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LA inhalers for COPD: perceptions/reality of ABCD GOLD tool use

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ABSTRACT

Background: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) created an ABCD tool to assess staging and severity of COPD subgroups that respond to LAMA or LABA with improved quality of life and reduced exacerbations. Our study assesses perception of physicians at five community hospitals towards LAMA use for patients admitted with COPD exacerbations according to the GOLD guidelines and describes the experience at our hospital.

Methods: Electronic survey forms regarding LAMA use and the GOLD criteria ABCD for COPD treating physicians were sent to five hospitals. A one-year chart review at our hospital determined prevalent use of a maintenance LAMA or LABA inhaler in patients admitted with acute COPD exacerbation. Currently, our EMR does not require a field for the GOLD ABCD categorization.

Results: We obtained a 33% (45/136) response rate. Of these, 63% felt a LAMA to be essential on formulary; 60% were neutral or unlikely to initiate LAMA on admission; 47.7% likely or very likely to start a LAMA during hospitalization; 82% were neutral to very likely to discharge a patient on a LAMA if deemed necessary for maintenance. Of those admitted for acute COPD exacerbations to our hospital, over a third of COPD patients were not on a maintenance LAMA or LABA.

Conclusions: Most physicians felt it important to prescribe a maintenance LAMA to COPD patients hospitalized for acute exacerbation. Our hospital's use of LAMA or LABA demonstrates the need to incorporate strategies to encourage appropriate prescribing of these LA inhalers per GOLD guidelines.

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The Global Initiative for Chronic Obstructive Lung Disease (GOLD) has primary goals: to raise awareness, improve prevention and advance treatment therapies of Chronic Obstructive Pulmonary Disease (COPD). Their 'ABCD' Assessment Tool combines the use of FEV1 GOLD [1–4] for staging airway obstruction and severity measures that include the number of exacerbations/hospitalizations and patient's functional status (Table 1) and recommends treatment options for each category. Their recommendations in 2019 and 2020 for groups 'BCD' is a long-acting (LA) inhaler, with a long-acting beta agonist (LABA) or a long-acting muscarinic antagonist (LAMA), with absolute indication of LAMA for patients group C (Table 2). A LAMA demonstrates an ability to improve symptoms, life quality, reduce rate of exacerbations/hospitalizations without mortality benefit [1–3]. We suspected, based on anecdotal perception, that LAMA are not appropriately utilized despite the current GOLD recommendations.

Our combined studies include (1) A survey of physicians from five local hospitals about their perceptions of LAMA use and consideration of the using the 2019 GOLD ABCD recommendations and (2) a chart review to assess how many patients were admitted and discharged on a LAMA or LABA at our Hospital in a one-year period. Both related studies were approved by IRB for exemption.

0.1. Study 1: Anonymous survey of physicians' attitudes regarding LAMA use

1. Methods

A five-question physician survey regarding attitudes and perceptions of LAMA use for hospitalized COPD patients is shown in Table 3. Responses were rated on a Likert scale of 1 (very likely) to 5 (never). SurveyMonkey and Google Forms were used to preserve anonymity and distributed to 136 physicians who treat COPD at five community teaching hospitals.[1] Thirty-three percent (45/136) physicians completed the survey for five questions regarding attitudes and perceptions toward use of LAMA.

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Table 1. 'ABCD' assessment tool.

0–1 exacerbations a year not leading to hospital admission	**Group A** Less symptoms Low risk	**Group B** More symptoms Low risk
2 or more exacerbations or 1 and more hospital admissions a year	**Group C** Less symptoms High risk	**Group D** More symptoms High risk

Table 2. Pharmacological treatment recommendations based on 2019 GOLD classification.

Group A Bronchodilator	**Group B** LABA or LAMA
Group C LAMA	**Group D** LAMA or LAMA+LABA or ICS+LABA

2. Results

37.8% (17/45) of respondents had less than 5 years of experience, 20% (9/45) had five to 10 years of experience, 15.6% (7/45) had 10 to 15 years of experience, 11.1% (5/45) had 15 to 20 years of experience, and 15.6% (7/45) had more than 20 years of experience. Table 4 details the % responses to several survey questions. Overall, more than half thought it was essential to have LAMA on formulary for hospitalized COPD patients and nearly half said they refer to the GOLD criteria. The majority were not likely to initiate a LAMA upon admission nor during hospitalization and 42% were not likely to discharge a patient on a LAMA. Regarding prescribing behavior, physicians with less than 5 years' experience were more likely to prescribe LAMA during hospitalization ($t = 2.08$, $df = 22$, $p = .05$) and discharge someone on a LAMA ($t = 3.57$, $df = 22$, $p < .01$). Less experienced physicians were more likely to refer to the GOLD criteria although the results were not statistically significant ($t = .87$, $df = 22$, $p = .39$)

2.1. Study 2: Chart review to assess actual LAMA use in admitted patients

3. Methods

Retrospective chart review of all patients admitted with COPD exacerbation from 11/2/18-11/1/19 was conducted at our hospital with IRB approval for exemption. Data were extracted from both the admission and discharge medication reconciliation forms in the EMR. We ascertained whether a patient was on a maintenance LAMA or LABA at the time of admission and how many of this group had the medication continued at the time of

Table 3. Survey.

1.Medical Specialty

- Internal Medicine
- Pulmonologist

2.Years of experience practicing in your specialty

- less than 5 years
- 5–10 years
- 10–15 years
- 15–20 years
- more than 20 years

3.Do you currently (or have within the last 2 years) research in your field?

- Yes
- No

4.Based on the current Research, do you think that having a LAMA on Formulary is an essential medication to choose from for prescribers treating COPD in hospitalized patients?

- 1 Very True
- 2
- 3
- 4
- 5 Not True

5.How often are patients that are admitted for COPD exacerbation started on a LAMA on admission?

- 1 Very Often
- 2
- 3
- 4
- 5 Never

6.How likely are you to start a patient admitted for COPD exacerbation on a LAMA during their hospital course?

- 1 Very Likely
- 2
- 3
- 4
- 5 Not Likely

7.How often do you send patients admitted for COPD exacerbation with a prescription for a LAMA to pick up upon discharge?

- 1 Very Often
- 2
- 3
- 4
- 5 Never

8.How often do you reference the GOLD Criteria when treating COPD patients in the hospital to determine whether or not they need to be prescribed a LAMA?

- 1 Very Often
- 2
- 3
- 4
- 5 Never

Table 4. Survey results.

How often are you:	Never	Neutral	Unlikely	Often	Very often
-initiate LAMA on admission	20% (9/45)	20% (9/45)	28.9% (13/45)	20% (9/45)	11.1% (5/45)
-start LAMA during hospitalization	20% (9/45)	2.2% (1/45)	28.9% (13/45)	28.9% (13/45)	17.8% (8/45)
-discharge COPD patients on LAMA	11.1% (5/45)	6.7% (3/45)	24.4% (11/45)	22.2% (10/45)	35.6% (16/45)
-refer to GOLD criteria	13.3% (6/45)	11.1% (5/45)	26.7% (12/45)	24.4% (11/45)	22.2% (10/45)

discharge. We captured additional patients who were begun on a LAMA or LABA inhaler at discharge.

4. Results

Our results found that 38.7% (46/119) were not on a LAMA or LABA upon admission, and 61.3% (73/119) were on an LA maintenance inhaler upon admission. Specifically, 30.2% (36/119) were on a maintenance LAMA and 31% (37/119) on a LABA. Often, during hospitalization for acute COPD exacerbations, the LA maintenance inhalers are held while frequent short-acting bronchodilators are utilized [5]. At discharge, 31.9% (38/119) were on a LAMA and 34.5% (41/119) were on a LABA. Our EMR precluded us from determining if patients admitted on an LA did so as per the ABCD recommendations for use. We also were not able to assess why a few patients were started on an LA at discharge.

5. Discussion

Multiple studies demonstrate the benefits of LAMA use in patients with persistent symptoms and frequent COPD exacerbations classifiable as 'BCD' groups by the pre-2020 ABCD GOLD criteria. A systematic review of 22 RCT trials enrolling 23,309 participants demonstrated tiotropium improved both the rate of exacerbations leading to hospitalizations and subjective symptoms in patient's quality of life despite having no effect on mortality [6].

Our physician survey revealed that nearly half, 19/45 (42%), are neutral, unlikely or never to discharge eligible patients on LAMA. Yet 63% (28/45), believe having a LAMA on formulary is essential for COPD patients admitted on a LAMA who are hospitalized for acute COPD exacerbation or available for discharge. The majority of surveyed physicians affirmatively responded to the importance of prescribing maintenance LA inhalers to hospitalized COPD patients with frequent exacerbations and persistent symptoms ('BCD' groups according to 2020 GOLD criteria).

Reasoning behind our physicians' attitudes and perceptions was not assessed. The range of responses have multiple explanations that warrant further exploration including hospitalists deferring change in medication regimen to the primary physician/pulmonologists after discharge, erroneous belief that LAMA must be on the hospital formulary in order to access the inhaler for reinstitution or initiation upon stable discharge (whereas medications can be ordered for patient to 'take own LAMA' or acquisition from other non-formulary sources are usually available), or a lack of medical knowledge of the current ABCD GOLD recommendations.

Our retrospective analysis of 119 patients showed a similar percentage (38.7%) is not admitted on an LA inhaler for acute exacerbations. Studies show discrepancies between guidelines and real-world practice [7–10]. For example, one cross-sectional study of 55,361 COPD patients looking at prescriber adherence to GOLD recommended care of COPD patients and found that 36% of COPD patients and history of at least one exacerbation were not receiving long-acting maintenance inhaler therapy [9].

The strength of our anonymous survey study on attitudes and the analysis of our actual usage of LA inhalers is that both represent real-world opinions and practice. Unfettered by any influence to provide a 'correct' survey response or to be guided by the knowledge that we will capture a prospective use of LA inhalers per the ABCD GOLD Criteria recommendations, we chose to perform these two studies as our representative of our true baseline of opinions and usage of LA inhalers in our community setting for acute COPD exacerbations.

One of the limitations of our study was the absence of routine charting of GOLD ABCD status which precludes us from determining how many should be on an LA inhaler upon discharge.

6. Conclusions

We demonstrated by anonymous survey and actual usage of LA inhalers, including LAMA, our pragmatic experience. There were some discrepancies between LAMA use by survey and actual usage over a year. Upon chart review, it became clear that we could not confirm documentation of ABCD GOLD category either upon admission nor at discharge of COPD patients admitted with acute exacerbations. Our current EMR introduces a prompt with fields of this year's revision of the ABCD GOLD tool to ascertain and document adoption or reasons for rejecting the recommendations.

Authorship statement

JN, VK, MB, VB designed the study. All authors performed the study, contributed to data extraction, literature review, analyzed the data, and wrote the paper.

Disclosure statement

This manuscript is original research, has not been previously published and has not been submitted for publication elsewhere while under consideration. Authors declare no conflict of interest with this manuscript.

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