

Online Supplement

The Role of Inhalation Delivery Devices in COPD: Perspectives of Patients and Health Care Providers

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e-Appendix 1: Supplementary Materials and Methods

Survey Design

Health care provider (HCP) and patient surveys were created by the 10 members of the American College of Chest Physician Steering Committee on Delivery Makes a Difference, or DMA_D, project. The Steering Committee comprised a group of clinicians with expertise in COPD patient management and COPD research. The group was assisted by Rockpile Strategies, LLC, a health care research consulting group with experience in survey-based research. A literature search was conducted to identify key HCP and patient knowledge, attitudes, beliefs, and behaviors related to COPD and medication delivery devices. We identified 6 papers to serve as the basis for survey question development.¹⁻⁶

HCP Survey. The HCP survey questions were designed to: (1) assess HCP priorities when developing treatment plans for COPD patients and analyze these priorities by patient clinical status and HCP type; (2) characterize HCP practices related to device education; and (3) determine patient-specific factors that influence device selection. As respiratory therapists typically do not have prescribing privileges, they were instructed to answer any questions on prescribing based on prescribing practices typically seen with their patients with COPD. The HCP survey (e-Figure 1) contained 58 questions in 6

domains: 10 questions for screening and HCP profiling; 22 questions on COPD management approach; 5 questions on HCP device utilization and preferences; 11 questions on perceived barriers to effective COPD management; 2 questions on financial issues; and 8 questions related to patient support resources for inhalation device training. Questions were primarily closed-ended multiple choice questions. Barriers to effective COPD management were assessed via a 5-point Likert-type scale, which asked HCPs to indicate the frequency (1=always, 5=never) of which 5 select barriers were a factor in perceived poor medication efficacy. A 5-point Likert-type scale was also used to determine how frequently (1=always, 5=never) HCPs educated on 6 different aspects of inhalation device technique and maintenance.

Patient Survey. The patient survey questions were designed to: (1) identify the impact of COPD on the respondents; (2) identify the treatment approaches taken for managing COPD; and (3) assess the relationship between medication device and effective COPD management, patient satisfaction and adherence, as well as patient attitudes and values. The survey contained up to 127 questions in 5 domains (e-Figure 2). A skip pattern, which directed patients to skip questions based on responses to previous questions, was applied in two sections. There were 16 questions for screening and demographics; up to 15 questions assessing patient's health status and risk factors; up to 69 questions on overall COPD management and treatment plans; 7 questions on education, knowledge, and use of health information resources on inhalation devices; and 20 questions on patient adherence and health beliefs. Questions relating to the first 3 domains were primarily closed-ended multiple choice questions. The Medication Adherence Report Scale (MARS-5) was used to measure patient adherence to COPD medication.³ MARS-5

asks patients to indicate on a scale of 1 to 5 (1=never; 5=always) how frequently 5 statements relating to habits of medication administration apply to them. Total score (range 5-25) was tabulated by aggregating responses across the 5 statements. Lower scores indicated greater medication adherence. For this survey, a score of 5 to 7 was considered a high level of adherence; a score of 8 to 14 was considered a medium level of adherence, and a score of 15 or higher was considered a low level of adherence.

The Modified Medical Research Council Dyspnea Scale, or mMRC, was used as an assessment of COPD symptom severity.^{7,8} Patients were asked to rate their level of dyspnea on a scale of 0 to 4 based on the degree of disability that dyspnea poses on everyday activities. Higher scores indicated a higher degree of dyspnea. Health care beliefs were assessed on a 5-point Likert-type scale, where patients were presented 15 statements about attitudes and experiences with medical care and asked to indicate how frequently each statement applies to them (1=frequently, 5=always).

Response Rates

As indicated in the main body of the manuscript, the response rates for the HCP and COPD patient surveys are 18% and 65% respectively. Response rates for this study are calculated as follows: number of complete and usable responses/total individuals qualifying for participation in the study.

HCP response rates. All HCPs who received the invitation and link to participate in the study qualified by definition of their medical specialty/field. Thus, the denominator for calculating the HCP response rate is the total number of individuals who received the invitation. The numerator is the number of complete and usable responses. To assess any potential skew among

respondents that might impact the survey results, a subsequent analysis of profiling variables was conducted that compared survey respondents to non-respondents in the sampling frame. Data regarding age, practice setting (e.g. community-based vs. academic medical center-based) and geography from the CHEST member data base were appended to records of survey respondents and sampling frame non-respondents. These data were analyzed to identify any differences in the profiles of these two groups. The results of this analysis demonstrated only minor numeric differences in the profiles of the survey respondents and non-respondents, minimizing the risk of bias in the survey results due to a skew in who responded to the survey.

Discussion of COPD patient response rates. COPD patients were accessed via syndicated research panels. Potential respondents were targeted to receive the invitation and survey link on the basis of age, and in a limited number of cases, based on data collected by the panel company where the potential respondent had previously self-reported a COPD diagnosis. As such, unlike the HCP survey, we have no way of knowing whether or not a particular individual who received an invitation to participate in the survey would actually qualify as a respondent (on the basis of having COPD). Therefore, the denominator for the COPD patient response rate calculation is all individuals who entered the survey and qualified (meaning they reported having a COPD diagnosis in the screening question at the beginning of the survey). The numerator is all complete, usable responses.

e-Figure 1: Delivery Makes a Difference – Health Care Providers’ Survey

September 26, 2016

Please note: Questions marked “Omitted” were placeholders to simplify programming instructions for this web-based survey and remind reviewers that questions had been eliminated during the survey design phase. All survey questions visible to the survey respondents are presented in this document.

The American College of Chest Physicians (CHEST) is conducting a survey of health care providers on the topic of COPD management and medication adherence. CHEST is not selling anything and would simply like to understand your opinions as part of an industry study to advance patient adherence to treatment plans and help improve the quality of life for people living with COPD. Your answers will be completely confidential and you will not be contacted in the future about your responses.

SCREENING AND PROFILING

Q.1 What is your area of clinical specialization?

Family Practice	1	SKIP TO Q3
General Internal Medicine	2	
Nurse Practitioner	3	
Physician’s Assistant	4	
Pulmonologist	5	SKIP TO Q3 THANK AND END
Respiratory Therapist	6	
None of the above	7	

Q.2 Are you a . . .

General Pulmonologist	1
Interventional Pulmonologist	2
Intensivist	3
Other	4

Q.3 Approximately what percentage of the patients under your care are diagnosed with COPD? _____

Q.4 Thinking specifically about your COPD patients, approximately what percentage of your patients would you classify into the following categories? PLEASE ENTER AS WHOLE NUMBER. PERCENTAGES MUST TOTAL TO 100%.

Mild _____ %

Moderate _____ %

Severe _____ %

Very Severe _____ %

Q.5 In what state is your practice located? _____

Q.6 Does your practice primarily serve . . .

An urban area 1

A suburban area 2

A rural area 3

Q.7 How many years have you been in practice? PLEASE ENTER THE NUMBER OF YEARS AS A WHOLE NUMBER. _____

Q.8 What percentage of your time is devoted to the following activities? PLEASE ENTER AS WHOLE NUMBER. PERCENTAGES MUST TOTAL TO 100%.

Direct patient care _____ %

Teaching _____ %

Research _____ %

Administrative duties _____ %

Q.9 **IF Q1=1-5, ASK Q9. ELSE, SKIP TO Q11.** Which of the following best describes your practice situation?

- | | |
|---------------------------|---|
| Single specialty practice | 1 |
| Multi-specialty practice | 2 |
| Solo Practitioner | 3 |

Q.10 Do you primarily work in an academic medical center environment?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

COPD MANAGEMENT APPROACH

Throughout this survey, we will use the term “inhalation device” to refer to any device that patients use to deliver COPD medication into their lungs, including DPIs, MDIs, hand held small volume nebulizers, soft mist inhalers, etc.

Q.11 On average, how frequently do you see a stable COPD patient specifically to manage their COPD?

- | | |
|--------------------------|---|
| Once a year | 1 |
| Two times a year | 2 |
| 4 times a year | 3 |
| More than 4 times a year | 4 |

For the next several questions, please think about your patients who are **newly diagnosed with COPD whose condition is stable.**

Q.12 When you consider prescribing maintenance medication for a **newly diagnosed, stable COPD patient,** which outcome are you personally more concerned with?

- | | |
|-----------------------------|---|
| Symptom control | 1 |
| Prevention of exacerbations | 2 |

Q.13 Assuming that affordability is not an issue, when you consider prescribing a maintenance medication for a **newly diagnosed, stable COPD patient**, which more important in determining which medication to prescribe?

- | | |
|---------------------------|---|
| Medication class | 1 |
| Type of inhalation device | 2 |

Q.14 What maintenance medication (or combination of medications) do you most frequently prescribe to **newly diagnosed, stable COPD patients**?

- | | |
|---|---|
| One long acting bronchodilator | 1 |
| More than one long acting bronchodilator | 2 |
| One long acting bronchodilator along with an inhaled corticosteroid | 3 |
| More than one long acting bronchodilator along with an inhaled corticosteroid | 4 |
| Other: SPECIFY | 5 |

Q.15 What maintenance medication (or combination of medications) do you most frequently prescribe to **newly diagnosed, COPD patients who are post exacerbation**?

- | | |
|---|---|
| One long acting bronchodilator | 1 |
| More than one long acting bronchodilator | 2 |
| One long acting bronchodilator along with an inhaled corticosteroid | 3 |
| More than one long acting bronchodilator along with an inhaled corticosteroid | 4 |
| Other: SPECIFY | 5 |

Q.16 Do you assess a **newly diagnosed patient's** ability to use a particular type of delivery device when determining which medication to prescribe to manage their COPD?

On every new patient	1
Frequently	2
Some of the time	3
Infrequently	4
Never	5

Q.17 How important is the inhalation device in determining which medication you will prescribe to a **newly diagnosed, stable COPD patient**?

Highly important	1
Somewhat important	2
Neither important nor unimportant	3
Not very important	4
Not at all important	5

Q.18 How important is the inhalation device in determining which medication you will prescribe to a **newly diagnosed COPD patient who is post exacerbation**?

Highly important	1
Somewhat important	2
Neither important nor unimportant	3
Not very important	4
Not at all important	5

For the next several questions, please think about **stable COPD patients who are not responding to treatment** and require a modification to their COPD management plan.

Q.19 What typically precipitates the need to change a patient's COPD treatment plan?

Poorly controlled symptoms	1
Exacerbations	2
Difficulty using the inhalation device	3
Presence of other co-morbidities	4
Change in patient's preferences	5
Change in patient's insurance plan	6
Other: SPECIFY	7

Q.20 When you consider changing treatment plans for **stable COPD patients who are not responding to their current treatment**, which outcome are you personally more concerned with?

Symptom control	1
Prevention of exacerbations	2

Q.21 When you consider changing treatment plans for **established COPD patients who are experiencing exacerbations**, which outcome are you personally more concerned with?

Symptom control	1
Prevention of exacerbations	2

Q.22 How frequently do you have to change a stable patient's treatment plan because **COPD symptoms are not well managed**?

All the time	1
Frequently	2
Some of the time	3
Infrequently	4
Never	5

Q.23 What maintenance medication (or combination of medications) do you most frequently prescribe to **stable COPD patients whose symptoms are not well managed?**

- | | |
|---|---|
| Change to a different medication in the same class | 1 |
| Add one long acting bronchodilator | 2 |
| Add more than one long acting bronchodilator | 3 |
| Add one long acting bronchodilator along with an inhaled corticosteroid | 4 |
| Add more than one long acting bronchodilator along with an inhaled corticosteroid | 5 |
| Other: SPECIFY | 6 |

Q.24 When considering medication changes for **stable COPD patients whose symptoms are not well managed**, do you assess the patient's ability to use a particular type of inhalation device when determining which medication to prescribe?

- | | |
|------------------|---|
| On every patient | 1 |
| Frequently | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q.25 What priority is the choice of inhalation device in your determination of which medication to prescribe to **stable COPD patients whose symptoms are not well managed?**

- | | |
|-----------------------------------|---|
| Highly important | 1 |
| Somewhat important | 2 |
| Neither important nor unimportant | 3 |
| Not very important | 4 |
| Not at all important | 5 |

Q.26 How often do you have **stable patients whose symptoms are not well managed** change to a different medication within the same class so that they will be using a different inhalation device that might be easier for them to operate?

All the time	1
Frequently	2
Some of the time	3
Infrequently	4
Never	5

Q.27 OMITTED

For the next several questions, please think about your **patients who are experiencing frequent exacerbations (defined as 2 or more times per year)**.

Q.28 How frequently do you have to change a patient's treatment plan because **they are experiencing frequent exacerbations (defined as 2 or more times per year)**?

All the time	1
Frequently	2
Some of the time	3
Infrequently	4
Never	5

Q.29 When treating an **established COPD patient who is experiencing frequent exacerbations**, which course of action do you usually follow?

Increase the dosage of the patient's current short acting bronchodilator	1
Change the class of short acting bronchodilator	2
Add a different class of short acting bronchodilator	3

Q.30 When treating an **established COPD patient who is experiencing frequent exacerbations**, are you more likely to consider a changing/adding medications or keep the same medication BUT with a change in inhalation device?

- | | |
|--|---|
| Change/adding medications | 1 |
| Keeping the same medication but with a change in inhalation device | 2 |

Q.31 When considering medication changes for **established COPD patients who are experiencing frequent exacerbations**, do you assess the patient's ability to use a particular type of inhalation device when determining which medication to prescribe?

- | | |
|------------------|---|
| On every patient | 1 |
| Frequently | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q.32 What priority is the choice of inhalation device in your determination of which medication to prescribe to **established COPD patients who are experiencing frequent exacerbations**?

- | | |
|-----------------------------------|---|
| Highly important | 1 |
| Somewhat important | 2 |
| Neither important nor unimportant | 3 |
| Not very important | 4 |
| Not at all important | 5 |

Q.33 How often do you have patients who are experiencing frequent exacerbations change to a different medication within the same class so that they will be using a different inhalation device that might be easier for them to operate?

All the time	1
Frequently	2
Some of the time	3
Infrequently	4
Never	5

Q.34 OMITTED

DEVICE UTILIZATION AND PREFERENCES

Q.35 OMITTED

Q.36 OMITTED

Q.37 OMITTED

Q.38 OMITTED

Q.39 How frequently is your prescribing choice influenced by the inhalation device that is used with the medication?

Always	1
Frequently	2
Sometimes	3
Infrequently	4
Never	5

Q.40 When prescribing multiple medications to manage your patients' COPD, do you take into account the type of inhalation device so that the patient doesn't have to develop a second skill set to use a different type of device?

Always	1
Frequently	2
Sometimes	3
Infrequently	4
Never	5

Q.41 Are there medications (compounds) that you prefer to prescribe but wish were available in a different inhalation device?

Yes	1
No	2

Q.42 When you see a patient following a hospital discharge—either with a new COPD diagnosis or for follow up due to an exacerbation—who typically prescribes the medication and device that the patient is using after discharge?

Hospitalist	1
Pulmonologist who rounded on the patient in hospital	2
COPD patient discharge team	3
Physician's assistant or nurse practitioner who has prescribing authority	4

Q.43 In following up on this patient, do you typically . . .

Maintain the treatment plan ordered at the hospital	1
Devise a new treatment plan for the patient	2

PATIENT FINANCIAL ISSUES

Q.44 How frequently do patients say they need to change their medication because of a change in their health plan coverage?

Almost all the time	1
Frequently	2
Sometimes	3
Infrequently	4
Never	5

Q.45 How do you typically navigate health plan formulary issues when developing or modifying a treatment plan for your COPD patients?

I prescribe the medication/device I think is best for the patient and then change it if there is a formulary problem.	1
I prescribe medication class and device type and then have a social worker or other resource determine which specific medication is covered.	2
I allow the pharmacist to make substitutions.	3

BARRIERS TO EFFECTIVE COPD MANAGEMENT

Q.46 Thinking about the different classifications of COPD patients listed below, approximately what percentage of your patients in each of these categories do you believe are effectively managed by their current COPD treatment plan?

Mild to moderate	___ %
Severe to very severe	___ %

For the next several questions, please think about your COPD patients that you classify as **mild to moderate.**

Q.47 How frequently are the following barriers to effective COPD management a factor in perceived poor efficacy of prescribed medication for your mild to moderate COPD patients?

	<u>Always</u>	<u>Often</u>	<u>Sometimes</u>	<u>Rarely</u>	<u>Never</u>
a. Patient is not making necessary lifestyle changes, such as smoking cessation	1	2	3	4	5
b. Full dose of medication may not be getting into the patient's lungs because they have difficulty using the inhalation device properly	1	2	3	4	5
c. Patient does not follow prescribed dosing schedule	1	2	3	4	5
d. Patient has difficulty understanding what they need to do to manage their COPD	1	2	3	4	5
e. Patient can't afford medication	1	2	3	4	5

For the next several questions, please think about your patients that you classify as **severe to very severe.**

Q.48 How frequently are the following barriers to effective COPD management a factor in perceived poor efficacy of prescribed medication for your severe to very severe COPD patients?

	<u>Always</u>	<u>Often</u>	<u>Sometimes</u>	<u>Rarely</u>	<u>Never</u>
a. Patient is not making necessary lifestyle changes, such as smoking cessation	1	2	3	4	5
b. Full dose of medication may not be getting into the patient's lungs because they have difficulty using the inhalation device properly	1	2	3	4	5
c. Patient does not follow prescribed dosing schedule	1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| d. Patient has difficulty understanding what they need to do to manage their COPD | 1 | 2 | 3 | 4 | 5 |
| e. Patient can't afford medication | 1 | 2 | 3 | 4 | 5 |

PATIENT SUPPORT RESOURCES

Q.49 Does your practice provide training to COPD patients on how to properly use their inhalation device?

- | | | |
|-----|---|--------------------|
| Yes | 1 | |
| No | 2 | SKIP TO END |

Q.50 Which methods does your practice use to train COPD patients on how to properly use their inhalation device? PLEASE CHECK ALL THAT APPLY.

- | | |
|--|---|
| 1 on 1 training | 1 |
| Small group training | 2 |
| Large group training | 3 |
| Training on the patient's actual device | 4 |
| Use of placebo devices to observe and teach patients on proper technique | 5 |
| Videos | 6 |
| Printed materials | 7 |
| Use of stickers/labels applied to the device with device-specific instructions | 8 |

Q.51 Do your COPD patients receive training about . . . ?

- | | <u>Always</u> | <u>Often</u> | <u>Sometimes</u> | <u>Rarely</u> | <u>Never</u> |
|---------------------------------------|---------------|--------------|------------------|---------------|--------------|
| a. Correctly assembling the device | 1 | 2 | 3 | 4 | 5 |
| b. Proper breathing technique | 1 | 2 | 3 | 4 | 5 |
| c. Proper storage of the device | 1 | 2 | 3 | 4 | 5 |
| d. Procedures for cleaning the device | 1 | 2 | 3 | 4 | 5 |
| e. Making minor repairs to the device | 1 | 2 | 3 | 4 | 5 |
| f. Correct use of the device | 1 | 2 | 3 | 4 | 5 |

Thank you for taking the time to participate in this survey.

e-Figure 2. Delivery Makes a Difference – Patient Survey

October 9, 2016

Please note: Questions marked “Omitted” were placeholders to simplify programming instructions for this web-based survey and remind reviewers that questions had been eliminated during the survey design phase. All questions visible to the survey respondents are presented in this document.

We are conducting a survey on medical issues and would like to include your opinions. We are not selling anything and would simply like to understand your opinions. Your answers and comments will be completely confidential.

SCREENING AND PROFILING

Q.1 Do you work for a doctor’s office, hospital, home care company or other organization that provides medical care?

Yes	1
No	2

Q.2 Have you been diagnosed by a physician with any of the following diseases or conditions? ACCEPT MULTIPLE RESPONSES

Irregular heart beat or arrhythmia	1
Gout	2
Chronic bronchitis	3
High blood pressure or hypertension	4
Chronic obstructive pulmonary disease or COPD	5
Chronic pain	6
Acid reflux or GERD	7
Emphysema	8
Psoriasis	9
None of the above	1 0

IF Q2 ≠ 3, 5 or 8, THANK AND END

Q.3 What is your age? _____

Q.4 What is your height? _____

Q.5 Approximately how much do you weigh? _____

Q.6 Are you:

- | | |
|--------|---|
| Male | 1 |
| Female | 2 |

Q.7 Which of the following ethnic groups do you identify with?

- | | |
|---|---|
| Caucasian/White | 1 |
| African American/Black | 2 |
| Asian | 3 |
| Native Hawaiian or Other Pacific Islander | 4 |
| American Indian or Native Alaskan | 5 |

Q.8 Are you of Latino or Hispanic heritage?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q.9 What is the highest level of education you have completed?

- | | |
|----------------------------------|---|
| Some high school | 1 |
| High school graduate | 2 |
| Technical school or trade school | 3 |
| Some college | 4 |
| Associate's degree | 5 |
| 4 year college degree | 6 |
| Graduate school | 7 |

Q.10 What state do you live in? _____

Q.11 Is the area where you live . . .

- | | |
|----------|---|
| Urban | 1 |
| Suburban | 2 |
| Rural | 3 |

Q.12 Which of the following best describes your household situation?

- | | |
|--|---|
| You live by yourself | 1 |
| You live with your spouse/partner, but not with any of your children | 2 |
| Your children live in the house with you | 3 |
| A sibling, parent or some other adult lives with you | 4 |

Q.13 Do you rely on the assistance of another adult to help you with medical care activities, such as transportation to doctor's appointments, understanding what the doctor is telling you or following any treatment plans the doctor gives you?

Yes	1
No	2

Q.14 Which of the following types of health insurance coverage, if any, do you currently have to help pay for your medical care expenses? PLEASE CHECK ALL THAT APPLY

Private insurance from an employer or union	1
Private insurance that you purchased on your own	2
Traditional Medicare	3
Medicaid	4
Supplemental coverage to pay for the expenses not covered by Medicare, also known as a Medigap policy	5
Medicare Advantage Plan (a private HMO or PPO that pays for your medical care expenses in place of Medicare)	6
VA benefits, TRICARE or other coverage that you have because of your military service	7
Not sure	8
Other SPECIFY	98
None	99

Q.15 Do you have any drug plan or health plan coverage that pays for at least some of the costs of your prescription drugs?

Yes	1
No	2

Q.16 During the past 12 months has your doctor had to change any of your COPD medications either because the medication was not covered by your drug plan or you couldn't afford the cost of the medication?

Yes	1
No	2

YOUR HEALTH

Q.17 How would you describe your overall health status? Would you say it is . . .

Excellent	5
Very Good	4
Average	3
Fair	2
Poor	1

Q.18 How concerned are you about your health?

Very concerned	1
Somewhat concerned	2
Not too concerned	3
Not at all concerned	4

Q.19 Are you dealing with any of the following medical issues? PLEASE CHECK ALL THAT APPLY.

- | | |
|----------------------------------|---|
| Arthritis in your hands | 1 |
| Tremors or shaking in your hands | 2 |
| Poor hearing | 3 |
| Poor eyesight | 4 |
| Depression | 5 |
| Anxiety | 6 |
| Memory problems | 7 |
| None of the above | 8 |

Q.20 Do you ever experience any difficulties with hand movements that use the small muscles of your fingers, such as picking up small objects or holding a fork or spoon?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q.21 Do you drink alcoholic beverages?

- | | |
|-----|----------------------------|
| Yes | 1 |
| No | <input type="checkbox"/> 2 |
- SKIP TO Q23**

Q.22 Approximately how many alcoholic drinks do you consume in a typical week?

Q.23 Which of the following best describes your experience using tobacco?

- | | | |
|----------------|---|--------------------|
| Current smoker | 1 | |
| Former smoker | 2 | SKIP TO Q26 |
| Never smoked | 3 | SKIP TO Q28 |

Q.24 Approximately how many cigarettes (not packs but individual cigarettes) do you smoke in a typical day?

Q.25 How many years have you smoked? PLEASE ENTER A WHOLE NUMBER THAT REPRESENTS YOUR BEST ESTIMATE OF THE NUMBER OF YEARS YOU HAVE SMOKED.

SKIP TO Q28

Q.26 When you did smoke, approximately how many cigarettes (not packs but individual cigarettes) did you smoke in a typical day?

Q.27 How many years did you smoke? PLEASE ENTER A WHOLE NUMBER THAT REPRESENTS YOUR BEST ESTIMATE OF THE NUMBER OF YEARS YOU SMOKED IN THE PAST.

Q.28 Approximately how many minutes of physical activity do you get in a typical day? PLEASE ENTER A WHOLE NUMBER THAT REPRESENTS THE TOTAL NUMBER OF MINUTES OF PHYSICAL ACTIVITY. PLEASE INCLUDE THE TIME SPENT ON ANY DAILY ACTIVITIES WHERE YOU ARE MOVING AROUND.

Do you participate in any type of regular exercise, such as walking outside or on a treadmill, or going to a health club to work out?

- | | | |
|-----|---|--------------------|
| Yes | 1 | |
| No | 2 | SKIP TO Q31 |

Q.29 In a typical week, how many minutes do you spend exercising?

Q.30 Have you been diagnosed by a physician with any of the following conditions? PLEASE CHECK ALL THAT APPLY.

- | | |
|--------------------|---|
| Chronic bronchitis | 1 |
| Emphysema | 2 |
| Asthma | 3 |
| None | 4 |

OVERALL COPD MANAGEMENT

Q.31 At what age were you diagnosed with chronic obstructive pulmonary disease (COPD)? PLEASE ENTER YOUR AGE AT DIAGNOSIS IN YEARS

Q.32 What type of doctor or clinician diagnosed your COPD?

- | | |
|---|---|
| Primary care physician (family doctor, general practitioner, internist) | 1 |
| Pulmonologist (lung specialist) | 2 |
| Nurse practitioner or physician's assistant | 3 |
| Emergency room doctor | 4 |

Q.33 What type of doctor or clinician do you currently see to manage your COPD?

Primary care physician (family doctor, general practitioner, internist)	1	
Pulmonologist (lung specialist)	2	
Nurse practitioner or physician's assistant	3	
Don't currently see anyone	4	SKIP TO Q37

Q.34 How often do you see your doctor or clinician to specifically manage your COPD?

Once a year	1
Two times a year	2
4 times a year	3
More than 4 times a year	4

Q.35 When you have a doctor's office visit for your COPD, is it typically as a check up so that your doctor can monitor your condition or is it because you are experiencing symptoms?

Check up to monitor the condition	1
Because you are experiencing symptoms	2

Q.36 Have you ever had a breathing test?

Yes	1
No	2

Q.37 How satisfied are you with the care you are receiving for your COPD?

Very satisfied	5
Somewhat satisfied	4
Not sure	3
Somewhat dissatisfied	2
Very dissatisfied	1

Q.38 Which of the following best describes how COPD impacts your everyday activities?

Not troubled by breathlessness except on strenuous exercising.	0
Shortness of breath when hurrying on level ground or walking up a slight hill.	1
Walk slower than people of the same age on level ground because of breathlessness or have to stop for breath when walking at your own pace on level ground.	2
Stops for breath after walking about 100 yards or after a few minutes of walking on level ground.	3
Too breathless to leave the house or breathless when dressing or undressing.	4

Q.39 What symptoms do you most frequently experience as a result of your COPD? PLEASE CHECK ALL THAT APPLY

Shortness of breath or dyspnea	1
Difficulty sleeping	2
Difficult or labored breathing when performing physical activity	3
Difficult or labored breathing when performing activities of daily living	4
Experiencing colds more frequently	5
Wheezing	6

Q.40 How often do you experience COPD symptoms at night?

- | | |
|------------------------|---|
| Never | 1 |
| About once a week | 2 |
| 2-3 times per week | 3 |
| Once a night | 4 |
| More than once a night | 5 |

Q.41 Have you ever been referred to a pulmonary rehab program?

- | | | |
|-----|---|--------------------|
| Yes | 1 | |
| No | 2 | SKIP TO Q44 |

Q.42 Have you completed a pulmonary rehab program?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q.43 Have you ever participated in a respiratory support group?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Let's talk for a moment about the medications you take to control your COPD.

Q.44 Bronchodilators help open the airways in the lungs by relaxing smooth muscle around the airways. Which of the following types of bronchodilator medications are you currently taking to manage your COPD? PLEASE CHECK ALL THAT APPLY

Anoro	1
Arcapta	2
Brovana	3
Foradil	4
Incruse	5
Serevent	6
Spiriva	7
Stiolto	8
Stiverdi	9
Tudorza	10
Other: SPECIFY	98
Don't currently take any bronchodilators	99

Q.45 Inhaled corticosteroids reduce inflammation in the airways that carry air to your lungs and reduce the mucus in those airways. Which of the following types of inhaled corticosteroids are you currently taking to manage your COPD? PLEASE CHECK ALL THAT APPLY

Aerospan	1
Alvesco	2
Flovent	3
Pulmicort	4
QVAR	5
Other: SPECIFY	98
Don't currently take any inhaled corticosteroids	99

Q.46 Some medications combine both bronchodilators and inhaled corticosteroids. Which of the following bronchodilator/inhaled corticosteroid combo medications are you currently taking to manage your COPD? PLEASE CHECK ALL THAT APPLY

Advair	1
Breo	2
Symbicort	3
Other: SPECIFY	98
Don't currently take any bronchodilator/inhaled corticosteroid combo medications	99

Q.47 In your opinion, how effective is your current maintenance medication in managing your COPD symptoms?

Very effective	1
Somewhat effective	2
Not very effective	3
Not at all effective	4

Q.48 Which of the following best describes how often you take your COPD medication exactly as it was prescribed to you?

All the time	<input type="checkbox"/> 1	SKIP TO Q 51
Most of the time	<input type="checkbox"/> 2	
Some of the time	<input type="checkbox"/> 3	
Infrequently	<input type="checkbox"/> 4	
Never	<input type="checkbox"/> 5	

Q.49 Approximately how many days in the last month did you NOT take your COPD medication exactly as it was prescribed to you?

Q.50 How often do you have to use rescue medications to deal with a COPD symptoms?

Less than once a month	1
2-3 times a month	2
Once a week	3
2-3 times a week	4
Once a day	5
Twice a day	6
More than twice a day	3

Q.51 Have you ever experienced any side effects resulting from your COPD medication?

Yes	1
No	2

Q.52 Has your doctor ever changed the treatment plan for your COPD? This may have involved changing to a different medication, adding medications or changing the device you use to inhale medication.

Yes	1
No	<input type="text" value="2"/> SKIP TO Q57

Q.53 Which of the following changes did your doctor make to your treatment plan?

Changed your existing medication but did not add any additional medications	1
Added one or more additional medications to your existing medication	2

Q.54 What was the main reason for the change in your treatment plan?

Poorly controlled symptoms	1
Frequent flare ups (exacerbations) requiring rescue medication	2
Difficulty using the inhalation device	3
Other SPECIFY	98

Q.55 Has your doctor ever made a change to the medications in your treatment plan specifically so that you would be able to use a different inhaler that might work better for you personally?

Yes	1
No	2

Q.56 In general, when your doctor changes your COPD medication, is that change being made so that you will be taking a medication that will work better or so that you will be using a device that is easier to operate?

Medication that works better	1
Device that's easier to operate	2

Q.57 How satisfied are you with the medications that you have been prescribed for managing your COPD?

Very satisfied	5
Somewhat satisfied	4
Not sure	3
Somewhat dissatisfied	2
Very dissatisfied	1

Q.58 Have you ever not taken your COPD medication because you could not afford to fill the prescription?

Yes	1
No	2

Q.59 OMIT

Q.60 Do you currently use a dry powder inhaler?

Yes	1
No	2

Q61A. Do you find your dry powder inhaler . . .

Very simple to use	1
Somewhat simple to use	2
Somewhat hard to use	3
Very hard to use	4

Q61B. Do you have a hard time assembling or inserting medication into your dry powder inhaler?

Yes	1	
No	2	SKIP TO Q61D

Q61C. What are the main reasons you have difficulty assembling your dry powder inhaler?

Hard to understand the instructions	1
Hard to manipulate or handle the device	2
Other: SPECIFY	3

Q41\4D. Do you have any difficulty operating your dry powder inhaler?

Yes	1	
No	2	SKIP TO Q61F

Q61E. What are the main reasons you have difficulty operating your dry powder inhaler?

Hard to understand the instructions	1
Hard to manipulate or handle the device	2
Other: SPECIFY	3

Q61F. How confident are you that the medication is delivered into your lungs when using your dry powder inhaler?

Very confident	1
Somewhat confident	2
Not at all confident	3

Q61G. How often do you feel that you use your dry powder inhaler correctly?

All the time	1
Most of the time	2
Some of the time	3
Infrequently	4
Never	5

Q61H. Overall, how satisfied are you with your dry powder inhaler?

Very satisfied	5
Somewhat satisfied	4
Not sure	3
Somewhat dissatisfied	2
Very dissatisfied	1

Q.61 Do you currently use a metered dose inhaler?

Yes	1
No	2

Q62A. Do you find your metered dose inhaler. . .

Very simple to use	1
Somewhat simple to use	2
Somewhat hard to use	3
Very hard to use	4

Q62B. Do you have a hard time assembling your metered dose inhaler?

Yes	1
No	2

SKIP TO Q62D

Q62C. What are the main reasons you have difficulty assembling your metered dose inhaler?

Hard to understand the instructions	1
Hard to manipulate or handle the device	2
Other: SPECIFY	3

Q62D. Do you have any difficulty operating your metered dose inhaler?

- | | | |
|-----|---|---------------------|
| Yes | 1 | |
| No | 2 | SKIP TO Q62F |

Q62E. What are the main reasons you have difficulty operating your metered dose inhaler?

- | | |
|---|---|
| Hard to understand the instructions | 1 |
| Hard to manipulate or handle the device | 2 |
| Other: SPECIFY | 3 |

Q62F. How confident are you that the medication is delivered into your lungs when using your metered dose inhaler?

- | | |
|----------------------|---|
| Very confident | 1 |
| Somewhat confident | 2 |
| Not at all confident | 3 |

Q62G. How often do you feel that you use your metered dose inhaler correctly?

- | | |
|------------------|---|
| All the time | 1 |
| Most of the time | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q62H. Overall, how satisfied are you with your metered dose inhaler?

Very satisfied	5
Somewhat satisfied	4
Not sure	3
Somewhat dissatisfied	2
Very dissatisfied	1

Q.62 Do you currently use a hand held small volume nebulizer?

Yes	1
No	2

Q63A. Do you find your hand held small volume nebulizer. . .

Very simple to use	1
Somewhat simple to use	2
Somewhat hard to use	3
Very hard to use	4

Q63B. Do you have a hard time assembling your nebulizer?

Yes	1	
No	2	SKIP TO Q63D

Q63C. What are the main reasons you have difficulty assembling your nebulizer?

Hard to understand the instructions	1
Hard to manipulate or handle the device	2
Other: SPECIFY	3

Q63D. Do you have any difficulty operating your nebulizer?

- | | | |
|-----|---|---------------------|
| Yes | 1 | |
| No | 2 | SKIP TO Q63F |

Q63E. What are the main reasons you have difficulty operating your nebulizer?

- | | |
|---|---|
| Hard to understand the instructions | 1 |
| Hard to manipulate or handle the device | 2 |
| Other: SPECIFY | 3 |

Q63F. How confident are you that the medication is delivered into your lungs when using your nebulizer?

- | | |
|----------------------|---|
| Very confident | 1 |
| Somewhat confident | 2 |
| Not at all confident | 3 |

Q63G. How often do you feel that you use your nebulizer correctly?

- | | |
|------------------|---|
| All the time | 1 |
| Most of the time | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q63H. Overall, how satisfied are you with your nebulizer?

Very satisfied	5
Somewhat satisfied	4
Not sure	3
Somewhat dissatisfied	2
Very dissatisfied	1

Q.63 Do you currently use a soft mist inhaler?

Q64A. Do you find your soft mist inhaler. . .

Very simple to use	1
Somewhat simple to use	2
Somewhat hard to use	3
Very hard to use	4

Q64B. Do you have a hard time assembling your soft mist inhaler?

Yes	1
No	2

SKIP TO Q64D

Q64C. What are the main reasons you have difficulty assembling your soft mist inhaler?

Hard to understand the instructions	1
Hard to manipulate or handle the device	2
Other: SPECIFY	3

Q64D. Do you have any difficulty operating your soft mist inhaler?

Yes	1
No	2

SKIP TO Q64F

Q64E. What are the main reasons you have difficulty operating your soft mist inhaler?

- | | |
|---|---|
| Hard to understand the instructions | 1 |
| Hard to manipulate or handle the device | 2 |
| Other: SPECIFY | 3 |

Q64F. How confident are you that the medication is delivered into your lungs when using your soft mist inhaler?

- | | |
|----------------------|---|
| Very confident | 1 |
| Somewhat confident | 2 |
| Not at all confident | 3 |

Q64G. How often do you feel that you use your soft mist inhaler correctly?

- | | |
|------------------|---|
| All the time | 1 |
| Most of the time | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q64H. Overall, how satisfied are you with your soft mist inhaler?

- | | |
|-----------------------|---|
| Very satisfied | 5 |
| Somewhat satisfied | 4 |
| Not sure | 3 |
| Somewhat dissatisfied | 2 |
| Very dissatisfied | 1 |

Q.64 Are you able to fix your inhaler device when there are minor problems with it?

- | | |
|---|---|
| Yes | 1 |
| No | 2 |
| Haven't had any problems with my inhaler device yet | 3 |

Q.65 Are you comfortable performing the required maintenance for your device, including cleaning and proper storage?

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

Q.66 Do you have concerns about how well your COPD medication is working?

- | | |
|------------------|---|
| All the time | 1 |
| Most of the time | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q.67 Does your ability to use your inhaler device ever interfere with you taking your medication exactly as it was prescribed to you?

- | | |
|------------------|---|
| All the time | 1 |
| Most of the time | 2 |
| Some of the time | 3 |
| Infrequently | 4 |
| Never | 5 |

Q.68 Do you have concerns about how well your COPD medication is working based on any concerns that you have about your ability to properly use your inhaler device?

All the time	1
Most of the time	2
Some of the time	3
Infrequently	4
Never	5

Q.69 If you could choose any type of inhaler device for delivery of your prescription medication, which one would you prefer?

Dry powder inhaler	1
Metered dose inhaler	2
Handheld small-volume nebulizer	3
No preference	4
Don't know	5

EDUCATION AND KNOWLEDGE ABOUT PROPER USE OF INHALER DEVICE

Q.70 When you were first prescribed COPD medication requiring the use of inhaler device, did your doctor or someone in his/her office train you on how to use the device?

Yes	1
No	2

Q.71 Were you trained on how to assemble the device?

Yes	1
No	2

Q.72 Were you trained on proper breathing technique when using the device?

Yes	1
No	2

Q.73 Did your doctor or someone in his/her office assess your abilities to operate the device?

Yes	1
No	2

Q.74 Did your doctor's office have a sample device for you to practice with as they were teaching you how to use it?

Yes	1
No	2

Q.75 Does your doctor help you make certain that you are using your device properly each time you have an office visit about your COPD?

Yes	1
No	2

Q.76 Does your doctor ask you to bring all of your medications and devices to your office visits in order to observe your technique in taking your medication?

All the time	1
Most of the time	2
Some of the time	3
Infrequently	4
Never	5

ADHERENCE AND HEALTH BELIEF

Q.77 Listed below are a series of statements about taking your medicine. For each statement, please indicate how frequently that statement applies to your experience taking COPD medication. RANDOMIZE ORDER OF EXPOSURE

	<u>Always</u>	<u>Often</u>	<u>Sometimes</u>	<u>Rarely</u>	<u>Never</u>
a. I sometimes forget to take my COPD medication.	5	4	3	2	1
b. I change the dosage of my COPD medication.	5	4	3	2	1
c. I stopped taking my COPD medication for a while.	5	4	3	2	1
d. I occasionally decide to skip one of my COPD medication dosages.	5	4	3	2	1
e. I use my COPD medication less than is prescribed.	5	4	3	2	1

Q.78 Finally, listed is a short series of statements about attitudes and experiences you may have had when it comes to your medical care. For each statement, please indicate how frequently that statement applies to you. RANDOMIZE ORDER OF EXPOSURE

	<u>Always</u>	<u>Often</u>	<u>Sometimes</u>	<u>Rarely</u>	<u>Never</u>
a. I have sufficient understanding about my illness.	5	4	3	2	1
b. My current management will keep my illness at bay.	5	4	3	2	1
c. The management of my illness is a mystery for me.	5	4	3	2	1
d. Natural remedies are safer than medicines.	5	4	3	2	1
e. My medications are working.	5	4	3	2	1

f. I have sufficient understanding about the options for managing my illness.	5	4	3	2	1
g. My doctors are very knowledgeable.	5	4	3	2	1
h. It is unpleasant to use some of my medications.	5	4	3	2	1
i. It is physically difficult to handle some of my medications and/or medical devices.	5	4	3	2	1
j. I am satisfied with the information my doctor shares with me.	5	4	3	2	1
k. My doctor spends adequate time with me.	5	4	3	2	1
l. I get confused about my medications.	5	4	3	2	1
m. I put up with my medical problems before taking any action.	5	4	3	2	1
n. My condition is untreatable and I just need to live with it.	5	4	3	2	1
o. There will be harsh side effects if I take my medication.	5	4	3	2	1

Thank you for taking the time to participate in this survey.

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