# Supplemental Material

## ATTRIBUTE LEVELS AND DEFINITIONS

Discrete choice experiment (DCE) attributes were defined based on key efficacy and risk outcomes relevant for asthma and chronic obstructive pulmonary disease (COPD) maintenance inhaler treatments as well as features characterizing the convenience of using these maintenance inhalers and out-of-pocket costs for maintenance medicine. Because the attributes that are most relevant to patients differ for asthma versus COPD (e.g., increased risk of pneumonia is only relevant for COPD patients), two unique DCEs were administered to patients with asthma and patients with COPD. The DCE attributes were selected based on a targeted literature review, opinions generated from focus groups consisting of patients with asthma (n=15) or COPD (n=22),[1] and consultations with clinical experts on the project team.

The attributes for this study span three domains: (1) efficacy, characterized by onset of action of the inhaled therapy and exacerbations per year; (2) safety, characterized by 5-year risk of osteoporosis, and for COPD patients, 5-year risk of pneumonia; and (3) non-clinical features of the inhaler related to convenience, characterized by device type, dosing frequency, dose counters, and priming. The attribute levels were constructed based on: asthma and COPD treatment product characteristics; clinical expert feedback; and a review of clinical data sources, published studies on patients' perceptions of asthma and COPD endpoints, and preference studies in patients with asthma or COPD. Definitions of attributes and attribute levels are provided in **Supplemental Table 1**.

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**Supplemental Table 1. Attribute and Level Definitions**

| Attribute | Attribute Description | Level | Level Description |
|---|---|---|---|
| Number of exacerbations | **For Asthma:** An asthma exacerbation, or asthma attack, is when your airways become swollen and the muscles around your airways contract. This may cause you to experience difficulty breathing, coughing, or wheezing. You will need to visit your health care provider or emergency room to get extra medication, such as oral steroids, and may require an overnight stay in the hospital. **For COPD:** A COPD exacerbation is when you experience a "flare-up", or sudden worsening of respiratory symptoms, and become sick. You will need to visit your health care provider or emergency room to get extra medication, such as oral steroids or antibiotics, and may require an overnight stay in the hospital. | 1 exacerbation per year | You experience one exacerbation in a year. |
| | | 2 exacerbations per year | You experience two exacerbations in a year. |
| | | 3 exacerbations per year | You experience three exacerbations in a year. |
| Onset of action | After you use your maintenance inhaler, it may take a few minutes before it starts working. With some inhalers, the medication will start working within just 5 minutes, but with others it may take up to 30 minutes. The amount of time it takes for your medication to begin working is called onset of action. | 5 minutes | Your medication will begin to work within 5 minutes after using your maintenance inhaler. |
| | | 15 minutes | Your medication will begin to work within 15 minutes after using your maintenance inhaler. |
| | | 20 minutes | Your medication will begin to work within 20 minutes after using your maintenance inhaler. |
| | | 30 minutes | Your medication will begin to work within 30 minutes after using your maintenance inhaler. |
| Osteoporosis | Some maintenance medications increase your chance of getting osteoporosis. Osteoporosis is a disease that affects your bones. Your body may then lose bone mass and your bones may become weak | 4% (4 out of 100 patients) | You have a 4% chance of experiencing a hip fracture within 5 years of using your inhaler. |
| | | 5% (5 out of 100 patients) | You have a 5% chance of experiencing a hip fracture within 5 years of using your inhaler. |

2

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| Attribute | Attribute Description | Level | Level Description |
|---|---|---|---|
| | and break easily. As a result, you may experience a hip fracture. | 6% (6 out of 100 patients) | You have a 6% chance of experiencing a hip fracture within 5 years of using your inhaler. |
| Dosing Frequency | Dosing frequency refers to the number of times per day your doctor recommends you use your maintenance inhaler. Some maintenance medications should be used once per day while others should be used twice per day (once in the morning and once in the evening, approximately 12 hours apart). | Once daily | You need to take one or two puffs of your maintenance inhaler once per day. |
| | | Twice daily | You need to take one or two puffs of your maintenance inhaler two times per day - once in the morning and again in the evening |
| Priming | Before you use your maintenance medication for the first time, it may require you to insert a cartridge containing all the doses. Some inhalers require you to follow a few simple steps to get it ready each time you use them. Others require you to remove a capsule from separate foil packaging and inserting it into the device. | One or two simple steps to get dose ready | Each time you use your inhaler, you will need to do one or two simple steps to get it ready. These steps only include opening the device and pulling either one or two levers. The steps are the same for your first dose and all other doses. |
| | | Need to discharge test doses on first use. One simple step to get dose ready. | The device requires you to discharge several doses into the air before you use it for the first time. Between each discharge of a test dose, you must shake the device for five seconds. Each time you use your inhaler for all other doses, you will just need to open the device. |
| | | Need to insert canister on first use. Two steps to get dose ready. | The device requires you to go through several steps to get it ready before you use it for the first time. First, you will need to remove the base of the inhaler and insert a separate canister of the medicine into the inhaler and push down hard until it clicks into place. Then, you must reattach the base into place. Each time you use the inhaler, you need to keep it upright, turn the base, and open the cap. |

3

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| Attribute | Attribute Description | Level | Level Description |
|---|---|---|---|
| | | Need to insert a new capsule into inhaler each time to get dose ready. | Each time you use this inhaler, you will need to remove a capsule containing the medicine from a separate package, insert it into the inhaler, and then close the inhaler to get it ready for use. The steps are the same for your first dose and all other doses. |
| Device type | Maintenance inhalers deliver your medicine in two different ways: 1) One type of inhaler is pressurized, like an aerosol can. The medication is forced out and you inhale moderately deeply and somewhat slowly. 2) The other type of inhaler contains the medicine in dry powder. For dry powder inhalers, you take a fast, very deep breath. | Pressurized inhaler | These inhalers are pressurized and force the medication out when you depress the canister or push the button. When you use these, you must inhale at slow speed, moderately deeply. |
| | | Soft mist inhaler | These inhalers gently release the medication out in a continuous liquid mist when you press the dose-release button. When you use these, you must inhale slowly and deeply as you press the button, continuing until your lungs are full. |
| | | Dry powder inhaler | These inhalers are not pressurized and hold the medicine in a dry powder form. When you use these inhalers, you must inhale very fast and deeply. |
| Dose counter | Inhalers often come with a dose counter built in that tells you how much medicine you have left. Some dose counters are very precise and display the exact number of doses that are left. Some dose counters are very precise but tell you how many doses you have left in counts of 10. Other dose counters are in the form of a meter, displaying an approximate amount of medicine left and look similar to a gas gauge in a car. | Every dose | The dose counter displays exactly the number of doses left. |
| | | Every 10 doses | The dose counter displays the number of doses left but counts only every 10 doses. |
| | | Metered dose counter | The dose counter is displayed as a needle on a meter, much like you would see a gas gauge in a car. It moves after every dose. |

4

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| Attribute | Attribute Description | Level | Level Description |
|---|---|---|---|
| Pneumonia (COPD patients only) | Some maintenance medications increase your chance of getting pneumonia. Pneumonia is a type of lung infection that can cause coughing, fever, shortness of breath, fatigue, weakness, nausea, vomiting, and diarrhea. | 10% (10 out of 100 patients) | You have a 10% chance of getting pneumonia in the coming 5 years. |
| | | 15% (15 out of 100 patients) | You have a 15% chance of getting pneumonia in the coming 5 years. |
| | | 20% (20 out of 100 patients) | You have a 20% chance of getting pneumonia in the coming 5 years. |

## DOMINATED-CHOICE QUESTION

For the dominated-choice question, one choice option was at least as good or better than the other on all attributes (**Supplemental Figure 1**). This dominated-choice question was used to assess whether patients understand the discrete choice task and were responding appropriately to the choices. The dominated-choice question was presented as the last question of the DCE exercise.

Although the patient population overall preferred once-daily over twice-daily dosing (**Figure 3**), some individual patients might have preferred twice-daily over once-daily dosing. For such patients, the dominated-choice question in **Supplemental Figure 1** is inappropriate.

**Supplemental Figure 1. Dominated-Choice DCE Question**

Your doctor asks you to decide between two maintenance inhaler medications, Inhaler A and Inhaler B. The outcomes you will experience after using either Inhaler A or B are described in the table below.

Take a moment to review the outcomes produced by each treatment, and then indicate which treatment you would choose at the bottom of the table.

| Outcomes | Inhaler A | Inhaler B |
|---|---|---|
| Number of exacerbations | 3 exacerbations per year | 1 exacerbation per year |
| Onset of action | 30 minutes | 15 minutes |
| Osteoporosis | 4% (4 out of 100 patients) risk of hip fracture over 5 years | 4% (4 out of 100 patients) risk of hip fracture over 5 years |
| Pneumonia | 20% (2 out of 100 patients) risk of pneumonia over 5 years | 10% (1 out of 100 patients) risk of pneumonia over 5 years |
| Dosing frequency | Once daily | Twice daily |
| Device type | Pressurized inhaler | Pressurized inhaler |
| Dose counter | Metered dose counter | Metered dose counter |

## DCE DESIGN

Using NGene version 1.1 (ChoiceMetrics, Sydney, Australia), separate D-efficient experimental designs were generated for the asthma and COPD surveys, applying directional priors when applicable. The designs consisted of 96 questions split into eight survey versions (blocks) with 12 choice tasks per block and four blocks each for asthma and COPD. For each choice task, patients were asked to choose between two unlabeled treatments (A and B) described by the treatment attributes. The design did not include constraints for level combinations. Although some attribute combinations do not occur with currently available inhalers, such as capsule

6

priming with pressurized inhaler type, no issues with level combinations were detected in the pilot interviews.

## STATISTICAL ANALYSIS OF DCE DATA

The analysis of the DCE data followed random utility maximization theory, by assuming that within every choice task ($t$), each respondent ($n$) always chose the treatment ($j$) that resulted in the highest utility.[2-4]

Baseline utility of patients with asthma was defined as

$$u_{jnt}^{\text{asthma}} = \alpha_{jnt}^{\text{asthma}} + \beta_1^{\text{asthma}}\text{one\_exacerbation}_{jnt} + \beta_2^{\text{asthma}}\text{two\_exacerbations}_{jnt} +$$
$$\beta_3^{\text{asthma}}\text{20min\_onset}_{jnt} + \beta_4^{\text{asthma}}\text{15min\_onset}_{jnt} + \beta_5^{\text{asthma}}\text{5min\_onset}_{jnt} +$$
$$\beta_6^{\text{asthma}}\text{5\%\_osteoporosis\_risk}_{jnt} + \beta_7^{\text{asthma}}\text{4\%\_osteoporosis\_risk}_{jnt} +$$
$$\beta_8^{\text{asthma}}\text{once\_daily}_{jnt} + \beta_9^{\text{asthma}}\text{canister}_{jnt} + \beta_{10}^{\text{asthma}}\text{discharge}_{jnt} +$$
$$\beta_{11}^{\text{asthma}}\text{1to2\_easy\_steps}_{jnt} + \beta_{12}^{\text{asthma}}\text{soft\_mist}_{jnt} + \beta_{13}^{\text{asthma}}\text{pressurized\_device}_{jnt} +$$
$$\beta_{14}^{\text{asthma}}\text{1to2\_easy\_steps}_{jnt} + \beta_{15}^{\text{asthma}}\text{count\_evey\_10th\_dose}_{jnt} +$$
$$\beta_{16}^{\text{asthma}}\text{count\_evey\_dose}_{jnt} + \varepsilon_{jnt}$$

Baseline utility of patients with COPD was defined as

$$u_{jnt}^{\text{COPD}} = \alpha_{jnt}^{\text{COPD}} + \beta_1^{\text{COPD}}\text{one\_exacerbation}_{jnt} + \beta_2^{\text{COPD}}\text{two\_exacerbations}_{jnt} +$$
$$\beta_3^{\text{COPD}}\text{20min\_onset}_{jnt} + \beta_4^{\text{COPD}}\text{15min\_onset}_{jnt} + \beta_5^{\text{COPD}}\text{5min\_onset}_{jnt} +$$
$$\beta_6^{\text{COPD}}\text{5\%\_osteoporosis\_risk}_{jnt} + \beta_7^{\text{COPD}}\text{4\%\_osteoporosis\_risk}_{jnt} + \beta_8^{\text{COPD}}\text{once\_daily}_{jnt} +$$
$$\beta_9^{\text{COPD}}\text{canister}_{jnt} + \beta_{10}^{\text{COPD}}\text{discharge}_{jnt} + \beta_{11}^{\text{COPD}}\text{1to2\_easy\_steps}_{jnt} + \beta_{12}^{\text{COPD}}\text{soft\_mist}_{jnt} +$$
$$\beta_{13}^{\text{COPD}}\text{pressurized\_device}_{jnt} + \beta_{14}^{\text{COPD}}\text{1to2\_easy\_steps}_{jnt} +$$
$$\beta_{15}^{\text{COPD}}\text{count\_evey\_10th\_dose}_{jnt} + \beta_{16}^{\text{COPD}}\text{count\_evey\_dose}_{jnt} +$$
$$\beta_{17}^{\text{COPD}}\text{10\%\_pneumonia\_risk}_{jnt} + \beta_{18}^{\text{COPD}}\text{15\%\_pneumonia\_risk}_{jnt}) + \varepsilon_{jnt}$$

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where $\alpha_{\text{left}}$ was the constant of the left alternative to control for left-right bias, $\beta_1$ to $\beta_{18}$ are

marginal utilities (i.e. estimated preference parameters) and $\varepsilon_{jnt}$ was an extreme value

distributed error that allowed the function to be estimated in a multinomial logit model.

All attributes were dummy-coded. Reference levels are indicated in Supplemental Table 1. Each

of the estimated marginal utilities measured respondents' sensitivity to deviations from the

reference level of the corresponding attribute. The sign (+ or -) of a marginal utility denoted

whether patients valued this deviation positively or negatively. Three behavioral output measures

were calculated to explore the trade-offs that patients are willing to make:

1. Relative attribute importance (RI) was estimated as the range of the marginal utilities

   within an attribute (i.e., the difference between the highest valued attribute and the lowest

   valued attribute), divided by the sum of the attribute ranges. RI scores sum up to one

   across each attribute and measure variation in overall utility that can be explained by

   changes in each attribute.

2. The maximum acceptable exacerbations (MAE) measured how many additional

   exacerbations a respondent was willing to accept for each of the attribute levels, relative

   to their respective reference level. This measure was obtained by estimating the baseline

   utility function with the number of exacerbations being coded as linear (i.e. one marginal

   utility is estimated instead of $\beta_1$ and $\beta_2$). Each marginal utility was then divided by the

   negative of the obtained marginal utility of the number of exacerbations.

3. The maximum acceptable onset time (MAO) measured how many extra minutes of onset

   of action patients were willing to accept for each of the attribute levels, relative to their

8

respective reference level. This measure was obtained by estimating the baseline utility function with the onset of action being coded as linear (i.e. one marginal utility is estimated instead of $\beta_3$ to $\beta_5$). Each marginal utility was then divided by the negative of the obtained marginal utility of the onset of action attribute.

The linearity assumptions made by MAE and MAO were tested by estimating the baseline utility function and fitting a linear function through the marginal utilities of the dummy coded attributes. Linearity was rejected for an $R^2$ <0.9. Standard errors of MEA and MAO were obtained using the delta method.

## ASSESSMENT OF INTERNAL VALIDITY

Internal validity indicators included:

- Not choosing the better option in the dominated-choice question
- Choosing a different answer in the repeated question
- Always choosing the alternative better on one of the attributes with unambiguous attribute ordering (all attributes apart from method of treatment)
- Always choosing A or B; in addition, the discrete choice models included a constant to assess biases that are not binary (i.e., choosing sometimes A, sometimes B, but choosing A more often than they should, based on the level differences)
- Assessing time to complete the DCE survey

Internal validity was assessed for the full sample and stratified by educational level and health literacy and numeracy. Level of education was dichotomized into a high and low score, whereby bachelor's and/or postgraduate degrees were defined as a high educational level and all other educational levels are defined as a low educational level. Health literacy and numeracy were dichotomized as recommended by their developers.[5, 6] Results are presented in **Supplemental Table 2**.

9

**Supplemental Table 2. Internal Validity Assessment Results**

| Validity assessment | n (%) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Overall (N=1957) | Asthma (N=810) | COPD (N=1147) | Low Literacy (N=295) | High Literacy (N=1662) | Low Numeracy (N=228) | High Numeracy (N=1729) | Low Education (N=1107) | High Education (N=850) |
| *Dominance test* | | | | | | | | | |
| Failed | 226 (12) | 133 (16) | 93 (8) | 98 (33) | 128 (8) | 94 (41) | 132 (8) | 157 (14) | 69 (8) |
| Passed | 1,731 (88) | 677 (84) | 1,054 (92) | 197 (67) | 1,534 (92) | 134 (59) | 1,597 (92) | 950 (86) | 781 (92) |
| *Repeated question* | | | | | | | | | |
| Failed | 410 (21) | 155 (19) | 255 (22) | 74 (25) | 336 (20) | 55 (24) | 355 (21) | 251 (23) | 159 (19) |
| Passed | 1,547 (79) | 655 (81) | 892 (78) | 221 (75) | 1,326 (80) | 173 (76) | 1,374 (79) | 856 (77) | 691 (81) |
| *Always choosing A or B* | | | | | | | | | |
| A | 40 (2) | 35 (4) | 5 (0) | 29 (10) | 11 (1) | 34 (15) | 6 (0) | 36 (3) | 4 (0) |
| B | 1 (0) | 1 (0) | 0 (0) | 0 (0) | 1 (0) | 0 (0) | 1 (0) | 0 (0) | 1 (0) |
| Neither (some A, some B) | 1,916 (98) | 774 (96) | 1,142 (100) | 266 (90) | 1,650 (99) | 194 (85) | 1,722 (100) | 1,071 (97) | 845 (99) |
| *Always choosing the alternative better on one attribute* | | | | | | | | | |
| None | 1,593 (81) | 673 (83) | 920 (80) | 239 (81) | 1,354 (81) | 200 (88) | 1,393 (81) | 929 (84) | 664 (78) |
| Exacerbations | 160 (8) | 58 (7) | 102 (9) | 27 (9) | 133 (8) | 11 (5) | 149 (9) | 75 (7) | 85 (10) |
| Onset of action | 150 (8) | 52 (6) | 98 (9) | 21 (7) | 129 (8) | 9 (4) | 141 (8) | 71 (6) | 79 (9) |
| Osteoporosis | 31 (2) | 26 (3) | 5 (0) | 5 (2) | 26 (2) | 7 (3) | 24 (1) | 15 (1) | 16 (2) |
| Pneumonia | 23 (1) | 1 (0) | 22 (2) | 3 (1) | 20 (1) | 1 (0) | 22 (1) | 17 (2) | 6 (1) |
| *Time to complete survey (min:s)* | | | | | | | | | |
| 3:00-4:59 | 1 (0) | 1 (0) | 0 (0) | 1 (0) | 0 (0) | 1 (0) | 0 (0) | 1 (0) | 0 (0) |
| 5:00-6:59 | 33 (2) | 25 (3) | 8 (1) | 19 (6) | 14 (1) | 14 (6) | 19 (1) | 22 (2) | 11 (1) |
| 7:00-9:59 | 83 (4) | 61 (8) | 22 (2) | 26 (9) | 57 (3) | 22 (10) | 61 (4) | 44 (4) | 39 (5) |
| 9:00-14:59 | 515 (26) | 265 (33) | 250 (22) | 89 (30) | 426 (26) | 77 (34) | 438 (25) | 265 (24) | 250 (29) |
| 15:00-19:59 | 427 (22) | 166 (20) | 261 (23) | 47 (16) | 380 (23) | 40 (18) | 387 (22) | 252 (23) | 175 (21) |
| ≥20:00 | 898 (46) | 292 (36) | 606 (53) | 113 (38) | 785 (47) | 74 (32) | 824 (48) | 523 (47) | 375 (44) |

Abbreviation: COPD, chronic obstructive pulmonary disease

10

## RESULTS OF MULTINOMIAL LOGIT MODELING

Results of multinomial logit modeling by disease are shown in **Supplemental Tables 3–5**, by asthma severity groups in **Supplemental Table 6**, and by COPD severity groups in **Supplemental Table 7**.

### Supplemental Table 3. Multinomial Logit Results (Dummy Coding) by Disease

| Attribute/level | Asthma (N=810) Marginal utility (coefficient) | 95% CI | RI | COPD (N=1147) Marginal utility (coefficient) | 95% CI | RI |
|---|---|---|---|---|---|---|
| Left alternative | 0.16*** | 0.12, 0.20 | - | 0.02 | -0.02, 0.06 | - |
| *Exacerbations* | | | | | | |
| 3 per year | Reference level | | | Reference level | | |
| 2 per year | 0.43*** | 0.37, 0.49 | 0.21 | 0.52*** | 0.47, 0.57 | 0.27 |
| 1 per year | 0.68*** | 0.61, 0.74 | | 1.07*** | 1.02, 1.13 | |
| *Onset time* | | | | | | |
| 30 min | Reference level | | | Reference level | | |
| 20 min | 0.38*** | 0.30, 0.45 | 0.33 | 0.46*** | 0.40, 0.53 | 0.28 |
| 15 min | 0.61*** | 0.53, 0.68 | | 0.74*** | 0.67, 0.80 | |
| 5 min | 1.05*** | 0.97, 1.13 | | 1.11*** | 1.04, 1.18 | |
| *5-year risk of osteoporosis* | | | | | | |
| 6% | Reference level | | | Reference level | | |
| 5% | 0.21*** | 0.15, 0.27 | 0.14 | 0.21*** | 0.15, 0.26 | 0.08 |
| 4% | 0.46*** | 0.39, 0.52 | | 0.32*** | 0.26, 0.38 | |
| *Dosing frequency* | | | | | | |
| Twice daily | Reference level | | 0.05 | Reference level | | 0.05 |
| Once daily | 0.15*** | 0.10, 0.20 | | 0.21*** | 0.16, 0.25 | |
| *Priming* | | | | | | |
| Capsule | Reference level | | | Reference level | | |
| Canister: two steps | 0.39*** | 0.32, 0.46 | | 0.32*** | 0.26, 0.38 | |
| Discharge: one step | 0.36*** | 0.28, 0.44 | 0.13 | 0.20*** | 0.12, 0.27 | 0.08 |
| One to two easy steps | 0.40*** | 0.32, 0.48 | | 0.32*** | 0.25, 0.39 | |
| *Device type* | | | | | | |
| Dry powder inhaler | Reference level | | | Reference level | | |
| Soft mist inhaler | 0.24*** | 0.18, 0.30 | 0.11 | 0.06* | 0.01, 0.11 | 0.04 |
| Pressurized inhaler | 0.34*** | 0.28, 0.41 | | 0.16*** | 0.11, 0.21 | |
| *Dose counter* | | | | | | |
| Metered | Reference level | | | Reference level | | |
| Every 10th dose | 0.03 | -0.03, 0.10 | 0.03 | -0.13*** | -0.19, -0.08 | 0.05 |
| Every dose | 0.08* | 0.02, 0.15 | | 0.07* | 0.02, 0.13 | |
| *5-year risk of pneumonia* | | | | | | |
| 20% | | | | Reference level | | |
| 15% | Not included | | | 0.268*** | 0.21, 0.32 | 0.15 |
| 10% | | | | 0.603*** | 0.55, 0.66 | |
| Log-likelihood | -6027 | | | -8220 | | |
| McFadden's pseudo-R² | 0.11 | | | 0.14 | | |

Abbreviations: COPD, chronic obstructive pulmonary disease; RI, relative importance score; SE, standard error.
*P<0.05. **P<0.01. ***P<0.001.

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**Supplemental Table 4. Multinomial Logit Results (Continuous Exacerbation Coding) by Disease**

| Attribute/level | Asthma (N=810) | | | | COPD (N=1147) | | | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | 95% CI | MAE | 95% CI | Coefficient | 95% CI | MAE | 95% CI |
| Left alternative | 0.16*** | 0.11, 0.20 | - | - | 0.02 | -0.02, 0.06 | - | - |
| **Exacerbations (1 per year)** | -0.34*** | -0.37, -0.31 | - | - | -0.54*** | -0.57, -0.51 | - | - |
| *Onset time* | | | | | | | | |
| 30 min | | Reference level | | | | Reference level | | |
| 20 min | 0.37*** | 0.29, 0.45 | 1.1 | 0.8, 1.3 | 0.46*** | 0.40, 0.53 | 0.9 | 0.7, 1.0 |
| 15 min | 0.60*** | 0.53, 0.68 | 1.8 | 1.5, 2.0 | 0.74*** | 0.67, 0.80 | 1.4 | 1.2, 1.5 |
| 5 min | 1.05*** | 0.97, 1.13 | 3.1 | 2.7, 3.4 | 1.11*** | 1.04, 1.18 | 2.1 | 1.9, 2.2 |
| *5-year risk of osteoporosis* | | | | | | | | |
| 6% | | Reference level | | | | Reference level | | |
| 5% | 0.21*** | 0.15, 0.27 | 0.6 | 0.4, 0.8 | 0.21*** | 0.15, 0.26 | 0.4 | 0.3, 0.5 |
| 4% | 0.45*** | 0.38, 0.52 | 1.3 | 1.1, 1.5 | 0.32*** | 0.26, 0.38 | 0.6 | 0.5, 0.7 |
| *Dosing frequency* | | | | | | | | |
| Twice daily | | Reference level | | | | Reference level | | |
| Once daily | 0.15*** | 0.10, 0.20 | 0.4 | 0.3, 0.6 | 0.21*** | 0.16, 0.25 | 0.4 | 0.3, 0.5 |
| *Priming* | | | | | | | | |
| Capsule | | Reference level | | | | Reference level | | |
| Canister: Two steps | 0.38*** | 0.31, 0.46 | 1.1 | 0.9, 1.4 | 0.32*** | 0.26, 0.37 | 0.6 | 0.5, 0.7 |
| Discharge: One step | 0.36*** | 0.28, 0.44 | 1.1 | 0.8, 1.3 | 0.20*** | 0.12, 0.27 | 0.4 | 0.2, 0.5 |
| One to two easy steps | 0.40*** | 0.32, 0.47 | 1.2 | 0.9, 1.4 | 0.32*** | 0.25, 0.39 | 0.6 | 0.5, 0.7 |
| *Device type* | | | | | | | | |
| Dry powder inhaler | | Reference level | | | | Reference level | | |
| Soft mist inhaler | 0.24*** | 0.18, 0.31 | 0.7 | 0.5, 0.9 | 0.06* | 0.01, 0.11 | 0.1 | 0.0, 0.2 |
| Pressurized inhaler | 0.34*** | 0.28, 0.41 | 1.0 | 0.8, 1.2 | 0.16*** | 0.11, 0.21 | 0.3 | 0.2, 0.4 |
| **Dose counter** | | | | | | | | |
| Metered | | Reference level | | | | Reference level | | |
| Every 10th dose | 0.04 | -0.02, 0.10 | 0.1 | -0.1, 0.3 | -0.13*** | -0.19, -0.08 | -0.2 | -0.3, -0.1 |
| Every dose | 0.08* | 0.02, 0.15 | 0.2 | 0.1, 0.4 | 0.07** | 0.02, 0.13 | 0.1 | 0.0, 0.2 |
| *5-year risk of pneumonia* | | | | | | | | |
| 20% | | | | | | Reference level | | |
| 15% | | Not included | | | 0.27*** | 0.21, 0.32 | 0.5 | 0.4, 0.6 |
| 10% | | | | | 0.60*** | 0.58, 0.66 | 1.1 | 1.0, 1.2 |
| Log-likelihood | | -6033 | | | | -8220 | | |
| McFadden's pseudo-R² | | 0.11 | | | | 0.14 | | |

Abbreviations: COPD, chronic obstructive pulmonary disease; MAE, maximum acceptable exacerbations; SE, standard error.

*P<0.05. **P<0.01. ***P<0.001.

## Supplemental Table 5. Multinomial Logit Results (Continuous Onset Coding) by Disease

| Attribute/level | Asthma (N=810) | | | | COPD (N=1147) | | | |
|---|---|---|---|---|---|---|---|---|
| | Marginal utility (coefficient) | 95% CI | MAO | 95% CI | Marginal utility (coefficient) | 95% CI | MAO | 95% CI |
| Left alternative | 0.16*** | 0.12, 0.20 | - | - | 0.02 | -0.02, 0.06 | - | - |
| *Exacerbations* | | | | | | | | |
| 3 per year | | Reference level | | | | Reference level | | |
| 2 per year | 0.43*** | 0.37, 0.49 | 10.1 | 8.6, 11.7 | 0.52*** | 0.47, 0.57 | 11.6 | 10.3, 12.9 |
| 1 per year | 0.68*** | 0.61, 0.74 | 16.0 | 14.2, 17.7 | 1.07*** | 1.02, 1.13 | 24.0 | 22.3, 25.7 |
| *Onset time (min)* | -0.04*** | -0.05, -0.04 | - | - | -0.04*** | -0.05, -0.04 | - | - |
| *5-year risk of osteoporosis* | | | | | | | | |
| 6% | | Reference level | | | | Reference level | | |
| 5% | 0.21*** | 0.15, 0.27 | 4.9 | 3.5, 6.4 | 0.20*** | 0.15, 0.26 | 4.5 | 3.4, 5.7 |
| 4% | 0.46*** | 0.39, 0.52 | 10.8 | 9.2, 12.4 | 0.32*** | 0.26, 0.38 | 7.1 | 5.9, 8.4 |
| *Dosing frequency* | | | | | | | | |
| Twice daily | | Reference level | | | | Reference level | | |
| Once daily | 0.15*** | 0.10, 0.20 | 3.6 | 2.4, 4.8 | 0.20*** | 0.16, 0.25 | 4.6 | 3.6,5.6 |
| *Priming* | | | | | | | | |
| Capsule | | Reference level | | | | Reference level | | |
| Canister: two steps | 0.39*** | 0.32, 0.46 | 9.2 | 7.4, 11.0 | 0.32*** | 0.26, 0.38 | 7.1 | 5.7, 8.4 |
| Discharge: one step | 0.36*** | 0.28, 0.44 | 8.5 | 6.6, 10.4 | 0.20*** | 0.12, 0.27 | 4.4 | 2.8, 6.1 |
| One to two easy steps | 0.40*** | 0.32, 0.48 | 9.4 | 7.5, 11.3 | 0.32*** | 0.25, 0.40 | 7.2 | 5.6, 8.9 |
| *Device type* | | | | | | | | |
| Dry powder inhaler | | Reference level | | | | Reference level | | |
| Soft mist inhaler | 0.24*** | 0.18, 0.30 | 5.6 | 4.1, 7.1 | 0.06* | 0.01, 0.11 | 1.4 | 0.21, 2.6 |
| Pressurized inhaler | 0.34*** | 0.28, 0.40 | 8.1 | 6.5, 9.6 | 0.16*** | 0.11, 0.22 | 3.6 | 2.4, 4.8 |
| *Dose counter* | | | | | | | | |
| Metered | | Reference level | | | | Reference level | | |
| Every 10th dose | 0.03 | -0.03, 0.09 | 0.7 | -0.7, 2.2 | -0.13*** | -0.19, -0.08 | -3.0 | -4.2, -1.8 |
| Every dose | 0.08* | 0.02, 0.14 | 1.9 | 0.4, 3.4 | 0.07* | 0.01, 0.13 | 1.6 | 0.3, 2.8 |
| *5-year risk of pneumonia* | | | | | | | | |
| 20% | | | | | | Reference level | | |
| 15% | | Not included | | | 0.27*** | 0.21, 0.32 | 6.0 | 4.8, 7.2 |
| 10% | | | | | 0.61*** | 0.55, 0.66 | 13.5 | 12.2, 14.9 |
| Log-likelihood | | -6737 | | | | -9540 | | |
| McFadden's pseudo-R² | | 0.11 | | | | 0.14 | | |

Abbreviations: COPD, chronic obstructive pulmonary disease; SE, standard error.

14

*P<0.05. **P<0.01. ***P<0.001.

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**Supplemental Table 6. Multinomial Logit Results (Dummy Coding): Asthma by ACQ Groups**

| Attribute/level | ACQ ≤0.75 (N=219) | | | 0.75 <ACQ <1.5 (N=195) | | | ACQ ≥1.5 (N=396) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Marginal utility (coefficient) | 95% CI | RI | Marginal utility (coefficient) | 95% CI | RI | Marginal utility (coefficient) | 95% CI | RI |
| Left alternative | 0.02 | -0.07, 0.10 | - | 0.10* | 0.01, 0.19 | - | 0.28*** | 0.21, 0.34 | - |
| *Exacerbations* | | | | | | | | | |
| 3 per year | Reference level | | | Reference level | | | Reference level | | |
| 2 per year | 0.53*** | 0.41, 0.66 | 0.22 | 0.44*** | 0.32, 0.57 | 0.25 | 0.38*** | 0.28, 0.47 | 0.19 |
| 1 per year | 0.94*** | 0.80, 1.07 | | 0.73*** | 0.60, 0.86 | | 0.54*** | 0.45, 0.63 | |
| *Onset time* | | | | | | | | | |
| 30 min | Reference level | | | Reference level | | | Reference level | | |
| 20 min | 0.31*** | 0.15, 0.46 | 0.24 | 0.30*** | 0.15, 0.46 | 0.34 | 0.46*** | 0.35, 0.57 | 0.39 |
| 15 min | 0.60*** | 0.45, 0.76 | | 0.49*** | 0.33, 0.64 | | 0.68*** | 0.57, 0.79 | |
| 5 min | 1.02*** | 0.86, 1.18 | | 1.00*** | 0.84, 1.17 | | 1.13*** | 1.02, 1.25 | |
| *5-year risk of osteoporosis* | | | | | | | | | |
| 6% | Reference level | | | Reference level | | | Reference level | | |
| 5% | 0.39*** | 0.26, 0.51 | 0.18 | 0.19** | 0.06, 0.31 | 0.10 | 0.13** | 0.05, 0.22 | 0.13 |
| 4% | 0.77*** | 0.64, 0.91 | | 0.31*** | 0.17, 0.44 | | 0.38*** | 0.28, 0.48 | |
| *Dosing frequency* | | | | | | | | | |
| Twice daily | Reference level | | | Reference level | | | Reference level | | |
| Once daily | 0.33*** | 0.22, 0.43 | 0.08 | 0.11* | 0.01, 0.22 | 0.04 | 0.08* | 0.01, 0.15 | 0.03 |
| *Priming* | | | | | | | | | |
| Capsule | Reference level | | | Reference level | | | Reference level | | |
| Canister: two steps | 0.53*** | 0.39, 0.67 | 0.15 | 0.42*** | 0.27, 0.56 | 0.15 | 0.31*** | 0.21, 0.41 | 0.11 |
| Discharge: one step | 0.55*** | 0.40, 0.71 | | 0.44*** | 0.28, 0.60 | | 0.24*** | 0.12, 0.35 | |
| One to two easy steps | 0.63*** | 0.48, 0.79 | | 0.46*** | 0.31, 0.62 | | 0.26*** | 0.15, 0.37 | |
| *Device type* | | | | | | | | | |
| Dry powder inhaler | Reference level | | | Reference level | | | Reference level | | |
| Soft mist inhaler | 0.22*** | 0.11, 0.34 | 0.09 | 0.25*** | 0.12, 0.37 | 0.10 | 0.25*** | 0.17, 0.34 | 0.12 |
| Pressurized inhaler | 0.38*** | 0.26, 0.50 | | 0.29*** | 0.17, 0.42 | | 0.36*** | 0.27, 0.45 | |
| *Dose counter* | | | | | | | | | |
| Metered | Reference level | | | Reference level | | | Reference level | | |
| Every 10th dose | 0.08 | -0.05, 0.20 | 0.05 | -0.03 | -0.15, 0.10 | 0.02 | 0.05 | -0.04, 0.13 | 0.03 |
| Every dose | 0.21** | 0.08, 0.34 | | -0.07 | -0.20, 0.06 | | 0.09* | 0.00, 0.19 | |
| Log-likelihood | -1580 | | | -1445 | | | -2946 | | |
| McFadden's pseudo-R² | 0.13 | | | 0.11 | | | 0.11 | | |

Abbreviations: ACQ, Asthma Control Questionnaire®; RI, relative importance score; SE, standard error. *P<0.05. **P<0.01. ***P<0.001.

16

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**Supplemental Table 7. Multinomial Logit Results (Dummy Coding): COPD by CAT Groups**

| Attribute/level | CAT ≤20 (N=334) | | | 20 <CAT <30 (N=476) | | | CAT ≥30 (N=337) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Marginal utility (coefficient) | 95% CI | RI | Marginal utility (coefficient) | 95% CI | RI | Marginal utility (coefficient) | 95% CI | RI |
| Left alternative | -0.04 | -0.11, 0.03 | - | 0.01 | -0.05, 0.07 | - | 0.08* | 0.02, 0.15 | - |
| *Exacerbations* | | | | | | | | | |
| 3 per year | Reference level | | | Reference level | | | Reference level | | |
| 2 per year | 0.60*** | 0.50, 0.71 | 0.27 | 0.48*** | 0.39, 0.56 | 0.24 | 0.51*** | 0.41, 0.61 | 0.27 |
| 1 per year | 1.32*** | 1.21, 1.43 | | 1.00*** | 0.91, 1.09 | | 0.96*** | 0.86, 1.07 | |
| *Onset time* | | | | | | | | | |
| 30 min | Reference level | | | Reference level | | | Reference level | | |
| 20 min | 0.45*** | 0.32, 0.57 | 0.20 | 0.46*** | 0.36, 0.56 | 0.28 | 0.48*** | 0.36, 0.60 | 0.32 |
| 15 min | 0.65*** | 0.52, 0.77 | | 0.78*** | 0.68, 0.88 | | 0.77*** | 0.65, 0.90 | |
| 5 min | 0.98*** | 0.84, 1.11 | | 1.19*** | 1.08, 1.30 | | 1.16*** | 1.03, 1.29 | |
| *5-year risk of osteoporosis* | | | | | | | | | |
| 6% | Reference level | | | Reference level | | | Reference level | | |
| 5% | 0.18*** | 0.07, 0.28 | 0.07 | 0.23*** | 0.15, 0.32 | 0.08 | 0.20*** | 0.10, 0.29 | 0.07 |
| 4% | 0.36*** | 0.25, 0.47 | | 0.33*** | 0.24, 0.42 | | 0.26*** | 0.16, 0.37 | |
| *Dosing frequency* | | | | | | | | | |
| Twice daily | Reference level | | 0.07 | Reference level | | 0.05 | Reference level | | 0.02 |
| Once daily | 0.34*** | 0.25, 0.43 | | 0.20*** | 0.13, 0.27 | | 0.09* | 0.00, 0.17 | |
| *Priming* | | | | | | | | | |
| Capsule | Reference level | | | Reference level | | | Reference level | | |
| Canister: two steps | 0.46*** | 0.35, 0.58 | 0.09 | 0.32*** | 0.28, 0.41 | 0.08 | 0.18*** | 0.08, 0.29 | 0.08 |
| Discharge: one step | 0.34*** | 0.20, 0.49 | | 0.15* | 0.03, 0.26 | | 0.13 | -0.01, 0.27 | |
| One to two easy steps | 0.41*** | 0.28, 0.55 | | 0.29*** | 0.17, 0.40 | | 0.28*** | 0.14, 0.42 | |
| *Device type* | | | | | | | | | |
| Dry powder inhaler | Reference level | | | Reference level | | | Reference level | | |
| Soft mist inhaler | 0.07 | -0.03, 0.17 | 0.03 | 0.10* | 0.02, 0.18 | 0.05 | 0.00 | -0.09, 0.10 | 0.04 |
| Pressurized inhaler | 0.14** | 0.04, 0.24 | | 0.21*** | 0.13, 0.29 | | 0.13** | 0.03, 0.23 | |
| *Dose counter* | | | | | | | | | |
| Metered | Reference level | | | Reference level | | | Reference level | | |
| Every 10th dose | -0.18*** | -0.28, -0.08 | 0.04 | -0.09* | -0.17, -0.01 | 0.02 | -0.15** | -0.25, -0.05 | 0.04 |
| Every dose | 0.10 | -0.00, 0.21 | | 0.09* | 0.00, 0.18 | | 0.02 | -0.08, 0.12 | |
| *5-year risk of pneumonia* | | | | | | | | | |
| 20% | Reference level | | 0.24 | Reference level | | 0.21 | Reference level | | 0.16 |
| 15% | 0.36*** | 0.26, 0.46 | | 0.28*** | 0.20, 0.37 | | 0.16** | 0.06, 0.26 | |

17

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10% | 0.83*** | 0.73, 0.94 | | 0.58*** | 0.50, 0.67 | 0.42*** | 0.32, 0.53 |
| Log-likelihood | -2299 | | | -3423 | | -2445 | |
| McFadden's pseudo-R² | 0.17 | | | 0.14 | | 0.13 | |

Abbreviations: CAT, COPD Assessment Test; COPD, chronic obstructive pulmonary disease; RI, relative importance score; SE, standard error.

*P<0.05. **P<0.01. ***P<0.001.

18

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**Supplemental Table 8. Multinomial Logit Results for Asthma by Age, Sex, Level of Education, and ACQ Score**

| Attribute/level | Coefficient (95% CI) | | | | | |
|---|---|---|---|---|---|---|
| | Marginal utility | ≥65 y vs. <65 y | Female vs. male | University degree or higher vs. less than university degree | 0.75 < ACQ < 1.5 vs. ACQ ≤0.75 or ≥1.5 | ACQ ≥1.5 vs. ACQ <1.5 |
| Left alternative | 0.17 (0.13, 0.22)*** | | | | | |
| *Exacerbations* | | | | | | |
| 3 per year | | | Reference level | | | |
| 2 per year | 0.36 (0.17, 0.54)*** | 0.13 (-0.03, 0.30) | 0.14 (0.01, 0.27)* | 0.13 (0.00, 0.26) | -0.08 (-0.26, 0.10) | -0.14 (-0.30, 0.20) |
| 1 per year | 0.66 (0.47, 0.85)*** | 0.14 (-0.03, 0.32) | 0.21 (0.07, 0.35)** | 0.21 (0.08, 0.35)** | -0.18 (-0.37, 0.01) | -0.35 (0.52, -0.18)*** |
| *Onset time* | | | | | | |
| 30 min | | | Reference level | | | |
| 20 min | 0.19 (-0.04, 0.41) | -0.02 (-0.23, 0.18) | 0.05 (-0.11, 0.21) | 0.19 (0.03, 0.35)* | 0.00 (-0.22, 0.23) | 0.16 (-0.04, 0.36) |
| 15 min | 0.42 (0.19, 0.64)*** | -0.08 (-0.28, 0.12) | 0.13 (-0.03, 0.29) | 0.25 (0.09, 0.41)** | -0.11 (-0.33, 0.11) | 0.09 (-0.10, 0.29) |
| 5 min | 0.47 (0.23, 0.70)*** | 0.10 (-0.12, 0.31) | 0.34 (0.17, 0.51)*** | 0.52 (0.35, 0.69)*** | 0.06 (-0.17, 0.30) | 0.23 (0.02, 0.43)* |
| *5-year risk of osteoporosis* | | | | | | |
| 6% | | | Reference level | | | |
| 5% | 0.28 (0.09, 0.46)** | 0.03 (-0.13, 0.20) | 0.15 (0.02, 0.29)* | 0.02 (-0.11, 0.15) | -0.19 (-0.37,-0.02)* | -0.25 (-0.42, -0.09)*** |
| 4% | 0.66 (0.47, 0.86)*** | 0.01 (-0.17, 0.19) | 0.09 (-0.05, 0.24) | 0.11 (-0.03, 0.25) | -0.45 (-0.65, -0.26)*** | -0.39 (-0.57, -0.22)* |
| *Dosing frequency* | | | | | | |
| Twice daily | | | Reference level | | | |
| Once daily | 0.19 (0.04, 0.34)* | 0.10 (-0.04, 0.24) | 0.05 (-0.06, 0.16) | 0.14 (0.04, 0.25)** | -0.20 (-0.35, -0.05) | -0.20 (-0.34, -0.07) |
| *Priming* | | | | | | |
| Capsule | | | Reference level | | | |
| Canister: Two-Steps | 0.29 (0.08, 0.49)** | 0.29 (0.10, 0.48)** | 0.14 (-0.01, 0.30) | 0.12 (-0.03, 0.27) | -0.07 (-0.28, 0.14) | -0.15 (-0.34, 0.03) |
| Discharge: One-Step | 0.34 (0.10, 0.58)** | 0.27 (0.06, 0.49)* | 0.11 (-0.05, 0.28) | 0.11 (-0.06, 0.28) | -0.07 (-0.30, 0.16) | -0.25 (-0.46, -0.05)* |
| One to two easy steps | 0.47 (0.24, 0.71)*** | 0.08 (-0.13, 0.28) | 0.06 (-0.10, 0.23) | 0.19 (0.02, 0.35)* | -0.15 (-0.37, 0.08) | -0.34 (-0.54, -0.14)*** |
| *Device type* | | | | | | |
| Dry powder inhaler | | | Reference level | | | |
| Soft mist inhaler | 0.11 (-0.07, 0.28) | 0.04 (-0.12, 0.20) | 0.13 (0.00, 0.26)* | 0.06 (-0.07, 0.19) | 0.03 (-0.14, 0.21) | 0.03 (-0.12, 0.19) |
| Pressurized inhaler | 0.25 (0.06, 0.43)** | 0.08 (-0.08, 0.25) | 0.17 (0.04, 0.30)* | 0.06 (-0.07, 0.19) | -0.10 (-0.28, 0.08) | -0.03 (-0.19, 0.13) |
| *Dose counter* | | | | | | |
| Metered | | | Reference level | | | |
| Every 10th dose | 0.10 (-0.08, 0.28) | -0.02 (-0.19, 0.14) | -0.01 (-0.14, 0.12) | -0.02 (-0.15, 0.11) | -0.10 (-0.27, 0.08) | -0.04 (-0.20, 0.12) |
| Every dose | 0.09 (-0.09, 0.28) | 0.26 (0.10, 0.43)** | 0.02 (-0.11, 0.16) | 0.04 (-0.09, 0.17) | -0.27 (-0.46, -0.09)** | -0.07 (-0.23, 0.09) |

Abbreviations: ACQ, Asthma Control Questionnaire® ; CI, confidence interval

19

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**Supplemental Table 9. Multinomial Logit Results for COPD by Age, Sex, Level of Education, and CAT score**

| Attribute/level | Coefficient (95% CI) | | | | | |
|---|---|---|---|---|---|---|
| | Marginal Utility | ≥65 y vs. <65 y | Female vs. male | University degree or higher vs. less than university degree | 20 < CAT < 30 vs. CAT ≤20 or ≥30 | CAT ≥30 vs. CAT <30 |
| Left alternative | 0.02 (-0.02, 0.06) | | | | | |
| *Exacerbations* | | | | | | |
| 3 per year | | | | Reference level | | |
| 2 per year | 0.43 (0.28, 0.59)*** | 0.02 (-0.11, 0.14) | 0.18 (0.07, 0.30)** | 0.16 (0.04, 0.27)** | -0.12 (-0.25, 0.02) | -0.09 (-0.25, 0.06) |
| 1 per year | 1.04 (0.88, 1.21)*** | 0.15 (0.02, 0.28) | 0.23 (0.09, 0.33)*** | 0.23 (0.10, 0.35)*** | -0.28 (-0.43, -0.13)*** | -0.32 (-0,48, -0.16)*** |
| *Onset time* | | | | | | |
| 30 min | | | | Reference level | | |
| 20 min | 0.40 (0.22, 0.58)*** | -0.12 (-0.27, 0.03) | 0.09 (0.04, 0.23) | 0.16 (0.02, 0.30)* | 0.00 (-0.16, 0.17) | -0.02 (-0.21, 0.16) |
| 15 min | 0.57 (0.38, 0.76)*** | =0.17 (-0.32, -0.01)* | 0.14 (0.00, 0.28)* | 0.20 (0.05, 0.34)** | 0.12 (-0.05, 0.29) | 0.06 (-0.13, 0.25) |
| 5 min | 0.98 (0.78, 1.18)*** | -0.27 (-0.43, -0.10)** | 0.04 (-0.11, 0.19) | 0.30 (0.15, 0.46)*** | 0.18 (0.0, 0.36) | 0.06 (-0.14, 0.26) |
| *5-year risk of osteoporosis* | | | | | | |
| 6% | | | | Reference level | | |
| 5% | 0.18 (0.30, 0.33)* | -0.02 (-0.14, 0.11) | -0.03 (-0.14, 0.09) | 0.03 (-0.08, 0.15) | 0.07 (-0.07, 0.20) | 0.02 (-0.13, 0.17) |
| 4% | 0.37 (0.20, 0.53)*** | -0.08 (0.02, 0.24) | -0.10 (-0.22, 0.02) | 0.03 (-0.09, 0.16) | 0.00 (-0.14, 0.15) | -0.06 (-0.23, 0.10) |
| *Dosing frequency* | | | | | | |
| Twice daily | | | | Reference level | | |
| Once daily | 0.26 (0.13, 0.39)*** | 0.13 (0.02, 0.24)* | 0.04 (-0.05, 0.14) | -0.02 (-0.11, 0.08) | -0.12 (-0.23, 0.00) | -0.20 (-0.33, -0.07)** |
| *Priming* | | | | | | |
| Capsule | | | | Reference level | | |
| Canister: Two-Steps | 0.42 (0.25, 0.59)*** | 0.11 (-0.03, 0.25) | -0.04 (-0.17, 0.09) | 0.00 (-0.13, 0.13) | -0.12 (-0.27, 0.04) | -0.21 (-0.38, -0.05)* |
| Discharge: One-Step | 0.41 (0.19. 0.63)*** | -0.01 (-0.18, 0.17) | -0.03 (-0.19, 0.13) | -0.12 (-0.29. 0.04) | -0.20 (-0.40, -0.01)* | -0.20 (-0.42, 0.02) |
| One to two easy steps | 0.52 (0.30, 0.73)*** | -0.14 (-0.31, 0.03) | 0.02 (-0.14, 0.17) | -0.08 (-0.24, 0.08) | -0.017 (-0.36, 0.02) | -0.19 (-0.40, 0.02) |
| *Device type* | | | | | | |
| Dry powder inhaler | | | | Reference level | | |
| Soft mist inhaler | 0.09 (-0.06, 0.24) | -0.01 (-0.13, 0.11) | 0.04 (-0.07, 0.15) | -0.12 (-0.23, -0.01)* | 0.02 (-0.11, 0.15) | -0.05 (-0.20, 0.10) |
| Pressurized inhaler | 0.21 (0.06, 0.36)** | -0.01 (-0.13, 0.11) | -0.16 (-0.17, 0.05) | -0.11 (-0.22, 0.00) | 0.07 (-0.07, 0.20) | 0.00 (-0.15, 0.15) |
| *Dose counter* | | | | | | |
| Metered | | | | Reference level | | |
| Count every 10th dose | -0.22 (-0.38, -0.07)** | 0.01 (-0.11, 0.14) | 0.01 (-0.10, 0.12) | 0.04 (-0.07, 0.16) | 0.11 (-0.02, 0.25) | 0.05 (-0.10, 0.20) |
| Count every dose | 0.02 (-0.14, 0.18) | 0.09 (-0.04, 0.22) | 0.03 (-0.08, 0.15) | 0.05 (-0.07, 0.17) | 0.01 (-0.13, 0.16) | -0.05 (-0.20, 0.11) |
| *5-year risk of pneumonia* | | | | | | |
| 20% | | | | Reference level | | |
| 15% | 0.42 (0.27, 0.57)*** | -0.02 (-0.15, 0.10) | -0.08 (-0.19, 0.03) | 0.00 (-0.12, 0.11) | -0.08 (-0.21, 0.06) | -0.21 (-0.36, -0.06)** |
| 10% | 0.86 (0.70, 1.02)*** | 0.05 (-0.08, 0.18) | -0.11 (-0.23, 0.01) | 0.04 (-0.08, 0.16) | -0.023 (-0.37, -0.09) | -0.40 (-0.56, -0.24)*** |

20

Abbreviations: CAT, COPD Assessment Test; CI, confidence interval; COPD, chronic obstructive pulmonary disease

21

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22