for differential diagnostic purposes
171 (123)	Chest X-ray should be performed in all patients admitted with suspicion of COVID-19.
171 (123)	Hospitalized patients should be monitored, from arrival at the hospital with Early Warning Score (vitals including blood pressure, pulse rate, respiratory rate, oxygen saturation, temperature and responsiveness score) and a thorough physical examination must be performed.
171 (123)	The diagnosis of COVID-19 with new coronavirus SARS-CoV-2 is obtained by a Reverse Transcription Polymerase Chain Reaction (RT-PCR) analysis of a pharyngeal swab.
211 (119)	The IDSA panel makes no recommendation either for or against using IgM antibodies to detect evidence of past SARS-CoV-2 infection (conditional recommendation, very low certainty of evidence).
211 (119)	The IDSA panel makes no recommendation for or against using capillary versus venous blood for serologic testing to detect SARS-CoV-2 antibodies (knowledge gap).
211 (119)	The IDSA panel suggests against using IgA antibodies to detect evidence of past SARS-CoV-2 infection (conditional recommendation, very low certainty of evidence).
211 (119)	The IDSA panel suggests against using IgM or IgG antibody combination tests to detect evidence of past SARS-CoV-2 infection (conditional recommendation, very low certainty of evidence).
211 (119)	The IDSA panel suggests against using serologic testing to diagnose SARS-CoV-2 infection during the first two weeks (14 days) following symptom onset (conditional recommendation, very low certainty of evidence).
211 (119)	The IDSA panel suggests using IgG antibody to provide evidence of COVID-19 infection in symptomatic patients with a high clinical suspicion and repeatedly negative NAAT testing (weak recommendation, very low certainty of evidence).
211 (119)	When SARS-CoV-2 infection requires laboratory confirmation for clinical or epidemiological purposes, the IDSA panel suggests testing for SARS-CoV-2 IgG or total antibody three to four weeks after symptom onset to detect evidence of past SARS-CoV-2 infection (conditional recommendation, very low certainty of evidence).
224 (78)	Acute COVID-19 infection is diagnosed with a PCR test of a nasopharyngeal sample. Antibody tests allowinvestigation of patient's immunity. Both PCR tests and antibody tests are associated with sources of errorthat always must be taken into account when interpreting the results.
224 (78)	An acute COVID-19 infection is diagnosed with a PCR test of a nasopharyngeal sample. The sensitivity of the PCR test is not particularly good. Many nasopharyngeal samples will yield falsenegative results. Sources of error include, among others, deficient specimen collection techniqueand the virus not occurring in the area where the sample is taken from.
224 (78)	COVID-19 testing (criteria applied in Finland, by the National Institute for Health and Welfare): A sample for COVID-19 testing is taken from all persons with symptoms fitting coronavirus infection or in whom, based on an assessment by a health care professional, there is a reason to suspectcoronavirus infection. *A patient seeking emergency care in a hospital, or having been referred to a hospital, with a respiratory infection or other symptoms that fit coronavirus infection.* Primary care patients: all patients with an acute respiratory infection or other symptoms fittingcorona virus infection. * Based on infection tracing, the close contacts of individuals with coronavirus infection. Consult thephysician responsible for infectious disease control in the area and other relevant infectious diseasespecialists, as required.
224 (78)	Initially, a specimen to confirm coronavirus infection and, based on clinical consideration, other specimensrequired in the differential diagnosis to detect also other possible infections should be collected andrelevant examinations performed (sputum, blood, acute and convalescent serums, urine, chest x-ray).
224 (78)	Tests to detect antibodies against coronavirus in the blood cannot be used to diagnose an acuteinfection, due to the delay between the onset of the infection and the formation of antibodies. Instead,they aim at providing an answer to the question whether a person has had a COVID-19 infection.Problems include false negative results (sensitivity) when the level of antibodies in a patient is low, aswell as false positive results (specificity), when the prevalence of the infection in a population is low.
234 (116)	A base do diagnóstico para novos vírus é o teste da reação em cadeia da transcriptase reversa-polimerase (RT-PCR) usado para identificar material genético em muitas amostras clínicas.

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247 (114)	Actualmente el método de elección para la detección del SARS-CoV-2 continúa siendo la reacción en cadena de polimerasa con transcriptasa reversa en tiempo real (rtRT-PCR, por sus siglas en inglés).
247 (114)	Deben solicitarse las siguientes pruebas diagnósticas en todos los pacientes con enfermedad grave: • Gasometría arterial (indicada para detectar hipercapnia o acidosis). • Biometría hemática completa. • Perfil metabólico completo. • Pruebas de coagulación. • Marcadores de inflamación (procalcitonina sérica y proteína C reactiva). • Troponina sérica. • Lactato deshidrogenasa en suero. • Creatina-cinasa en suero.
247 (114)	Toma de muestras. Es importante que el médico conozca que el tipo de muestreo más utilizado para establecer el diagnóstico inicial de infección por SARS-CoV-2 por medio de RT-PCR ha sido el hisopado nasofaríngeo o, bien, hisopado orofaríngeo o nasal anterior, cuando no es posible obtener el nasofaríngeo. Se recomienda tomar muestra tanto nasofaríngea como orofaríngea y colocar ambas muestras en un solo tubo que contenga medio de transporte viral universal, medio de transporte Amies o solución salina estéril.
260 (121)	Bronchoscopy could be employed in certain situations, including highly suspected SARS-CoV-2 infection with the repeated negative results of upper respiratory tract specimens, clinical outcomes being dissatisfied, or other pulmonary diseases even emergencies affecting the treatment decision of COVID-19 being suspected.
260 (121)	Bronchoscopy is not a routine sampling method for testing SARS-CoV-2, and less invasive diagnosis specimens are recommended to be tested first in suspected COVID-19 patients.
	Governmental agencies
44 (84)	Dessa forma, recomenda-se realizar investigações iniciais e o exame físico para verificar as condições fisiológicas do paciente, de forma a dar o suporte adequado (19,83–85):● avaliação do padrão respiratório: tosse e/ou dispneia; ● aferição de temperatura axilar, frequência cardíaca, frequência respiratória e oximetria de pulso; ● ausculta pulmonar: presença de estertores inspiratórios ou expiratórios, respiração brônquica ou dificuldade respiratória em pacientes com pneumonia; e ● avaliação de sinais de cianose e hipóxia. O paciente com a forma grave da doença requer internação em unidades hospitalares (e UTIs se necessário) com terapia e monitoramento precoces de suporte.
44 (84)	Exame Físico: Os pacientes podem apresentar febre (com ou sem calafrio), tosse e/ou dificuldade para respirar. A auscultação pulmonar pode revelar estertores inspiratórios, estertores e/ou respiração brônquica em pacientes com pneumonia ou dificuldade respiratória. Pacientes com dificuldade respiratória podem apresentar taquicardia, taquipneia ou cianose acompanhada de hipóxia (17,62–64). Dessa forma, recomenda-se que o exame físico seja composto de: • Avaliação do padrão respiratório: tosse e/ou dispneia; • aferição de temperatura axilar; frequência cardíaca, frequência respiratória e oximetria de pulso; • auscultação pulmonar: presença de estertores inspiratórios, estertores e/ou respiração brônquica em pacientes com pneumonia ou dificuldade respiratória, e • avaliação de sinais de cianose e hipóxia.
44 (84)	Os testes imunológicos para identificação de anticorpos IgM e IgG contra o SARS-CoV-2, aplicados como testes rápidos ou processados em laboratório, não são recomendados para a confirmação diagnóstica de pacientes com sintomas de início recente (há menos de sete dias), mas apenas para finalidade de vigilância por meio de estudos de inquéritos populacionais e também como auxílio diagnóstico (18).
44 (84)	Testes diagnósticos: O teste recomendado para o diagnóstico laboratorial de COVID-19 é o teste PCR (Polymerase Chain Reaction), que amplifica sequências de RNA do vírus, possibilitando sua identificação
48 (85)	Among the reagents with EUA, some kits with three target genes use one target gene for the screening test and the other two target genes for the confirmatory test. For these kits, the confirmatory test result is deemed positive only if both confirmatory genes are detected. If one gene is not detected, the result cannot be interpreted as positive.
48 (85)	As of March 11, 2020, KSLM and the KCDC recommend a positive result determination only when all the genes are detected, even for tests using different genes from those mentioned in the above two guidelines. This recommendation is based on the opinions of numerous experts who observed nonspecific and weak amplification in the clinical specimens of patients who received final results of COVID-19 as negative.
48 (85)	As the current knowledge on COVID-19 is limited, it is difficult to rule out infection based on a single negative test result, especially when the test is performed using an upper respiratory tract specimen. Even if the upper respiratory tract specimen tests negative, the collection and testing of lower respiratory tract specimens are strongly recommended, especially in cases of severe or progressive disease
48 (85)	COVID-19 real-time RT-PCR may be performed for the purposes of: Confirming cases of suspected COVID-19
48 (85)	COVID-19 real-time RT-PCR may be performed for the purposes of: Differential diagnosis of cases with unknown respiratory syndromes
48 (85)	Criteria for final test interpretation: All kits currently available in Korea can detect two or more genes. According to the interpretation criteria of some manufacturers, detection of only one of multiple genes is interpreted as COVID-19 positive. However, based on results from actual clinical specimens, KSLM recommends a determination of a positive result only when all genes are detected. When only one gene is detected, retesting or consulting the reference laboratory is recommended.
48 (85)	If a patient with an epidemiological correlation and COVID-19 symptoms repeatedly tests negative, the tested specimen should be submitted to the KCDC for further testing.
48 (85)	If the upper respiratory tract specimens test negative, lower respiratory tract specimens should be collected and tested.
48 (85)	Patient specimens, a positive control, and a negative control should be examined together, and internal controls should be examined and verified together in all reactions.

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48 (85)	Repetitive testing may be necessary to confirm COVID-19 in suspected cases or PUIs. As the clinical significance of co-infection caused by the causative agent of COVID-19 and other infectious diseases remains unclear, the collection of a sufficient quantity of clinical specimens with proper methods is recommended.
48 (85)	Specimen selection/ Patients referred for additional testing by a physician (e.g., patients who tested negative using nasopharyngeal or oropharyngeal swabs, but show an indication of pneumonia): Lower respiratory tract specimens, such as sputum, bronchoalveolar lavage, and tracheal aspirates, should be collected.
48 (85)	Specimen selection/Patients with severe symptoms, patients with a productive cough, and intubated patients: Lower respiratory tract specimens, such as sputum, bronchoalveolar lavage, and tracheal aspirates, should be collected. If possible, the collection of nasopharyngeal and oropharyngeal swabs can be considered.
48 (85)	The collection of specimens for diagnosis is recommended within seven days of symptom onset.
84 (88)	Novel coronavirus nucleic acid can be detected in nasopharyngeal swabs, sputum, lower respiratory tract secretions, blood, feces and other specimens using RT-PCR and/or NGS methods. It is more accurate if specimens are obtained from lower respiratory tract (sputum or air tract extraction). The specimens should be submitted for testing as soon as possible after collection
88 (89)	En el caso de que se determine que se cumplen los criterios de realización de test diagnóstico para la detección de infección por SARS-CoV-2 es necesaria la toma de las siguientes muestras: - Tracto respiratorio superior: exudado nasofaríngeo/orofaríngeo. o - Tracto respiratorio inferior: esputo (si es posible) o aspirado endotraqueal, lavado broncoalveolar, o broncoaspirado, especialmente en pacientes con enfermedad respiratoria grave.
88 (89)	La indicación de TC torácico debe individualizarse. La realización de TC tórax de baja dosis para la detección de infección por SARS-CoV-2 puede valorarse, especialmente en las áreas geográficas más afectadas por el COVID-19, y para pacientes con radiografía de tórax normal con elevada sospechosa clínica.
88 (89)	Si al paciente es preciso realizarle una radiografía de tórax (con proyecciones postero-anterior y lateral) se utilizará un aparato portátil para evitar traslados. El aparato deberá estar protegido por plásticos desechables y lavado posteriormente con una solución de hipoclorito de sodio al 1% o del desinfectante aprobado para superficies en su centro.
88 (89)	Si las pruebas iniciales son negativas en un paciente con una alta sospecha clínica y epidemiológica (especialmente cuando solo se han recogido muestras de tracto respiratorio superior o la muestra recogida inicialmente no estaba tomada adecuadamente) se repetirá el diagnóstico con nuevas muestras del tracto respiratorio.
88 (89)	Tras la confirmación del caso se enviarán también las siguientes muestras: Dos muestras de suero: la serología es útil para la confirmación de la respuesta a la infección por coronavirus. La primera muestra debe recogerse durante la primera semana del cuadro clínico (fase aguda) y la segunda muestra entre 14-30 días después.
119 (97)	1, It is recommended to choose imaging methods for known / suspected COVID-19 infection differentially, in accordance with the available equipment and human resources of the medical organization, as well as the structure and number of patients examined.
119 (97)	4. Laboratory diagnostics general (additional): General (clinical) blood test with determination of the level of erythrocytes, hemoglobin, hematocrit, leukocytes, platelets, leukocyte formula. Biochemical blood test (urea, creatinine, electrolytes, glucose, alanine aminotransferase, aspartate aminotransferase, bilirubin, albumin, lactate, lactate dehydrogenase, troponin, ferritin). Hormonal research: procalcitonin, brain sodium uretic peptide - NT-proBNP / BNP. Coagulogram in volume: activated partial thromboplastin time (APTT), prothrombin time, prothrombin ratio, fibrinogen, D-dimer (by quantitative method).
119 (97)	All signs detected by radiation studies, including CT symptoms, are not specific for any type of infection and do not allow establishing an etiological diagnosis. Outside of a clinical (epidemic) situation, they do not allow the identified changes to be attributed to COVID-19 pneumonia and to differentiate them with other pneumonias and non-inflammatory diseases. Radiation data does not replace SARS-CoV-2 RNA test results. The absence of changes in CT does not exclude the presence of COVID-19 and the possibility of developing pneumonia after the study.
119 (97)	In case of signs of lower respiratory tract disease, if a negative result is obtained in smears from the mucous membrane of the nasopharynx and oropharynx, sputum (if any) or bronchial washings obtained during fibrobronchoscopy (bronchoalveolar lavage), (endo) tracheal, nasopharyngeal aspirate are additionally examined. In intubated patients (in patients on mechanical ventilation), in order to detect SARS-CoV-2, it is recommended to obtain and study an aspirate of the contents of the trachea
119 (97)	It is not recommended to use methods of radiation diagnostics in the absence of ARI symptoms in patients with positive results for SARS-CoV-2 RNA, as well as in the presence of epidemiological data indicating the possibility of infection.
119 (97)	Laboratory examination for SARS-CoV-2 RNA is recommended for all persons with signs of ARI. As a preliminary screening examination, it is recommended to use the test for the determination of the SARS-CoV-2 antigen in nasal / oropharyngeal swabs by immunochromatography.
119 (97)	The use of radiation methods in patients with ARVI symptoms of mild severity and a stable patient's condition is possible only for specific clinical indications, including in the presence of risk factors, subject to sufficient technical and organizational capabilities. The method of choice in this case is CT of the lungs according to the standard protocol without intravenous contrast enhancement or RG with limited availability of CT. The use of ultrasound in these cases is inappropriate.
120 (98)	Real time or Conventional RT-PCR test is recommended for diagnosis.

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120 (98)	SARS-CoV-2 antibody tests are not recommended for diagnosis of current infection with COVID-19.
125 (101)	Diagnósticos consignados en COVID-19: a) Diagnóstico clínico: El cuadro clínico más frecuente está caracterizado por un síndrome gripal, que inicia con fiebre leve, con evolución progresiva de la temperatura, y persistencia entre 3 a 4 días, con un posterior descenso, como ha sido observado en casos de influenza9. El diagnóstico depende de la evaluación clínica-epidemiológica y del examen físico. Se recomienda que en todos los casos con síndrome gripal se pregunte por el antecedente de viaje en el interior y exterior del país, así como contacto cercano con personas que haya viajado, dentro de los 14 días antes del inicio de síntomas. Esta información debe escribirse en la historia clínica para una eventual investigación epidemiológica.
125 (101)	Diagnósticos consignados en COVID-19: b) Diagnóstico laboratorial: Se realiza a través de la identificación del virus SARS-CoV-2 por técnica de Reacción en Cadena de la Polimerasa en tiempo real (RT-PCR), mediante el secuenciamiento parcial o total del genoma viral.
129 (102)	1. For diagnostics on SARS-CoV-2 (www.rki.de/covid-19-diagnostik): - Detect the pathogen by means of PCR from a deep nasopharyngeal / oropharyngeal smear, (possibly induced) sputum and / or tracheobronchial secretion, if necessary, repeat if the result is negative and persistent suspicion (see above), if necessary, additional stool diagnostics
129 (102)	3. Further diagnostics: - Regular blood sampling with differential blood count, clinical chemistry depending on the course of the disease with control of CRP, LDH, kidney and liver function parameters, electrolytes, and, depending on the course of the disease, procalcitonin, troponin, D-Dimer, IL-6
129 (102)	The serological test options do not play a role in the initial diagnosis, but can be useful as additional information in the later course of the disease and should be further investigated in terms of their significance, e.g. also for epidemiological questions.
140 (105)	Nucleic acid testing is the preferred method for diagnosing COVID-19. In our country viral nucleic acid is detected by RT-PCR.
140 (105)	Supportive investigations: CBC, CRP and procalcitonin, Blood culture, Liver and Renal function test, Arterial blood gas analysis. Serum Ferritin, S.LDH, D-dimer (D-dimer levels and Ferritin are significantly elevated in severe cases, which is a potential risk factor for poor prognosis). Treating clinician may order other relevant investigations if required.
140 (105)	Testing for COVID-19: Whom to test: All Suspected cases (according to the case definition). Detection of virus ➢ Specimen- Specimen type include: Upper airway specimens: Oropharyngeal swabs, nasal swabs, nasopharyngeal secretions, • Lower airway specimens: sputum, bronchoalveolar lavage fluid, airway secretions
173 (112)	Routine confirmation of COVID-19 cases is based on real-time reverse transcription polymerase chain reaction (rRT-PCR) with a NAAT test to detect specific sequences of virus RNA and, if necessary, verify by nucleic acid sequence analysis.
173 (112)	serological tests cannot be used for diagnosis in the early period of the disease
173 (112)	Thorax computed tomography (CT) is a sensitive diagnostic approach in the early period in PCV test negative COVID-19 patients. Thorax CT is recommended to support the faster triage of these patients.
173 (112)	When a negative result is obtained from a patient with a high suspicion of COVID-19, additional samples containing lower respiratory tract samples should be obtained and studied, if possible, especially if only the upper respiratory tract samples have been collected.
215 (99)	The Panel Recommends against the use of serologic testing as the sole basis for diagnosis of acute SARS-CoV-2 infection (AIII).
215 (99)	The Panel recommends that a molecular or antigen test for SARS-CoV-2 should be used to diagnose acute SARS-CoV-2 infection (AIII).
222 (80)	Collect specimens for COVID-19 testing as recommended by your local or provincial public health laboratory.
222 (80)	SARS-CoV-2 antibody tests are not recommended for diagnosis of current SARS-CoV-2infection, but they may be useful in post-infectious syndromes.
231 (104)	A single positive PCR test is sufficient proof of COVID-19 infection. Repeat “confirmatory” PCR testing on asymptomatic patients who test positive is not indicated, as PCR-based tests have excellent specificity, and asymptomatic and pre-symptomatic COVID-19 patients are now well described26.
231 (104)	Clinical specimens should be collected as soon as possible after onset of symptoms, ideally within 7 days. If a patient presents ≥7 days from symptom onset and is still symptomatic, respiratory samples should be collected.
231 (104)	Currently, we do not recommend using antibody-based (serological) tests for the diagnosis of acute COVID-19.
231 (104)	From the moment that COVID-19 is considered as a diagnostic possibility, persons under investigation should be isolated, and infection control measures should be implemented. Specimens should be collected and transported urgently (same day as collection) for SARS-CoV-2 testing.
231 (104)	If a high clinical suspicion for COVID-19 persists despite an initial negative test, repeat testing should be considered in consultation with an infectious diseases expert, particularly in hospitalised patients for whom management might be significantly altered. However, it is equally important to maintain a broad differential diagnosis and to always consider alternative diagnoses26.
231 (104)	Lower respiratory tract samples are the preferred specimen type because the lower respiratory tract is the primary site of infection and they are likely to contain the highest viral loads (based on experience with MERS-CoV) and therefore have a better yield. For severe cases, collection of both lower and upper airway specimens for SARS-CoV-2 testing is recommended.

ID document	Recommendation
231 (104)	Routine confirmation of cases of COVID-19 is based on amplification and detection of unique SARS-CoV-2 viral nucleic acid sequences by real-time reverse-transcription polymerase chain reaction (rRT-PCR). Testing for SARS-CoV-2 is performed using any one of several in-house and commercial PCR assays to test for the presence of SARS-CoV-2 RNA30,31. Testing for SARS-CoV-2 must be performed in appropriately equipped laboratories by staff trained in the relevant technical and safety procedures. Initial processing of specimens (before inactivation) should be done in a biological safety cabinet. Molecular testing should be conducted in a BSL-2 laboratory.
231 (104)	Viral culture and isolation should only be performed by properly trained and competent personnel in a BSL-3 laboratory. Appropriate PPE must be worn by all laboratory personnel handling SARS-CoV-2 specimens.
232 (83)	Currently, we do not recommend using antibody-based (serological) tests for the diagnosis of acute COVID-19. These tests are insufficiently sensitive early in the disease course (before sufficient antibodies have been produced).
232 (83)	For patients with severe disease who require admission, appropriate tests may include: § HIV test (if status unknown); § Full blood count + differential; § Blood culture; § Nasopharyngeal and/or oropharyngeal swabs for detection of viral and atypical pathogens; § Chest radiography; § Sputum for MCS and Mycobacterium tuberculosis detection (GeneXpert MTB/RIF Ultra); § Urine for lipoarabinomannan (LAM) if HIV positive; § Beta-D-glucan and expectorated sputum/tracheal aspirate for PJP if HIV positive and clinically suspicious of PJP (don't induce sputum though)
232 (83)	If a high clinical suspicion for COVID-19 persists despite an initial negative test, repeat testing should be considered in consultation with an infectious diseases expert, particularly in hospitalised patients for whom management might be significantly altered.
232 (83)	Testing for acute COVID-19 infection should be by means of polymerase chain reaction (PCR) assays. Samples to be sent are: · Upper respiratory tract samples – A sample from the upper respiratory tract should be sent from all patients. A single site is sufficient. Currently, a nasopharyngeal swab is the preferred specimen, but in patients where this is not possible (e.g. recent nasal surgery, or severe coagulopathy), an oropharyngeal, nasal mid-turbinate, or anterior nares swab can be collected instead. Lower respiratory tract samples – send when available. Lower respiratory tract samples may have a higher sensitivity than upper respiratory tract samples.25, 30 Sputum, tracheal aspirates, or bronchoalveolar lavage fluid are all acceptable samples to send. Sputum induction should not be performed however.
243 (115)	Virus detection can be done with (real-time) reverse transcription (RT) PCR for viral RNA detection . Of course, for optimal detection of the virus, independent of the technique, the sample collection - nasopharynx (nose) what and oropharynx (throat) what - must be done correctly. SARS-CoV-2 is more detectable in nasopharyngeal smears than in oropharyngeal smears in patients with COVID-19. It remains important to collect both, as there are patients who are only positive at one of the two sites. Therefore, for SARS-CoV-2 diagnostics, always submit a nasopharyngeal swab, in addition to an oropharyngeal swab and, if possible, a sputum sample or bronchoalveolar lavage fluid (Yang 2020).

Symptomatic illness: competitive diagnosis

ID document	Recommendation
	WHO-CDCs
149 (106)	In addition, testing for other respiratory viruses and bacteria should be considered when clinically indicated.
149 (106)	Depending on local epidemiology and clinical symptoms, test for other potential etiologies (e.g. malaria, dengue fever, typhoid fever) as appropriate.
149 (106)	For COVID-19 patients with severe or critical disease, also collect blood cultures, ideally prior to initiation of antimicrobial therapy (3).
229 (77)	If required for case management, patients should also be tested for other pathogens, as recommended in local clinical management guidelines, but this should never delay testing for SARS-CoV-2 [99, 100].
	Scientific Societies
39 (81)	a. Exámenes generales a casos sospechosos:i. Hemograma y VHS y Proteína C reactiva (PCR); ii. Hemocultivos periféricos; iii. Muestra de hisopado o aspirado nasofaríngeo para la detección de virus respiratorios con la finalidad de descartar los principales virus respiratorios circulantes, panel molecular de virus respiratorios si está disponible; iv. Radiografía de tórax en dos proyecciones.; v. Oximetría de pulso, gases arteriales; vi. Serologías para Chlamydia pneumoniae, Mycoplasma pneumoniae (si están disponible); vii. Antígeno urinario para Streptococcus pneumoniae y Legionella pneumophila. (si están disponible)
40 (82)	Punto de buena práctica: Se recomienda la realización de TC de tórax simple en los siguientes escenarios: pacientes con presentación severa de la enfermedad, con sospecha de neumonía por COVID-19 y radiografía de tórax normal o con alteraciones radiológicas inespecíficas a quien se desea descartar un diagnóstico alterno. (Fuerte a favor)
40 (82)	Se recomienda realizar hemocultivos en pacientes con enfermedad grave que presenten SDRA, sepsis o choque séptico.(Fuerte a favor)

ID document	Recommendation
40 (82)	Se recomienda realizar PCR múltiple anidada en todos los pacientes con neumonía grave, SDRA, sepsis o choque séptico.para evaluar diagnóstico diferencial de SARS- CoV-2/COVID-19 e identificar coinfecciones virales o bacterianas (Fuerte a favor)
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Diagnostics:Examination for influenza and/or other pathogens responsible for upper respiratory tract infections
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: In case of persistent fever >38°C, perform blood cultures test
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Diagnostics: · Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Diagnostics: In case of persistent fever >38°C, perform blood cultures test
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Echocardiography indicated in case of suspected acute heart failure due to respiratory failure
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: Examination for influenza and/or other pathogens responsible for upper respiratory tract infections.
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Diagnostics: In case of persistent fever >38°C, perform blood cultures test
103 (93)	Indicaciones de realización de broncoscopia: 1. Cuando hay una sospecha diagnóstica alternativa o a˜nadida que tenga relevancia clínica o terapéutica para el paciente. Esta circunstancia puede ocurrir especialmente en pacientes inmunocomprometidos.
114 (96)	The indication for bronchoscopy in the case of confirmed or suspected COVID-19 disease should be made very strict and should only be considered if: Diagnostic reason: Other diagnoses are considered that would significantly change clinical management.
130 (103)	If a patient with initial stability or with chronic symptoms over few days develop new onset clinical deterioration and chest radiological abnormalities suspected of bacterial superinfection, two sets of blood cultures and sputum Gram stain and culture should be considered.
171 (123)	Chest CT is rarely indicated in the initial phase of the disease unless other pathology, requiring CT, is suspected.
171 (123)	Consider: ● Pharyngeal swab for Influenza A/B and RS virus PCR: ● Pharyngeal swab for Mycoplasma/Chlamydia PCR
247 (114)	De manera breve hay que señalar que en buena medicina hay que considerar solicitar pruebas para el diagnóstico de influenza A y B, cultivo de expectoración cuando sea posible, hemocultivos, procalcitonina, lactato, dímero D, interleucina 6 e, incluso, algunos autores consideran solicitar pruebas para el diagnóstico de tuberculosis
	Government agencies
44 (84)	Culturas de sangue e escarro: Recomenda-se coletar amostras de sangue e escarro para cultura em todos os pacientes para descartar outras causas de infecção do trato respiratório inferior, especialmente em pacientes com histórico epidemiológico atípico.
88 (89)	En caso de neumonía y, por su implicación en el manejo, conviene considerar: - Realización de cultivos de muestras de vías respiratorias que ayuden a descartar otras causas de infección, coinfección o sobreinfección, como PCR para virus respiratorios comunes (incluida la gripe) o cultivos bacterianos y/o fúngicos.
119 (97)	To carry out differential diagnosis in all patients, studies are carried out with the use of IASC for causative agents of respiratory infections: influenza viruses type A and B, respiratory syncytial virus, parainfluenza viruses, rhinoviruses, adenoviruses, human metapneumoviruses, MERS-CoV. It is recommended to conduct microbiological diagnostics (culture) and / or PCR diagnostics for Streptococcus pneumoniae, Haemophilus influenzae type B, Legionella pneumophila, as well as other pathogens of bacterial respiratory infections of the lower respiratory tract
120 (98)	Dual infections with other respiratory infections (viral, bacterial and fungal) have been found in COVID-19 patients. Depending on local epidemiology and clinical symptoms, test for other potential etiologies (e.g. Influenza, other respiratory viruses, malaria, dengue fever, typhoid fever) as appropriate.
120 (98)	For COVID-19 patients with severe disease, also collect blood cultures, ideally prior to initiation of antimicrobial therapy
129 (102)	2. For differential diagnostic bacteriological examination:- Collection of several blood cultures (each aerobic + anaerobic) on E + R; - Sputum, BAL, tracheobronchial secretion on E + R; - Urine diagnostics on pneumococci, legionella
222 (80)	Collect blood cultures for bacteria where clinically indicated based on the presentingsyndrome, for example, sepsis or severe pneumonia, ideally before antimicrobial therapy. Donot delay antimicrobial therapy to collect blood cultures. Blood cultures should be done inchildren if clinically indicated.
231 (117)	As the role of co-infections is not yet clearly understood, identification of a conventional respiratory pathogen does not rule out SARS-CoV-2 infection.
231 (117)	Patients with severe illness should also undergo routinely available laboratory tests as clinically indicated according to the clinical guidance above and local management guidelines for community-acquired pneumonia to determine the presence of other potential primary aetiologies of pneumonia (e.g Streptococcus pneumoniae, Haemophilus

ID document	Recommendation
	influenzae, Mycoplasma pneumoniae, Legionella pneumophila, Mycobacterium tuberculosis and respiratory viruses including influenza, and respiratory syncytial virus (RSV)).

Symptomatic illness: Staging/grading severity

ID document	Recommendation
	WHO-CDCs
164(111)	For patients with suspected or confirmed COVID-19, not currently hospitalized and with mild symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to decide on hospital admission versus home discharge (Conditional recommendation, based on expert opinion)
164(111)	For patients with suspected or confirmed COVID-19, not currently hospitalized and with moderate to severe symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to decide on regular ward admission versus intensive care unit (ICU) admission (Conditional recommendation, based on very low certainty evidence)
	Scientific Societies
40 (82)	En pacientes con alteración de signos vitales, de la oxigenación y/o con factores de riesgo, se recomienda la realización de hemograma, Proteína c reactiva, enzimas hepáticas, bilirrubinas, función renal, LDH, CK, troponinas, EKG y dímero D con sospecha de infección o infección confirmada por SARS-CoV-2 para definir criterio de gravedad y definir hospitalización.(Fuerte a favor)
40 (82)	Punto de buena práctica: Se considera que la presencia de opacidades parenquimatosas (vidrio esmerilado / consolidación) de distribución periférica y predominio basal pueden sugerir el diagnóstico de neumonía por COVID-19, en un contexto clínico apropiado.
40 (82)	Se considera que la presencia de anormalidad en el hemograma (Linfocitos < 800, Neutrófilos >10.000, plaquetas < 150.000) linfopenia, neutrofilia o trombocitopenia al ingreso del paciente con sospecha e infección confirmada por SARS-CoV-2 en pacientes con factores de riesgo permite definir hospitalización (Fuerte a favor)
40 (82)	Se considera que la presencia de anormalidad en la función renal al ingreso del paciente con sospecha e infección confirmada por SARS-CoV-2/COVID-19 que tengan factores de riesgo permite definir hospitalización.(Fuerte a favor)
40 (82)	Se recomienda en los pacientes con sospecha clínica de neumonía por SARS-CoV-2/COVID-19 realizar una radiografía portátil de tórax.(Fuerte a favor)
40 (82)	Se recomienda evitar el uso rutinario de procalcitonina para evaluar severidad ni para definir inicio de antibioticoterapia ante la sospecha de coinfección bacteriana (Fuerte en contra)
40 (82)	Se recomienda no solicitar exámenes de apoyo en ausencia de alteración de signos vitales o de la oxigenación y sin factores de riesgo.(Fuerte en contra)
40 (82)	Se recomienda solicitar gases arteriales al ingreso al servicio de hospitalización y en el seguimiento del paciente con infección por SARS-CoV-2 en el contexto de índices de oxigenación y score de severidad (CURB 65, qSOFA, SOFA).(Fuerte a favor)
40 (82)	Se sugiere que un nivel de LDH > 350 ui/L en paciente con sospecha o infección confirmada por SARS-CoV-2 con factores de riesgo permite definir necesidad de hospitalización (Débil a favor)
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging:Lung X-ray is the basis for identification of lung lesions and can be performed with the use of portable devices.
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Imaging: in case of persistent coughing and/or symptoms indicating lung occupation, a routine lung X-ray or lung CT scan is advised.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Computer tomography (without contrast) has a high sensitivity to detect interstitial lesions, valuable together with the assessment of the acid-base balance in predicting deterioration.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Lung X-ray is the basis for identification of lung lesions and can be performed with the use of portable devices.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Imaging:Pulmonary ultrasound can be an easy method for early detection of pneumonia directly at the Admissions Room.
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Computer tomography (without contrast) has a high sensitivity in detecting interstitial lesions and evaluating their dynamics. It should be performed for every patient at this stage of the disease. Contrast radiology should only be performed in case of differentiation (e.g. with pulmonary embolism).
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Imaging: Pulmonary ultrasound can be an easy method for early detection of pneumonia directly at the Admissions Room.
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Imaging: Computer tomography (without contrast) has a high sensitivity in detecting interstitial lesions and evaluating their dynamics. It should be performed for every patient at this stage of the disease. Contrast radiology should only be performed in case of differentiation (e.g. with pulmonary embolism).

ID document	Recommendation
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Imaging: Echocardiography indicated in case of suspected acute heart failure due to respiratory failure
98 (91)	Imaging is indicated for patients with COVID-19 and evidence of worsening respiratory status (Scenarios 1, 2, and 3)
98 (91)	Imaging is indicated for patients with moderate to severe features of COVID-19 regardless of COVID-19 test results (Scenarios 2 and 3)
98 (91)	In a resource constrained environment where access to CT is limited, CXR may be preferred for patients with COVID-19 unless features of respiratory worsening warrant the use of CT (Scenarios 2 and 3)
130 (103)	Chest CT, low dose non-contrast,may be helpful in making the diagnosis/follow-up and can also reveal presence of complications like ARDS and pleural effusions. No finding can completely rule in or rule out the possibility of COVID-19 pneumonia.
151 (107)	QUESTION 3: Is there a place for the thoracic CT scan in a symptomatic patient suspected of Covid-19 or proven? UNCHANGED RECOMMENDATIONS The chest scanner is the only recommended imaging test, to be performed only for moderate to severe respiratory symptoms. The use of a systematic angiogram is not validated. In pauci-symptomatic patients without the need for oxygenation and without risk factors (obesity, hypertension, immunosuppression), there is no place for chest imaging.
153 (108)	CT allows evaluation of disease extent at baseline, which may help to predict a poor outcome and the need for ventilation. If supplementary oxygen is needed in patients with limited disease extension, other diagnoses, especially pulmonary embolism, should be suspected and an additional contrastenhanced CT acquisition may be indicated.
153 (108)	CT allows for the identification of signs of pulmonary oedema, raising the suspicion of COVID-19 related myocarditis, in which case troponin measurement and echocardiography may be required.
153 (108)	CT is indicated after the clinical evaluation of patients with respiratory symptoms such as dyspnoea and desaturation, the degree of severity justifying investigation being left to clinical judgement and depending on local resources.
159 (110)	If a patient with an initial negative RT-PCR result returns to the emergency department with worsening symptoms, a chest X-ray may be useful to detect COVID-19 pneumonia and complications. As the number of days increases from initial symptom onset, the chest radiograph has an increased likelihood of being abnormal
159 (110)	In patients presenting with moderate to severe symptoms, CXR, if available, may be useful in addition to clinical judgment to determine whether there is a need for additional assessment in a hospital setting.
159 (110)	Similar to CXR, CT should only be performed if the results are expected to influence patient management (…) The following is a list of potential indications or clinical scenarios for which CT chest may be warranted (Figure 5). It is not meant to be prescriptive.: a) Detection of Intrathoracic Complications; b) Immunosuppressed or High-Risk Patients With Suspected Respiratory Infection and a Negative Chest Radiograph; c) Initial Negative RT-PCR Result but Ongoing High Clinical Suspicion or Clinical Deterioration After a Normal Chest Radiograph; d)
	Governmental agencies
44 (84)	Raio-X do tórax: Recomenda-se solicitar radiografia de tórax em todos os pacientes com suspeita de pneumonia. Infiltrados pulmonares unilaterais são encontrados em 25% dos pacientes e infiltrados pulmonares bilaterais em 75% dos pacientes (17,73).
44 (84)	Tomografia computadorizada (TC) do tórax: • Recomenda-se solicitar uma tomografia computadorizada do tórax em todos aqueles pacientes com acometimento do trato respiratório inferior (Figura 1). Achados anormais de tomografia computadorizada do tórax foram relatados em até 97% dos pacientes (17,62–64).
88 (89)	Se recomienda una valoración analítica completa para valorar la función de órganos y detectar sepsis: - Hemograma y Hemostasia. - Bioquímica que incluya función renal, hepática. - Si se sospecha insuficiencia respiratoria, gasometría arterial y lactato.
119 (97)	It is recommended to conduct radiation examination for patients with moderate, severe and extremely severe ARI for the purpose of triage, assessing the nature of changes in the chest cavity and determining the prognosis of the disease: - performing CT of the lungs without intravenous contrast enhancement in inpatient conditions or in outpatient settings - with indications for hospitalization; - performing RG of the lungs in two projections, if CT is not possible in a given medical organization / clinical situation.
140 (105)	CT is better than Chest Xray for diagnosis early. Bilateral pneumonia is a common finding of COVID-19 pneumonia

Symptomatic illness: Monitoring

ID document	Recommendation
	WHO-CDCs
164 (111)	For patients with suspected or confirmed COVID-19, currently hospitalized and with moderate to severe symptoms, WHO suggests using chest imaging in addition to clinical and laboratory assessment to inform the therapeutic management (Conditional recommendation, based on very low certainty evidence)
	Scientific Societies
40 (82)	Se sugiere la realización de TC de tórax simple para la valoración de pacientes con curso clínico no esperado, para detectar complicaciones y se considera que debería implicar cambios en la conducta terapéutica. (Débil a favor)
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Clinical monitoring in the place of isolation: · Physician advice at least once a day (can be by phone),· General clinical evaluation and temperature measurement by nurse at least twice a day.
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: If the first control test is negative, a second control test is carried out after at least 24 hours.
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: · Nose and throat swab testing for SARS-CoV-2 with the use of RT PCR after at least 14 days from the onset of symptoms, and in asymptomatic patients after at least 14 days from collecting the swab signalling initial infection.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Clinical evaluation and assessment of vital signs (temperature, blood pressure, heart rate, respiratory count, Glasgow scale) 2-3 times a day
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Clinical monitoring: Pulse oximetry 2-3 times a day; the objective is to maintain SpO2 >94%.
91 (90)	5. Clinical image: 5.2. Stable case with respiratory and/or systemic symptoms (MEWS score <3, Table 1): Virological monitoring: as per asymptomatic and mild conditions
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Close clinical monitoring and evaluation of vital signs (temperature, blood pressure, heart rate, respiratory count, Glasgow scale, SpO2)
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Clinical and laboratory monitoring:Monitoring of D-dimers, ferritin, fibrinogen, C-reactive protein, triacylglycerol, lactate dehydrogenase, IL-6.
91 (90)	5. Clinical image: 5.3. Patient with respiratory failure, clinically unstable: Virological monitoring: as per asymptomatic and mild conditions
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Evaluation of the acid-base balance, especially on day 5-7 after the occurrence of symptoms or in case of a sudden deterioration of the clinical condition.
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Monitoring of D-dimers, ferritin, fibrinogen, C-reactive protein, triacylglycerol, lactate dehydrogenase, IL-6.
91 (90)	5. Clinical image: 5.4. Patient in critical condition (ARDS)(MEWS classification: score>4, table 1): Clinical and laboratory monitoring: Nose and throat swab testing for SARS-CoV-2 with RT PCR technique until negative.
98 (91)	Daily chest radiographs are NOT indicated in stable intubated patients with COVID-19
103 (93)	Broncoscopia: En pacientes hospitalizados con COVID-19 confirmado, se pueden recoger muestras repetidas de vía aérea superior e inferior para demostrar el aclaramiento viral, cuya frecuencia dependerá de las características y los recursos de la epidemia local10
103 (93)	Indicaciones de realización de broncoscopia: 2. Si se presenta una atelectasia lobar o pulmonar total. 3. Ante una hemoptisis crítica con inestabilidad hemodinámica que precise maniobras endoscópicas para controlar la hemorragia. 4. Para la extracción de un cuerpo extra˜no. 5. Para el tratamiento de una obstrucción, de origen benigno o maligno, de la vía aérea central grave que sea sintomática o dificulte el manejo terapéutico del paciente. 6. Como ayuda a las medidas de soporte ventilatorio, como son la necesidad de una intubación endotraqueal o la realización de una traqueotomía percutánea y el manejo de sus complicaciones. 7. La ocupación pleural sintomática, bien por aire —como complicación por iatrogenia o espontánea— o por líquido pleural. 8. El resto de las indicaciones, cuando no exista repercusión clínica ni dificulte o imposibilite el manejo terapéutico del paciente, se debe de posponer a que el paciente esté libre de la enfermedad.
130 (103)	ECG is required for all hospitalized patients to measure baseline QT interval as some subjects may require drugs like chloroquine and/or azithromycin which may cause QT interval prolongation and cardiovascular events.

ID document	Recommendation
151 (107)	QUESTION 6: For which patient and with what delay should a control image be made to a patient who has had Covid-19? 1 / Patient who is no longer symptomatic: 1.1 / For those who have made a "light" Covid-19 (ambulatory forms), the control scanner is not indicated. 1.2 / For those who have had a larger Covid-19 with the need for hospitalization, a chest CT scan without injection is useful, in search of a fibrotic evolution. It should not be done too early: recommendation around 3 months. This point remains to be clarified, however, because the data are non-existent. 2 / Patient who remains or becomes symptomatic again: Imaging is recommended, to be decided between non-injected CT and angiography, depending on the clinic and biology, and knowing that a threshold of D-dimers a little higher than usual can probably be tolerated in these patients.
153 (108)	Chest radiography is not sensitive for the detection of ground glass opacities, which are the main imaging features of COVID-19 pneumonia. It should be restricted to the follow-up of patients admitted to intensive care units, who are too fragile to be sent for CT
153 (108)	Chest ultrasound does not allow differentiation between bacterial and viral pneumoniae, nor between pulmonary oedema and infection. Ultrasound is used at the bedside to diagnose complications such as a pneumothorax under mechanical ventilation or pleural effusions and can help in adjusting mechanical ventilation or monitoring pulmonary fluid load.
159 (110)	Chest X-rays are useful in clinically worsening patients, but daily chest X-rays in stable patients are not necessary and may increase the risk of viral transmission6,7 to health care workers.
171 (123)	Focused lung ultrasound and general lung ultrasound (F-LUS/ LUS) is useful to monitor disease progression and to diagnose complications at the bedside with minimal exposure of disease to fellow patients and health-care personnel.
	Government agencies
119 (97)	6. Intravenous contrast enhancement at CT in patients with known / suspected viral (COVID-19) pneumonia is carried out with suspicion of diseases and pathological conditions, the diagnosis of which is impossible without the use of contrast media (PE, cancer, etc.). A sudden increase in the concentration of D-dimer in blood tests and clinical suspicion of PE are important criteria for performing CT angiopulmonography, provided that its positive result may have an impact on treatment and patient management.
119 (97)	9. Assessment of the dynamics of the course of identified pneumonia COVID-19 is carried out according to clinical indications using the following imaging methods: - optimal: performing CT examination of the lungs according to the standard protocol without intravenous contrast enhancement; - Possibly: RG in two projections in the X-ray room; - possible: performing ultrasound of the lungs (as an additional study) if it is impossible to assess the dynamics using CT and RG, subject to the availability of initial information about the true volume and cause of lung damage and trained medical personnel.
173 (112)	in cases of clinical deterioration, CT imaging is recommended to assess COVID-19 progression, secondary cardiopulmonary abnormalities such as pulmonary embolism or bacterial pneumonia attached to it, or heart failure secondary to possible COVID-19 myocardial damage

Convalescence: De-isolation

ID document	Recommendation
	WHO-CDCs
61 (86)	Guidance on discharge and ending isolation in the context of widespread community transmission: Critical infrastructure responders (e.g. heathcare workers, law enforcement, firefighters etc.). End isolation after resolution of fever for at least three days AND after eight days from the onset of symptoms have passed. Healthcare workers can return to work immediately after that, using a surgical mask during work hours until 14 days after the onset of symptoms have passed*. · If testing capacity allows, for a clinically recovered patient, two negative RT-PCR tests from respiratory specimens at 24 hours interval, at least eight days after onset of symptoms. Critical infrastructure responders, especially HCWs, should be considered a priority group for testing during the pandemic.
61 (86)	Guidance on discharge and ending isolation in the context of widespread community transmission: Family members and other categories of contacts of COVID-19 patients: This category refers to: · Partners and spouses · Family members and other persons sharing housing or taking care of COVID- 19 patients: For guidance on household care of a COVID-19 case, refer to the relevant ECDC guidance [28]. Caretakers of COVID-19 patients should self-quarantine for 14 days after last contact with sick spouse/relative. Caretakers or family members that develop symptoms in the 14-day quarantine period, should stay in home isolation for eight days after onset of symptoms AND until resolution of fever for at least three days AND clinical improvement of other symptoms, or seek medical care, if symptoms worsen.
61 (86)	Guidance on discharge and ending isolation in the context of widespread community transmission: Hospitalised suspected or confirmed COVID-19 cases: This category refers to: · Patients who are hospitalised with suspected or laboratory confirmed COVID-19 (mild, severe and critically ill) [27] · Confirmed COVID-19 patients discharged early, due

ID document	Recommendation
	to clinical improvement. If testing and hospitalisation capacity allows, · For a clinically recovered patient, two negative RT-PCR tests from respiratory specimens at 24 hours interval at least eight days after onset of symptoms [4] If limited/no testing capacity, · Patient can be discharged based on clinical criteria, per evaluation of the treating physician, AND · the discharged patient should self-isolate at home or in a safe place until resolution of fever for at least three days and clinical improvement of other symptoms AND · until eight days after the onset of symptoms for mild cases or for 14 days (severe cases) if these criteria have not been fulfilled in hospital. · Follow-up visits, or monitoring via phone or other electronic device can be considered. · These patients should be prioritised for testing.
61 (86)	Guidance on discharge and ending isolation in the context of widespread community transmission: Immunocompromised patients: Self-isolation should last until all of the following criteria are fulfilled: at least 14 days after symptom onset AND resolution of fever for at least three days AND clinical improvement of symptoms other than fever.
61 (86)	Guidance on discharge and ending isolation in the context of widespread community transmission: Mild suspected or confirmed COVID-19 cases: This category refers to: · Confirmed COVID-19 patients never hospitalised due to mild symptoms or asymptomatic presentation · Suspected or probable COVID-19 patients in the community, who adhered to the stay-at-home advice by the national authorities. These patients can end self-isolation eight days after the onset of symptoms AND resolution of fever AND clinical improvement of other symptoms for at least for three days.
131 (104)	Criteria for Recovery and Discontinuing Isolation: For symptomatic confirmed patients: At least 3 days have passed since recovery (resolution of the fever without using fever reducing medication and respiratory symptom resolution (cough and SOB) AND followed by 2 negative respiratory samples ≥ 24 hours apart.
131 (104)	Criteria for Recovery and Discontinuing Isolation: For symptomatic confirmed patients: If PCR test not feasible, resolution of the fever without using fever reducing medication and respiratory symptom resolution for at least 3 days AND at least 10 days have passed since symptom first appeared (exclude HCWs and sever cases from this approach).
149 (106)	Criteria for discharging patients from isolation (i.e., discontinuing transmission-based precautions) without requiring retesting: • For symptomatic patients: 10 days after symptom onset, plus at least 3 additional days without symptoms (including without feverii and without respiratory symptoms) • For asymptomatic casesiv: 10 days after positive test for SARS-CoV-2. Countries can choose to continue to use a laboratory testing algorithm as part of the release criteria in (a subset of) infected individuals if their risk assessment gives reason to do so.
164 (111)	For hospitalized patients with COVID-19 whose symptoms are resolved, WHO suggests not using chest imaging in addition to clinical and/or laboratory assessment to inform the decision regarding discharge (Conditional recommendation, based on expert opinion)
	Scientific Societies
39 (81)	Condiciones para el alta: a) Clínica: Mejoría del estado general: i. Evolución sin fiebre por al menos 48 horas. ii. Gasometría normal, y sin necesidad de 02 adicional; b) Resultados de Laboratorio: (en normalización si previamente estuvieron alterados) i. Recuento de leucocitos y linfocitos ii. Recuento de plaquetas iii. CK iv. Función hepática v. Sodio plasmático vi. Proteína C reactiva. vii. Radiografía de tórax: mejoría de imágenes radiológicas
39 (81)	Seguimiento post alta de casos: i. Indicar control de temperatura dos veces al día. Si se presenta alza en más de dos mediciones reportar inmediatamente al centro donde estuvo hospitalizado.
39 (81)	Seguimiento post alta de casos: iii. Si el paciente persiste con tos en su domicilio deberá usar mascarilla quirúrgica hasta la resolución del síntoma o en su defecto sus contactos domiciliarios.
39 (81)	Seguimiento post alta de casos: iv. Control a los 7 días de alta con radiografía de tórax, hemograma y exámenes de laboratorio si se mantuvo alguno alterado al alta. De acuerdo con condición del paciente indicar nuevos exámenes en 7 días.
40 (82)	Se recomienda para pacientes inmunocomprometidos, hemato-oncológicos, y receptores y donantes de trasplantes, mantener el aislamiento de pacientes infectados con SARS-CoV-2/COVID-19 hasta la obtención de dos (2) RTPCR para SARS-CoV-2/COVID-19 negativas consecutivas. (Fuerte a favor)
40 (82)	Se recomienda que los pacientes con infección SARSCoV- 2/ COVID-19 pueden ser dados de alta y continuar aislamiento en casa si cumplen los siguientes criterios: ► Ausencia de fiebre >48 horas sin antipiréticos y ► Mejoría clínica de los síntomas respiratorios y la hipoxemia y ► No requiere hospitalización por otras patologías y ► Tolerancia a la vía oral (Fuerte a favor)
40 (82)	Se sugiere, en caso de disponibilidad, mantener el aislamiento de pacientes infectados con SARS-CoV-2/COVID- 19 hasta la obtención de una (1) RT-PCR para SARSCoV-2/COVID-19 negativa.(Fuerte a favor)
40 (82)	Si no es posible controlar con RT-PCR, se recomienda extender el aislamiento de pacientes infectados con SARS-CoV-2/COVID-19 confirmados hasta completar el periodo máximo registrado de diseminación viral de 14 a 28 días, de acuerdo con la gravedad de los síntomas y la resolución de estos. (Débil a favor)
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: After a double negative result, the patient can be released from isolation or hospitalisation if his/her clinical condition permits.
91 (90)	5. Clinical image: 5.1. Asymptomatic or mild type: Virological monitoring: If any of the two control results is positive, the test should be repeated at intervals of 7 days until negative.
98 (91)	CT is indicated in patients with functional impairment and/or hypoxemia after recovery from COVID-19

ID document	Recommendation
123 (100)	SEGUIMIENTO HOSPITALARIO Y VALORACIÓN DE ALTA: Evaluar resultados de hisopado nasofaríngeo: 1. Resultado positivo: mantener hospitalización y manejo de COVID-19 establecido. 2. Resultado negativo: evaluar según sospecha clínica de infección COVID-19: · Sospecha clínica alta: repetir hisopado nasofaríngeo. · Sospecha clínica baja: suspender terapia para COVID-19 y valorar posibilidad de alta precoz. 3. Segundo resultado negativo: ampliar evaluación sobre todo en pacientes ingresados en cuidados críticos: · Repetir tomografía de tórax. · Evaluar la posibilidad de toma de tercera muestra por aspirado bronquial o lavado broncoalveolar de ser necesaria la confirmación diagnóstica para cambio de conducta terapéutica.
123 (100)	Valorar Alta hospitalaria: Considerar los siguientes parámetros previos al Alta: 1. Mejora clínica evidente. 2. Ausencia de fiebre por más de 72 horas. 3. Retiro completo de soporte ventilatorio. 4. Baja o ninguna necesidad de soporte oxigenatorio. 5. Ausencia de necesidad de control de comorbilidades.
224 (78)	A patient with COVID-19 infection with mild symptoms may be cared for at home. Home isolation iscontinued for at least 14 days. If the patient still has symptoms after these 14 days, he/she should remainat home until he/she has been asymptomatic for at least 2 days (48 hours). No control testing isnecessary.
224 (78)	If the patient is discharged directly to home , home isolation is continued until the patient has beenasymptomatic for 2 days (48 hours) and at least 14 days have passed from the onset of symptoms.
224 (78)	If the patient is discharged to another care facility for further care or rehabilitation , control testing is notnecessary, provided that the patient has been asymptomatic for 2 days (48 hours) and at least 14 dayshave passed from the onset of symptoms. If the patient is transferred before 14 days have passed fromthe symptom onset, the unit providing further care is informed about the continuation of isolation andprecautionary measures.
224 (78)	In a convalescent patient, the end of infectiousness can be ensured by control specimens or by allowing anadequately long time to pass after clinical recovery.
224 (78)	In a hospital ward, isolation and precautionary measures are continued throughout the whole hospitalstay. If needed, discontinuing isolation and precautionary measures may be considered if the patient hasnot had symptoms fitting COVID-19 infection for 2 days (48 hours) and at least 14 days have passed fromthe onset of symptoms.
	Governmental agencies
48 (85)	COVID-19 real-time RT-PCR may be performed for the purposes of: Deciding on the release of confirmed COVID-19 patients from quarantine
84 (88)	1.Discharge criteria: 1) Body temperature is back to normal for more than three days; 2) Respiratory symptoms improve obviously; 3) Pulmonary imaging shows obvious absorption of inflammation, 4) Nuclei acid tests negative twice consecutively on respiratory tract samples such as sputum and nasopharyngeal swabs (sampling interval being at least 24 hours). Those who meet the above criteria can be discharged.
88 (89)	Los casos probables y confirmados que han requerido ingreso hospitalario podrán recibir el alta si su situación clínica lo permite aunque su PCR siga siendo positiva, pero deberán mantener aislamiento domiciliario con monitorización de su situación clínica al menos 14 días desde el alta hospitalaria o hasta que se obtenga un resultado de laboratorio negativo. Los casos ingresados que al alta tengan un resultado de laboratorio negativo podrán ir a su domicilio sin aislamiento.
140 (105)	Discharge criteria: 1. Resolution of fever without the use of fever-reducing medications e.g paracetamol for at least 3 (three) days and 2. Significant improvement in the respiratory symptoms (e.g., cough, shortness of breath) for 3 days, and 3. After discharge, continue home or facility isolation for the duration which extends from the day of symptom onset to 21th day for hospitalized patients. 4. For severe or critical patients – physician's discretion
145 (122)	Si es caso sospechoso o confirmado de COVID 19, se encuentra en grupo de riesgo no tiene síntomas/signos de gravedad, se recomienda solicitar servicios médicos a través del 1-7-1 o 9-1-1, aislamiento domiciliario por 14 días posteriores a la resolución de los síntomas o hasta obtener dos pruebas negativas tomadas con 24 horas de diferencia, en una vivienda con ambiente bien ventilado y tratamiento sintomático a base de paracetamol evitando AINES (1,4), manteniendo estrictas medidas de bioseguridad, monitoreo de posible deterioro clínico y exploración exhaustiva de los factores de riesgo.
145 (122)	Si es caso sospechoso o confirmado de COVID-19, no se encuentra en grupo de riesgo y no tiene síntomas/signos de gravedad, se recomienda aislamiento domiciliario por 14 días posteriores a la resolución de los síntomas o hasta obtener dos pruebas negativas tomadas con 24 horas de diferencia, en una vivienda con ambiente bien ventilado y tratamiento sintomático a base de paracetamol evitando AINES (1,4), manteniendo estrictas medidas de bioseguridad y monitoreo clínico.
174 (113)	Consequently, the HCSP recommends the lifting of containment: 1. In the general population: • From the 8th day from the onset of symptoms; • AND at least 48 hours from the disappearance of the fever verified by a rectal temperature below 37.8 ° C (measured with a thermometer twice a day, and in the absence of any antipyretic intake for at least 12 hours) ; • AND at least 48 hours from the disappearance of a possible dyspnea (respiratory rate less than 22 / min at rest); The disappearance of the cough is not a good criterion since an irritant cough may persist beyond healing. Within 7 days of the lifting of containment, it is recommended to avoid close contact with persons at risk of severe form.
231 (117)	It is not necessary to repeat PCR testing in order to de-isolate a patient. Patients can be de-isolated 14 days after the onset of their symptoms (in mild cases), 14 days after achieving clinical stability (in severe cases), or 14 days after the positive test (in asymptomatic cases).
232 (83)	Asymptomatic patients can be de-isolated 10 days after their test.

ID document	Recommendation
232 (83)	Hospitalised patients with moderate-severe disease (who require hospitalisation due to Covid- 19) can be de-isolated 10 days after achievement of clinical stability (i.e. from when they are not requiring supplemental oxygen and are otherwise clinically stable).
232 (83)	Repeat PCR testing is NOT required in order to de-isolate a patient and is not recommended.
232 (83)	Symptomatic patients with mild disease (not requiring hospitalisation for Covid-19) can be deisolated 10 days after the onset of their symptoms, provided their fever has resolved and their other symptoms are improving.

Other recommendations

ID document	Recommendation
	WHO-CDCs
69 (87)	WHO does not currently recommend the use of antigendetecting rapid diagnostic tests for patient care, although research into their performance and potential diagnostic utility is highly encouraged.
69 (87)	WHO does not recommend the use of antibody-detecting rapid diagnostic tests for patient care but encourages the continuation of work to establish their usefulness in disease surveillance and epidemiologic research
226 (118)	2. Appropriate scenarios for use of COVID-19 Ag-RDTs include the following: i) To respond to suspected outbreaks of COVID-19 in remote settings, institutions and semi-closed communities where NAAT is not immediately available. Positive Ag-RDT results from multiple suspects is highly suggestive of a COVID-19 outbreak and would allow for early implementation of infection control measures. Where possible, all samples giving positive Ag-RDT results (or at least a subset) should be transported to laboratories with NAAT capability for confirmatory testing.
226 (118)	2. Appropriate scenarios for use of COVID-19 Ag-RDTs include the following: iii) To monitor trends in disease incidence in communities, and particularly among essential workers and health workers during outbreaks or in regions of widespread community transmission where the positive predictive value and negative predictive value of an Ag-RDT result is sufficient to enable effective infection control.2
226 (118)	5. Use of Ag-RDTs is not recommended in settings or populations with low expected prevalence of disease (e.g. screening at points of entry, blood donation, elective surgery), especially where confirmatory testing by NAAT is not readily available. Such use will not be possible until there are more data from high-quality studies confirming high specificity (>99%) of one or more of the commercialized Ag-RDT test kits.
226 (118)	Situations where SARS-CoV-2 Ag-RDTs should not be used, based on currently available information: In individuals without symptoms unless the person is a contact of a confirmed case; Where there are zero or only sporadic cases; Appropriate biosafety and infection prevention and control measures (IPC) are lacking; Management of the patient does not change based on the result of the test; For airport or border screening at points of entry; In screening prior to blood donation
229 (77)	Serological assays that detect antibodies produced by the human body in response to infection with the SARS-CoV-2 can be useful in various settings. For example, serosurveillance studies can be used to support the investigation of an ongoing outbreak and to support the retrospective assessment of the attack rate or the size of an outbreak
255 (120)	Rapid antigen tests can be used for screening testing in high-risk congregate settings in which repeat testing could quickly identify persons with a SARS-CoV-2 infection to inform infection prevention and control measures, thus preventing transmission. In this case, there may be value in providing immediate results with antigen tests even though they may have lower sensitivity than RT-PCR tests, especially in settings where a rapid turnaround time is required.
	Scientific Societies
40 (82)	Se sugiere realizar pruebas serológicas IgG/IgM siguiendo los patrones de seroconversión conocidos hasta el momento, al menos cada 4 semanas en aquellas personas con resultado inicial negativo y según evaluación individual de riesgo.(Débil a favor)
102 (92)	The IDSA panel suggests against SARS-CoV-2 RNA testing in asymptomatic individuals without a known exposure to COVID-19 who are undergoing a time-sensitive aerosol generating procedure (e.g., bronchoscopy) when PPE is available (conditional recommendation, very low certainty of evidence).
102 (92)	The IDSA panel suggests SARS-CoV-2 RNA testing in asymptomatic individuals without a known exposure to COVID-19 who are undergoing a time-sensitive aerosol generating procedure (e.g., bronchoscopy) when PPE is limited, and testing is available (conditional recommendation, very low certainty of evidence).
	Governmental agencies
48 (85)	Other specimens: If necessary, additional specimens, such as blood, urine, and feces, may be collected on consultation with the physician taking care of the patient and a laboratory physician. However, the diagnostic value and clinical utility of these specimens remain unclear. The collection of blood specimens may be considered for public health purposes, such as serological surveys

119 (97)	Testing for antibodies to the SARS-Cov-2 virus is recommended for use in the following cases: - as an additional method for diagnosing an acute infection (taking into account the seronegative period) or when it is impossible to study smears by the method of amplification of nucleic acids, including during hospitalization in a hospital for somatic pathology; - to identify individuals with an asymptomatic form of infection; - to establish the fact of a previous infection when examining risk groups and conducting a mass survey of the population to assess the level of population immunity; - for the selection of potential donors of immunocompetent plasma.
215 (99)	The Panel Recommends against the use of serologic testing to determine whether a person is immune toSARS-CoV-2 infection (AIII).
232 (83)	We do not currently recommend point of care antigen-based tests, due to concerns about poor sensitivity and specificity

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Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	4
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	Appendix 1
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	3
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix 2
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	6
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	7
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	6

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	7
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	9 (flow diagram)
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Appendix 6
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Appendix 5
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Appendix 6
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	14 (fig.3)
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	15
Limitations	20	Discuss the limitations of the scoping review process.	15, 16
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	16
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	2

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.