Health-Care Quality Standards in Chronic Obstructive Pulmonary Disease

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ABSTRACT

Although clinical practice guidelines have contributed to improving the quality of health care offered to patients with chronic obstructive pulmonary disease (COPD), the level of adherence to recommendations continues to be inadequate and variable. Standards of care in COPD are written after applying an evidence-based approach, with the aim of unifying health-care criteria, establishing levels of acceptable adherence, and providing a way to assess quality; the ultimate goal is to improve patient care. In this statement we propose a series of health-care quality criteria and related indicators that will facilitate the quantitative evaluation of adherence to recommendations. The level of adherence that should be required is stipulated. This statement is not intended to provide a detailed description of how COPD should be managed. The aim is rather to set out quality assurance criteria that will contribute to the improvement of health-care access and equity, guaranteeing application of the highest levels of scientific and technical quality possible within the constraints of available resources, with the final purpose of satisfying the patient with COPD. The quality criteria have been grouped in 3 categories: a) so-called key criteria, to which adherence is essential; b) a set of conventional quality standards; and c) health-care administrative standards. Finally, we propose a framework on which to base the eventual accreditation of health-care quality for COPD patients.

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Estándares de calidad asistencial en la EPOC

RESUMEN

Aunque las guías de práctica clínica han contribuido a mejorar la asistencia que se ofrece al paciente con enfermedad pulmonar obstructiva crónica (EPOC), el grado de cumplimiento sigue siendo insuficiente y variable. Los estándares de calidad asistencial de la EPOC son un documento que, empleando una metodología basada en la evidencia, pretende unificar criterios de asistencia, establecer unos márgenes de cumplimiento y un sistema de evaluación con el objetivo final de mejorar la atención del paciente con EPOC. Con esta finalidad se propone una serie de criterios de calidad asistencial, a los que se asigna un indicador que permite cuantificar su aplicación, y se establece cuál debe ser el grado de cumplimiento exigible. El documento no pretende ser una descripción detallada del manejo de la EPOC, sino que busca implantar unos criterios de calidad encaminados a garantizar la accesibilidad y equidad en la atención con la mejor calidad científico-técnica posible, teniendo en cuenta los recursos disponibles, a fin de lograr la satisfacción del paciente con EPOC. Los estándares de calidad se estructuran en 3 categorías: a) los denominados estándares de calidad clave, de obligado cumplimiento; b) un grupo de estándares de calidad convencionales, y c) un tercer bloque dirigido a la Administración sanitaria. Finalmente, el documento también propone las bases para una futura acreditación de calidad asistencial en la EPOC.

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Introduction

Chronic obstructive pulmonary disease (COPD) is indisputably among the most significant chronic diseases in Western countries. The estimated prevalence in the population aged 40 to 69 years is 9.1%, meaning that in Spain the number of sufferers would be over a million and a half. Predictions are equally discouraging given the recent adoption of smoking by women and the still elevated rate of consumption in this country, among other factors. Beyond the raw prevalence rates, the actual situation of individuals with COPD is one of gradual deterioration that leads to exercise intolerance, recurrent exacerbations, and premature death. The chronic, progressive nature of COPD, its high prevalence, and inadequate control associated with frequent episodes of respiratory decompensation are the main causes of pressure on the health-care system. Nearly 10% to 12% of primary care medical visits and 10% of hospital admissions are attributable to COPD, which is now the fifth leading cause of death in Spain and the fourth leading cause worldwide, surpassed only by heart and cerebrovascular diseases and cancers. COPD is the only one of these that is still on the rise. By 2020, this chronic disease is expected to reach third place as a cause of death and fifth as a cause of disability.

In order to improve this outlook, the main Spanish and international scientific associations have issued clinical practice guidelines that unify criteria with the aim of improving each and every aspect of health care for COPD patients. Among the specific goals of such guidelines are the following: to analyze available scientific evidence, improve quality of care, achieve uniformity of clinical care, improve the cost-effectiveness ratio, guide regulatory agencies, and identify the main areas of uncertainty where research efforts should be concentrated. However, the reality of clinical practice remains far removed from this ideal situation. For example, nearly 80% of patients found to have COPD in the IBERPOC study had not been previously diagnosed, and somewhat more than 50% of patients with severe disease were not receiving specific treatment. In the EFRAM study, slightly more than 85% of patients admitted to hospital with a COPD exacerbation had not participated in pulmonary rehabilitation programs during the previous year, even though the main clinical practice guidelines recommend such treatment even at initial stages of disease. These figures indicate that current adherence to clinical practice guidelines in Spain is still inadequate, with great variability, and that health-care quality can be improved. These obstacles are not specific to Spain but are reported for other developed countries as well. One study designed to assess quality of care of COPD patients in the United States found that the disease was being managed in accordance with guidelines in only 58% of the cases. Adherence was better during exacerbations (60.4%) than for periods of stability (46.1%). That study also detected wide geographic variation and lower quality of care reaching patients in low income brackets, underscoring the need to take measures to promote equity of care. A recent audit addressing the issue of hospital admissions for COPD in the United Kingdom revealed that better-organized departments had lower mortality rates, a finding that encourages the search for approaches to improving quality of care.

Aware of these disparities in the delivery of health care, the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR) asked its Standards of Care Committee to propose a set of standard criteria for managing this disease, with the aim of improving equity in access to first-rate care for COPD patients.

Objective of This Statement

The first purpose of this statement is to gather together the criteria that will facilitate improvements in quality of care for patients with COPD in Spain. A second aim is to suggest a means for evaluating the health care that is being provided. These quality standards focus on the process of delivering health care to patients with COPD and by no means are intended to offer a detailed description of diagnostic or therapeutic management, as such guidance can be found in other recently published papers or clinical guidelines. The target readership for this statement includes a) health-care professionals involved in the diagnosis and treatment of COPD patients at any level of the health-care system, and b) administrative personnel, given that quality assurance requires measures to provide structures, staff, and training opportunities.

Definitions

Health-care quality standards: a set of standards whose purpose is to assure that access to services is equitable and that care is delivered with optimal professionalism within the constraints of available resources, with a view to achieving patient adherence and satisfaction.

Dimensions of quality: attributes or components of quality. The dimensions most often mentioned in the medical literature are efficiency, effectiveness, scientific and technical quality (professional competence and practice), accessibility, and user satisfaction or approval.

Quality criteria: conditions a health-care activity, intervention, or process must meet in order to be judged acceptable.

Quality indicators: a quantitative measure that can be used to monitor and evaluate the quality of activities; the particular way in which each quality criterion is numerically assessed (normally on a scale).

Quality standards: the degrees of due compliance with quality criteria. In other words, quality standards define a range of acceptable care for a specific process, setting minimum and maximum levels for an indicator of quality. A standard therefore sets the minimum level below which the quality of a health-care process would be compromised. If that standard is not met, a practice (a product or service) would not be said to be of sufficient quality.

Methods

These standards of health-care quality in COPD have been developed with guidance from and under the auspices of SEPAR’s Standards of Care Committee and the association’s Assembly on COPD. A working group of respiratory medicine specialists with expertise in COPD evaluated current guidelines available in the literature, applying an evidence-based medicine approach. Table 1

<table>
<thead>
<tr>
<th>Evaluation Category</th>
<th>Source of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Randomized controlled clinical trials with large datasets</td>
</tr>
<tr>
<td>B</td>
<td>Randomized clinical trials with small datasets</td>
</tr>
<tr>
<td>C</td>
<td>Nonrandomized clinical trials or observational studies</td>
</tr>
<tr>
<td>D</td>
<td>Expert consensus statements</td>
</tr>
</tbody>
</table>
shows the levels of scientific evidence that provide support for the recommendations made in this statement. Many quality criteria finally included have been derived from expert opinion and have therefore been assigned an evidence level of D. We have nevertheless included these criteria because it is also our opinion that they will contribute to improving the care of COPD patients. These criteria should be reassessed in the future from a scientific standpoint and we therefore believe that research to validate them should be undertaken.

In the first phase of writing this statement, 2 authors drafted each section independently. A second draft was created by all authors in collaboration, using the first drafts as the starting point. The second draft was then sent to a group of 18 experts in COPD in different parts of Spain. Final approval of the manuscript was based on the responses of these external reviewers. The authors synthesized the main components of current clinical practice guidelines,5-8 with particular attention to the COPD guidelines issued by SEPAR and the Latin American Thoracic Society (ALAT).5 However, as the aim of the committee was not to produce a detailed description of COPD management, but rather to establish the most important quality criteria, general criteria were given priority over specific ones.

Five groups of quality standards have been established in order to facilitate their distribution. The first are based on the key criteria (Table 2). This group provides a set of principles of greatest importance for achieving a minimum standard of health care. We therefore consider that compliance with these criteria is mandatory. If any key criterion is not fulfilled, overall quality of care will be

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Evidence Level</th>
<th>Key Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of COPD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>D</td>
<td>No. of patients correctly diagnosed with COPD/No. of patients classified in the chart as having COPD</td>
</tr>
<tr>
<td>S2</td>
<td>A</td>
<td>No. of active smokers with COPD for whom a specific smoking cessation intervention has been prescribed/No. of active smokers with COPD</td>
</tr>
<tr>
<td>S3</td>
<td>A</td>
<td>No. of patients prescribed an SABD for on-demand treatment/No. of patients with COPD</td>
</tr>
<tr>
<td>S4</td>
<td>A</td>
<td>No. of patients prescribed an LABD/No. of symptomatic COPD patients</td>
</tr>
<tr>
<td>S5</td>
<td>A</td>
<td>No. of patients prescribed combined treatment with LABAs and inhaled corticosteroids/No. of patients for whom such treatment is indicated</td>
</tr>
<tr>
<td>S6</td>
<td>A</td>
<td>No. of patients on CHOT/No. of patients for whom CHOT is indicated</td>
</tr>
<tr>
<td>Treatment of exacerbations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S7</td>
<td>A</td>
<td>No. of patients with exacerbated COPD for whom the bronchodilator dosage is increased/No. of patients with exacerbated COPD</td>
</tr>
<tr>
<td>S8</td>
<td>A</td>
<td>No. of patients with exacerbated COPD on systemic corticosteroids/No. of patients with exacerbated COPD in whom this treatment is indicated</td>
</tr>
<tr>
<td>S9</td>
<td>A</td>
<td>No. of patients prescribed antibiotics/No. of patients for whom this treatment is indicated</td>
</tr>
</tbody>
</table>

Abbreviations: CHOT, continuous home oxygen therapy; FEV1, forced expiratory volume in 1 second; FVC, forced vital capacity; LABA, long-acting β2-agonists; LABD, long-acting bronchodilator; SABD, short-acting bronchodilator; SEPAR, Spanish Society of Pulmonology and Thoracic Surgery.

*Any intervention aiming to encourage a smoker to quit, including medical advice, psychological counseling, or pharmacologic treatment
considered deficient. The remaining standards in the tables address various issues. Table 3 concerns the diagnosis, classification, and follow-up of COPD; Table 4, treatment while the patient is in a stable phase of disease; and Table 5, the management of exacerbations. Finally, Table 6 shows a set of quality standards that should be met by health-care administrators.

Evaluation of Health-Care Quality

Most quality standards are matched to a specific indicator of health-care quality that serves as an evaluative measure. Just as there are 2 categories for quality-of-care standards, there are 2 groupings for indicators: the so-called key indicators and all the remaining indicators. Key indicators are particularly relevant to the final objective of achieving better health care and they are therefore weighted differently.

In a set of 42 indicators, 10 of which are considered key, 25 address conventional aspects of health care and 7 refer to administrative issues. Each result is expressed as a percentage, with a range of 60% to 120% considered to indicate acceptable care. Percentages outside this range are considered an indication of deficient care. The selected cutpoints are arbitrary and, therefore, require validation. However, the working group charged with setting these quality standards for COPD care believe that they provide a necessary starting point. The upper limit of 120% was set to reflect the group’s attempt to detect overactivity as a type of poor health-care practice.

Scoring will vary depending on whether an indicator is considered key or not, as follows:

1. For key indicators:
   - A percentage considered to identify deficiency on a key indicator (<60% or >120%) = 0 points
   - A percentage considered acceptable on a key indicator (≥60% and ≤120%) = 5 points.

2. For other indicators:
   - A percentage indicating deficiency (<60% or ≥120%) = 0 points
   - A percentage indicating acceptability (=60% and ≥120% ≤120%) = 5 points.

Some quality standards are not applicable in all settings. For example, certain indicators, such as those pertaining to referral to hospital, can only be quantified at the primary care level. Others will only be relevant to specialized care settings. Likewise, if a hospital emergency service is being audited, only indicators that are meaningful in that context can be taken into consideration. The overall score, therefore, should be adjusted in accordance with the number of potentially applicable indicators in the setting being audited. Administrative quality indicators should be assessed separately so that the results do not affect the evaluation of a department, hospital, or other service being audited.
Table 4
Health-Care Quality Standards for the Management of Stable COPD

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Evidence Level</th>
<th>Key Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>General recommendations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S17 Regular exercise should be recommended to all COPD patients</td>
<td>C</td>
<td>No. of COPD patients who are advised to exercise regularly/No. of patients with COPD</td>
</tr>
<tr>
<td>S18 Influenza vaccination should be recommended to all COPD patients</td>
<td>A</td>
<td>No. of COPD patients vaccinated against influenza/No. of patients with COPD</td>
</tr>
<tr>
<td>S19 Pneumococcal vaccination should be offered to patients with severe COPD and to all COPD patients over 65 years of age</td>
<td>B</td>
<td>No. of COPD patients vaccinated against the pneumococcus/No. of patients for whom such vaccination is indicated</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S20 “Triple” drug combination (long-acting anticholinergic agents, LABA, and inhaled corticosteroids) is justified in severe or very severe COPD if the patient experiences symptomatic deterioration in spite of LABAD treatment</td>
<td>B</td>
<td>No. of patients prescribed “triple” drug therapy (LABA, inhaled corticosteroids, and tiotropium)/No. of patients for whom such therapy is indicated</td>
</tr>
<tr>
<td>S21 Theophyllines should be used whenever a patient remains symptomatic in spite of treatment appropriate for stage of disease; or in the few cases in which an oral route is required SEPAR has published guidelines for COPD treatment according to stage of disease</td>
<td>D</td>
<td>No. of prescribed theophyllines/No. of COPD patients who remain symptomatic in spite of disease-stage-appropriate treatment</td>
</tr>
<tr>
<td>S22 Oral corticosteroids are not recommended for maintenance therapy in stable COPD</td>
<td>A</td>
<td>No. of COPD patients who are not on oral corticosteroids/No. of patients with stable COPD</td>
</tr>
<tr>
<td>Pulmonary rehabilitation S23 (NAPC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S23 Pulmonary rehabilitation should be prescribed for all COPD patients who continue to experience limitations in activities of daily living due to dyspnea after stage-appropriate pharmacologic treatment SEPAR has published guidelines for pulmonary rehabilitation programs</td>
<td>A</td>
<td>No. of patients enrolled in a rehabilitation program/No. of patients for whom rehabilitation is indicated</td>
</tr>
<tr>
<td>Other therapeutic strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S24 Lung reduction surgery should be considered for patients with heterogeneous emphysema predominantly in the upper lobes if they have low tolerance for exercise</td>
<td>A</td>
<td>No. of patients who undergo lung reduction surgery/No. of patients for whom the procedure is indicated</td>
</tr>
<tr>
<td>S25 Lung transplantation should be considered for patients under 65 years of age with very advanced disease who meet the general conditions for that procedure SEPAR has published guidelines on evaluating lung transplant candidates</td>
<td>C</td>
<td>No. of patients evaluated for a lung transplant/No. of patients for whom a transplant is indicated</td>
</tr>
<tr>
<td>Follow-up S26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S26 All patients with COPD should be followed, with regular visits scheduled at least once a year</td>
<td>D</td>
<td>No. of COPD patients who are seen by a physician at least once a year/No. of patients with COPD</td>
</tr>
</tbody>
</table>

Abbreviations: LABA, long-acting β2-agonists; NAPC, not applicable in primary care; NASC, not applicable in specialized care; SEPAR, Spanish Society of Pulmonology and Thoracic Surgery.

As mentioned, all 10 key standards must be met. If any of the key indicators proves unsatisfactory, the evaluation process is detained. If percentages for all 10 key indicators are acceptable (50 points), points are then added based on other indicators (2 points for each non-key quality criterion on which a satisfactory percentage is achieved). The total score will be expressed according to the maximum possible score, depending on the number of quality standards considered applicable, according to the following formula:

Overall quality score:

\[
\text{Total score on applicable indicators} \times 100
\]

Overall quality of health care will be classified as follows:

- **Deficient quality of health care:** This category is assigned whenever passing percentages are not achieved on all 10 key indicators.
- **Adequate quality of health care:** This category is assigned whenever passing percentages are achieved on all 10 key indicators and the total number of points earned falls between 50% and 84% of the maximum possible score on applicable indicators.
- **Excellent quality of health care:** This assessment is assigned whenever passing percentages are achieved on all 10 key indicators and the total number of points earned is at least 85% of the maximum possible score on applicable indicators.

As mentioned, scores on administrative quality standards (Table 6) shall not be taken into consideration when evaluating quality of health care and, therefore, will not affect the accreditation process. However, results on administrative quality standards should appear in the final accreditation report, as they are considered relevant to the ultimate purpose of the report: to improve quality of health care for the patient. The report should distinguish results for a department, hospital, or service requesting accreditation (standards 1-35) from the results attributable to the corresponding administration (standards 36-42).

**Accreditation Process**

Accreditation is understood to involve an external audit to confirm the level of compliance with a series of quality standards for...
Table 5
Health-Care Quality Standards for the Management of COPD Exacerbations

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Evidence Level</th>
<th>Key Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S27</td>
<td>The patient's chart should record the following basic information: symptoms (dyspnea, sputum color, and volume), prior exacerbations, comorbidity, previous treatment</td>
<td>D</td>
</tr>
<tr>
<td><strong>Criteria for referral to a specialist</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S28 (NASC)</td>
<td>Patients with exacerbations should be referred to a specialist under the following conditions:</td>
<td>D</td>
</tr>
<tr>
<td>1. If the course of COPD includes any of the following signs: Respiratory failure Persistent tachypnea Recruitment of accessory muscles Evidence of right heart failure Hypercapnia Impossibility of disease management at home Severe associated comorbidity Diminished level of consciousness Lack of improvement evident in a follow-up appointment after exacerbation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Need to rule out other diseases: Pneumonia Pneumothorax Left heart failure Pulmonary embolism Bronchopulmonary cancer Upper airway obstruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Additional tests</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S29 (NAPC)</td>
<td>The following tests should be performed in all patients who come to the hospital with an exacerbation: Chest x-ray Arterial blood gas analysis, noting the inspired oxygen fraction administered during the test Electrocardiogram Complete blood workup, including complete blood count and biochemistry, with electrolyte balance and kidney function Sputum sample for Gram staining and culture in patients with frequent exacerbations, those in need of assisted ventilation, and or in cases of antibiotic failure</td>
<td>D</td>
</tr>
<tr>
<td>S30 (NAPC)</td>
<td>In patients who are initially hypercapnic and require high-flow oxygen, arterial blood gases should be checked approximately 30 min after start of therapy</td>
<td>D</td>
</tr>
<tr>
<td><strong>Invasive mechanical ventilation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S31 (NAPC)</td>
<td>NIV should be prescribed for patients who develop respiratory acidosis (pH &lt;7.35) in spite of optimal treatment</td>
<td>A</td>
</tr>
<tr>
<td>S32 (NAPC)</td>
<td>Invasive mechanical ventilation should be used in patients with severe respiratory acidosis (pH &lt;7.25), diminished level of consciousness, and/or hemodynamic instability</td>
<td>C</td>
</tr>
<tr>
<td><strong>Hospital discharge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S33 (NAPC)</td>
<td>The discharge report should include a written, specific treatment plan</td>
<td>D</td>
</tr>
<tr>
<td><strong>Follow-up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S34 (NASC)</td>
<td>All patients with exacerbations who are not admitted should have a follow-up visit within 72 hours</td>
<td>D</td>
</tr>
<tr>
<td>S35 (NAPC)</td>
<td>Patients discharged after hospitalization should be given an appointment for a follow-up visit in 2 weeks</td>
<td>D</td>
</tr>
</tbody>
</table>

Abbreviations: NAPC, not applicable in primary care; NASC, not applicable in specialized care; NIV, noninvasive ventilation.
whatever facility, department, or service wishes to be accredited. The accrediting body will designate a team of qualified external auditors who will review compliance with quality standards over a specified period of time. If the facility receives a favorable evaluation, the accrediting body will issue a statement to that effect. If the evaluation is unfavorable, the audit team may ask the facility, department, or service for an action plan to be implemented within a fixed time frame. The audit team will prepare a report evaluating the action plan, if the accrediting body so requires, in order to move forward toward accreditation, re-accreditation, or partial or full revocation of accreditation.

Duration and Validation of the Standards

The working group believes these standards should be considered applicable for a maximum of 3 years, after which time they should be revised. Before that time, arrangements should be made to validate them. We have intentionally not included “outcomes indicators” in the present statement. Such indicators, in our opinion, should be introduced during the validation process, given that they are conditioned by compliance with the quality standards. However, once the standards are validated, outcomes indicators could be incorporated into future health-care quality standards. Examples of such indicators might be the in-hospital mortality rate, mortality after discharge (30, 90, and 360 days), the rate of treatment failure or the readmission rate, hospital stay, the rate of orotracheal intubation, results of patient satisfaction surveys, health-related quality of life, consumption of health resources, lost work due to illness, cost-effectiveness analysis, etc.

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References


Table 6

Health-Care Quality Standards for Administrators of Programs for COPD Patients

<table>
<thead>
<tr>
<th>Quality Criterion</th>
<th>Evidence Level</th>
<th>Key Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>S36  All physicians who provide care for patients with COPD should have access to spirometry</td>
<td>D</td>
<td>No. of health-care facilities with a spirometer/No. of facilities</td>
</tr>
<tr>
<td>S37  Spirometry should be carried out by trained staff using validated spirometry systems. All health-care facilities where spirometry is performed should have trained staff with sufficient time to implement these specific tests</td>
<td>D</td>
<td>No. of high-quality spirometries/No. of spirometries evaluated</td>
</tr>
<tr>
<td>S38  Specialists in respiratory medicine should have equipment for performing arterial blood gas analysis and to determine lung volumes and carbon monoxide diffusing capacity</td>
<td>D</td>
<td>No. of specialist respiratory care facilities with the appropriate equipment for these tests/No. of specialist care facilities</td>
</tr>
<tr>
<td>S39  Primary care facilities offer the ideal setting in which to initiate smoking cessation programs. Antismoking campaigns should be put into effect to facilitate specialized treatment in every health-care area</td>
<td>D</td>
<td>No. of dedicated smoking cessation teams/No. of health-care areas studied</td>
</tr>
<tr>
<td>S40  All hospitals should offer pulmonary rehabilitation as an integral component of care. SEPAR has published guidelines for pulmonary rehabilitation programs</td>
<td>D</td>
<td>No. of hospitals with a pulmonary rehabilitation program/No. of hospitals studied</td>
</tr>
<tr>
<td>S41  All hospitals treating patients with COPD should have NIV devices, the means to record data, and staff trained in how to provide this therapy</td>
<td>A</td>
<td>NIV/No. of hospitals attending patients with exacerbated COPD</td>
</tr>
<tr>
<td>S42  Surveys should be undertaken in a representative sample of COPD patients to assess their perception of level of satisfaction with quality of care</td>
<td>D</td>
<td>Performance of COPD patient satisfaction surveys</td>
</tr>
</tbody>
</table>

Abbreviations: NIV, noninvasive ventilation; SEPAR, Spanish Society of Pulmonology and Thoracic Surgery.