Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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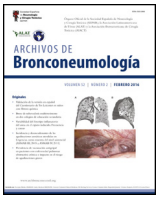

Scientific Letter

Consensus on the Management of the COPD Patient in the COVID-19 Setting: COPD Forum Working Group

To the Director,

Since the beginning of the COVID-19 SARS-CoV-2 pandemic, numerous papers have been published on strategic planning and the positioning of different medical societies in the prevention and management of chronic obstructive pulmonary disease (COPD).[1–6] However, the reality is far from perfect. Although much was learned during the darkest hours of the pandemic, many aspects of the diagnosis, treatment, and follow-up of these patients remain controversial and raise concerns among health professionals.[7] Therefore, in order to determine the opinion of COPD experts, we drew up a Delphi-based consensus statement[8] on certain issues surrounding disease management during the COVID-19 pandemic.

The scientific committee was made up of 19 COPD experts who analyzed scientific evidence in 4 areas: diagnosis, follow-up, treatment, and exacerbations of COPD during the COVID-19 pandemic. This evidence was then discussed in 15 sessions to which 8 practicing pulmonologists were invited. Using the information obtained from these meetings, a 61-item questionnaire (Table 1) was developed and sent to a panel of 106 experienced COPD pulmonologists who were asked to grade them on a Likert scale of 1–9. Statements that scored 1–3 (disagreement, median ≤ 3) or 7–9 (agreement, median ≥ 7) by more than two-thirds of the panelists were considered to have achieved consensus. Statements that were given a score of 4–6 points by more than two-thirds of the panelists were not considered to have achieved consensus.

After two consecutive rounds, consensus was reached on 44 statements (72.1%): 40 in agreement (65.6%) and 4 in disagreement (6.6%). Seventeen statements (27.9%) failed to achieve consensus. Table 1 shows the scores and the degree of agreement for each statement.

Of the 17 statements on diagnosis, 11 achieved consensus agreement and 2 achieved consensus disagreement. The panelists believed it was important to take necessary precautions to prevent the transmission of the virus, such as the use of PPE, FFP2 masks and face shields, even if the health personnel were vaccinated, and that particular care should be taken in cleaning and disinfecting laboratories and all equipment used. Despite the pandemic situation, the vast majority felt that spirometry was essential for diagnosis and could not be replaced by another method. However, in order to relieve the pressure of care, the panelists agreed that patients with frequent exacerbations should be prioritized, while stable patients could be monitored by recording symptoms and exacerbations. They agreed that the limitations imposed during the pandemic have led to the underdiagnosis or erroneous diagnosis of COPD, and in some cases, treatment has begun without lung function evaluations.

Of the 16 statements on follow-up, 11 achieved consensus agreement and the rest did not achieve consensus. Consensus agreement was reached on the usefulness of remote consultations during the pandemic, especially in non-complex COPD patients and frail patients who either could not or would not travel to a health facility. It was also agreed that virtual consultations should include a visual element (not just telephone contact) and that blood oxygen should be measured and the COPD Assessment Test (CAT) administered, as a minimum, during these sessions. Furthermore, remote consultations should be conducted primarily by physicians. Nurses would preferably intervene in mild cases or frail patients who need more continuous follow-up. Even so, it was agreed that in spite of the pandemic, initial consultations should be in-person, as such visits achieve better quality care than remote consultations.

Of the 19 statements on COPD treatment, consensus agreement was achieved on 11 and consensus disagreement on 2. It was agreed that the objectives of COPD treatment should be maintained despite the development of SARS-CoV-2 infection, and that the bronchodilator treatment used before the infection should be maintained, continued physical activity prioritized, and access to smoking cessation treatment facilitated. The panelists did not agree that inhaled corticosteroids should be contraindicated in patients with COPD and SARS-CoV-2 infection with a history of pneumonia. The panel also agreed that hospital admission for COVID-19 should be considered a serious exacerbation, that COPD patients admitted for COVID-19 should start a rehabilitation program, and that attending physicians should screen these patients for symptoms of COVID-19-related anxiety, depression, cardiovascular and other comorbidities. Although the degree of consensus was small, participants agreed that antithrombotic prophylaxis should be administered only to COPD patients with COVID-19 who required hospital admission.

Finally, 7 of the 9 statements on exacerbations achieved consensus agreement. Panelists agreed that home telemonitoring of exacerbations should be initiated after a severe exacerbation, and should include modified Medical Research Council dyspnea scale results, oxygen saturation data, a physical activity diary, rescue medication use, and sputum color. No consensus was reached on the inclusion of daily peak flow results. The panel agreed that telemonitoring alerts should be managed by skilled nurses, but not that they should be managed by a physician.

This Delphi study shows how panelists managed COPD patients during the COVID-19 pandemic. Although certain areas remain controversial, the high degree of agreement highlights some key messages that should be taken into account in recommendations

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Table 1
Results obtained by the panel of experts after 2 rounds of consultations.

	Median (IQI)	% disagree	% agree
Diagnosis			
In a pandemic situation when incidence is high, PCR is required in all patients in whom lung function tests are planned.	8 (4)	16.7	66.7
When incidence is low, the use of PPE, the completion of a quick questionnaire, and the measurement of patient temperature are sufficient for performing lung function tests.	8 (3)	8.6	75.2
In a pandemic situation, PPE must be used by healthcare personnel involved in lung function testing.	8 (3)	6.0	71.8
During the pandemic, the use of an FFP2 mask and face shield are sufficient safety measures for performing lung function tests.	8 (4)	20.4	68.5
In a pandemic situation, the use of PPE is unnecessary for lung function tests when health personnel are vaccinated.	1 (3)	71.3	11.1
In a pandemic situation, a telephone consultation should be conducted prior to lung function testing to detect possible SARS-CoV-2 infection.	5 (4)	44.5	39.8
In a pandemic situation, the material should be disinfected after each lung function test.	9 (1)	2.6	94.9
Since the beginning of the pandemic, cleaning protocols in lung function laboratories have had to be adapted due to the airborne transmission of SARS-CoV-2.	9 (1)	0.0	98.3
In a pandemic situation, spirometry is only necessary at the time of diagnosis.	5 (4)	46.3	34.3
In a pandemic situation, follow-up spirometries in patients with frequent exacerbations should be prioritized.	8 (2)	7.4	73.1
In a pandemic situation, clinical monitoring of patients with stable COPD should be performed by recording symptoms and exacerbations.	8 (3)	6.0	72.7
Limitations in the performance of lung function tests due to the pandemic have led to an underdiagnosis of COPD.	8 (2)	0.9	85.5
The pandemic situation has led to more mis-diagnoses of COPD, and treatments have been initiated without lung function evaluations.	7 (2)	6.0	71.8
Spirometry is necessary for the diagnosis of COPD and cannot be replaced by other methods.	9 (1)	0.9	91.5
COPD can be diagnosed in primary care using methods other than spirometry, such as clinical questionnaires or peak flow measurements.	1 (2)	73.2	7.4
In a pandemic situation, measuring the FEV1/FEV6 index with portable devices is an alternative to conventional spirometry.	7 (2)	13.0	57.4
In a pandemic situation, the alternative to conventional spirometry is telespirometry.	6 (2)	16.7	46.3
Follow-up			
A remote consultation is feasible for the follow-up of COPD patients if the infrastructure is adapted to this procedure.	7 (2)	12.0	70.1
In-person visits are essential in the follow-up care of COPD patients.	3 (2)	50.9	18.5
Remote consultations are a useful alternative in the follow-up of non-complex COPD patients.	8 (2)	1.7	90.6
Remote consultations are a useful alternative in the follow-up of frail patients who prefer not to come to the hospital.	7 (1)	4.6	85.2
Remote consultations are a useful alternative if audiovisual support is available, not just telephone contact.	7 (2)	7.4	75.0
Remote consultations offer a lower quality of care than in-person consultation in the follow-up of COPD patients.	7 (2)	7.4	75.9
In-person consultation is more effective than remote consultation in the prevention of exacerbations.	6 (3)	23.2	50.0
The measurement of at least oxygen saturation during remote consultations is necessary in the follow-up of COPD patients.	7 (3)	8.5	69.2
The CAT questionnaire should be administered during remote follow-up of COPD patients.	7 (2)	9.4	70.1
Remote consultations should be carried out by specialized nurses as a complement to COPD follow-up.	6 (3)	19.4	47.2
Remote consultations should be carried out by doctors as an alternative in COPD follow-up.	8 (3)	0.9	74.4
Remote consultations by specialized nurses are indicated in the follow-up of frail patients with COPD.	7 (4)	22.2	66.7
Remote consultations by specialized nurses are indicated in the follow-up of patients with mild COPD.	7 (4)	20.4	66.7
Remote consultations by specialized nurses are indicated in the follow-up of patients with COPD and frequent exacerbations.	5 (6)	45.4	48.2
The initial visit of COPD patients must always be in-person, despite the pandemic situation.	8 (3)	14.5	70.9
In a pandemic situation, follow-up visits of COPD patients must always be in-person.	4 (4)	48.2	31.5
Treatment			
Patients who have had SARS-CoV-2 infection should maintain COPD treatment goals.	9 (1)	0.0	96.6
In a pandemic situation, priority should be given to maintaining physical activity in COPD patients, despite limitations due to mobility restrictions.	8 (1)	0.0	96.6
In patients with COPD who have had SARS-CoV-2 infection, treatment goals should be reconsidered due to infectious sequelae.	6 (5)	31.5	44.4
The low incidence of SARS-CoV-2 infection in COPD patients has been due to greater compliance with isolation measures.	8 (1)	0.9	88.0
The pandemic situation has increased the prevalence of smoking in the population.	6 (2)	4.6	41.7
In a pandemic situation, access to smoking cessation programs should be offered to COPD patients, as smoking is a risk factor for severe SARS-CoV-2 infection.	8 (2)	1.7	76.9
In a pandemic situation, short-term smoking interventions are irrelevant as a preventive measure.	2 (4)	70.1	12.0
COPD patients who have had SARS-CoV-2 infection should continue the bronchodilator treatment they were receiving prior to their infection.	8 (2)	3.4	86.3
ICS should be included in the treatment of COPD patients with SARS-CoV-2 infection.	5 (2)	26.9	18.5
ICS should be included in the treatment of COPD patients who have been admitted for severe SARS-CoV-2 infection.	5 (3)	27.8	18.5
ICS are contraindicated in patients with COPD and SARS-CoV-2 infection who have a history of pneumonia.	2 (2)	73.1	4.6
In COPD patients, hospital admission for COVID-19 should be considered, to all intents and purposes, as a severe exacerbation.	8 (1)	10.2	77.8
A rehabilitation program is recommended in COPD patients who have had SARS-CoV-2 infection and prolonged hospital admission.	9 (1)	0.0	98.3
COPD patients who have had SARS-CoV-2 infection should undergo active case finding for symptoms of anxiety and depression.	8 (2)	1.7	81.2
COPD patients who have had SARS-CoV-2 infection should be screened for cardiovascular comorbidities.	8 (2)	2.6	81.2
COPD patients who have had SARS-CoV-2 infection should be screened for COVID-19-related comorbidities.	7 (1)	2.6	76.1
Antithrombotic therapy should always be administered to patients with COPD and SARS-CoV-2 infection.	5 (4)	42.6	30.6
Antithrombotic prophylaxis should be administered only to patients with COPD and SARS-CoV-2 infection who have been admitted to hospital.	7 (5)	20.4	66.7
Patients with COPD and SARS-CoV-2 infection should preferably be admitted to intermediate respiratory care units.	6 (2)	17.6	49.1

Table 1 (*Continued*)

	Median (IQI)	% disagree	% agree
Exacerbations			
Home telemonitoring of COPD patients should include measurement of daily peak flow.	6 (4)	29.6	49.1
Home telemonitoring of COPD patients should include administration of the mMRC questionnaire.	8 (2)	3.4	88.9
Home telemonitoring of COPD patients should include measurement of blood oxygen.	8 (2)	0.9	90.6
Home telemonitoring of COPD patients should include a physical activity diary.	8 (2)	0.0	94.0
Home telemonitoring of COPD patients should include rescue medication records.	9 (1)	0.0	97.4
Home telemonitoring of COPD patients should include evaluation of sputum color.	9 (1)	0.9	96.6
Telemonitoring alerts in COPD patients should initially be handled by a specialist nurse.	8 (2)	10.3	76.9
Telemonitoring alerts in COPD patients should initially be handled by a physician.	4 (5)	49.1	25.9
Telemonitoring of exacerbations in COPD patients should begin after a severe exacerbation.	7 (3)	12.0	70.1

CAT: COPD Assessment Test; COPD: chronic obstructive pulmonary disease; FEV1: peak expiratory volume in 1 second; FEV6: peak expiratory volume in 6 s; ICS: inhaled corticosteroids; IQI: interquartile interval; mMRC: modified Medical Research Council dyspnea scale; PCR: polymerase chain reaction; PPE: personal protective equipment; Green: Consensus agreement; Red: Consensus disagreement; White: No consensus reached.

on the management of these patients during the pandemic, including the importance of safety and protection measures, the use of spirometry in diagnosis, the use of remote visits in addition to, not instead of, in-person visits, the continuity of therapeutic objectives despite viral infection, and the use of home telemonitoring to prevent and control exacerbations.

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Conflict of interest

MCR has received honoraria from Boehringer Ingelheim, AstraZeneca, Grifols, GlaxoSmithKline, Chiesi, Menarini and Novartis. She declares no real or perceived conflict of interest between these sources and this document.

JLLC has received honoraria in the past 3 years for giving lectures, scientific consultancy, participating in clinical studies, and writing publications for (in alphabetical order) AstraZeneca, Bial, Boehringer Ingelheim, Chiesi, CSL Behring, Ferrer, Gebro, GlaxoSmithKline, Grifols, Menarini, Megalabans, Novartis, and Rovi.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.arbres.2022.04.011.

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