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Trial record **1 of 1** for: CQVA149A2303

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A Study to Assess the Efficacy, Safety and Tolerability of Once-daily (q.d.) QVA149 in Patients With Moderate to Severe Chronic Obstructive Pulmonary Disease (COPD) (SHINE)

This study has been completed.

Sponsor:
Novartis Pharmaceuticals

Information provided by (Responsible Party):
Novartis (Novartis Pharmaceuticals)

ClinicalTrials.gov Identifier:
NCT01202188

First received: September 13, 2010
Last updated: August 26, 2013
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History of Changes

Results First Received: February 7, 2013

Study Type:	Interventional
Study Design:	Allocation: Randomized; Intervention Model: Parallel Assignment; Masking: Double Blind (Subject, Caregiver, Investigator, Outcomes Assessor); Primary Purpose: Treatment
Condition:	Chronic Obstructive Pulmonary Disease (COPD)
Interventions:	Drug: indacaterol and glycopyrronium (QVA149) Drug: glycopyrronium (NVA237) Drug: indacaterol (QAB149)

	Drug: tiotropium Drug: placebo

Participant Flow

Hide Participant Flow

Recruitment Details

Key information relevant to the recruitment process for the overall study, such as dates of the recruitment period and locations
No text entered.

Pre-Assignment Details

Significant events and approaches for the overall study following participant enrollment, but prior to group assignment
There was a 14 day run-in period prior to randomization.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler

	(SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Participant Flow: Overall Study

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
STARTED	475	477	475	483	234
Safety Set; Received Study Drug	474	476	473	480	232
COMPLETED	437	421	422	441	189
NOT COMPLETED	38	56	53	42	45
Protocol deviation	14	8	12	10	11
Subject withdrew consent	12	13	22	11	13
Adverse Event	5	23	13	10	10
Administrative problems	3	2	1	1	2
Unsatisfactory therapeutic effect	2	8	2	5	8
Lost to Follow-up	1	1	0	4	1
Death	1	1	1	1	0
Abnormal test procedure result (s)	0	0	2	0	0

Baseline Characteristics

Hide Baseline Characteristics

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Baseline measures are based on the Safety Set that includes all participants who received study drug.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Total	Total of all reporting groups

Baseline Measures

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo	Total
Number of Participants [units: participants]	474	476	473	480	232	2135
Age [units: years] Mean (Standard Deviation)	64.0 (8.88)	63.6 (8.78)	64.3 (9.04)	63.5 (8.73)	64.4 (8.58)	63.9 (8.83)
Gender [units: participants]						
Female	112	122	108	120	63	525
Male	362	354	365	360	169	1610

Outcome Measures

Hide All Outcome Measures

1. Primary: Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment [Time Frame: 23 hours 15 minutes and 23 hour 45 minute post-dose Week 26]

Measure Type	Primary
Measure Title	Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment
Measure Description	Spirometry was performed according to internationally accepted standards. Trough FEV1 was defined as the mean of the 23 hour 15 minute and 23 hour 45 minute post-dose values. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.

Time Frame	23 hours 15 minutes and 23 hour 45 minute post-dose Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, defined as all randomized participants who received at least one dose of study drug, with data available for analysis. Data was imputed with last observation carried forward. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from the analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks.Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Indacaterol (QAB149)**	**Glycopyrronium (NVA237)**
Number of Participants Analyzed [units: participants]	**442**	**435**	**424**
Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment [units: Liters]	**1.45 (0.010)**	**1.38 (0.010)**	**1.36 (0.010)**

Least Squares Mean (Standard Error)			

No statistical analysis provided for Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment

2. Secondary: Transitional Dyspnea Index (TDI) Focal Score at Week 26 [Time Frame: Week 26]

Measure Type	Secondary
Measure Title	Transitional Dyspnea Index (TDI) Focal Score at Week 26
Measure Description	A trained assessor interviewed the patient and graded the degree of impairment due to dyspnea (difficulty breathing). TDI focal score is based on three domains: functional impairment, magnitude of task and magnitude of effort. Each domain is scored from -3 (major deterioration) to 3 (major improvement) to give an overall TDI focal score of -9 to 9. Higher numbers indicate a better score. A mixed model was used with treatment as a fixed effect with Baseline Dyspnea Index Score and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid

	(ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Placebo
Number of Participants Analyzed [units: participants]	**439**	**193**
Transitional Dyspnea Index (TDI) Focal Score at Week 26 [units: Score on a scale] Least Squares Mean (Standard Error)	**2.72 (0.170)**	**1.63 (0.230)**

No statistical analysis provided for Transitional Dyspnea Index (TDI) Focal Score at Week 26

3. Secondary: St. George's Respiratory Questionnaire (SGRQ) Total Score at Week 26 [Time Frame: 26 weeks]

Measure Type	Secondary
Measure Title	St. George's Respiratory Questionnaire (SGRQ) Total Score at Week 26
Measure Description	SGRQ is a health related quality of life questionnaire consisting of 51 items in three areas: symptoms (respiratory symptoms and severity), activity (activities that cause or are limited by breathlessness) and impacts (social functioning and psychological disturbances due to airway disease). The total score is 0 to 100 with a higher score indicating poorer health status. A mixed model was used with treatment as a fixed effect with Baseline SGRQ and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	26 weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set,included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward but not more than 14 weeks and data within 4 weeks of day 1 were not carried forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Placebo**
Number of Participants Analyzed [units: participants]	**441**	**196**
St. George's Respiratory Questionnaire (SGRQ) Total Score at Week 26 [units: Score on a scale] Least Squares Mean (Standard Error)	**37.01 (0.679)**	**40.02 (0.941)**

No statistical analysis provided for St. George's Respiratory Questionnaire (SGRQ) Total Score at Week 26

4. Secondary: Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication Over 26 Weeks [Time Frame: Baseline, Week 26]

Measure Type	Secondary
Measure Title	Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication Over 26 Weeks
Measure Description	The number of puffs of rescue medication taken in the previous 12 hours was record in patient diary in the morning and in the evening for 26 weeks. The total number of puffs per day was calculated and divided by the number of days with data to determine the mean daily number of puffs of rescue medication for each patient. Rescue medication data recorded during the 14 day run-in was used to calculate the baseline. A negative change from baseline indicates improvement. A mixed model was used with treatment as a fixed effect with baseline number of puffs and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	Baseline, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the full analysis, consisting of all randomized participant who received study drug, with data available for analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium	

	(QVA149)	Placebo
Number of Participants Analyzed [units: participants]	**419**	**199**
Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication Over 26 Weeks [units: Puffs per day] Least Squares Mean (Standard Error)	**-1.88 (0.105)**	**-0.92 (0.147)**

No statistical analysis provided for Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication Over 26 Weeks

5. Secondary: Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149, QAB149 and NVA237 Compared to Placebo [Time Frame: 23 hours 15 minutes and 23 hour 45 minute post-dose Week 26]

Measure Type	Secondary
Measure Title	Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149, QAB149 and NVA237 Compared to Placebo
Measure Description	Spirometry was performed according to internationally accepted standards. Trough FEV1 was defined as the mean of the 23 hour 15 minute and 23 hour 45 minute post-dose values. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	23 hours 15 minutes and 23 hour 45 minute post-dose Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.

Participants from the Full Analysis Set, defined as all randomized participants who received at least one dose of study drug, with data available for analysis. Data was imputed with last observation carried forward. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from the analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks.Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Placebo
Number of Participants Analyzed [units: participants]	**442**	**435**	**424**	**191**
Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149, QAB149 and NVA237 Compared to Placebo [units: Liters] Least Squares Mean (Standard Error)	**1.45 (0.010)**	**1.38 (0.010)**	**1.36 (0.010)**	**1.25 (0.015)**

No statistical analysis provided for Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149, QAB149

and NVA237 Compared to Placebo

6. Secondary: Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149 Compared to Tiotropium [Time Frame: 23 hours 15 minutes and 23 hour 45 minute post-dose Week 26]

Measure Type	Secondary
Measure Title	Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149 Compared to Tiotropium
Measure Description	Spirometry was performed according to internationally accepted standards. Trough FEV1 was defined as the mean of the 23 hour 15 minute and 23 hour 45 minute post-dose values. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	23 hours 15 minutes and 23 hour 45 minute post-dose Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Per-protocol Set, randomized participants who received at least one dose of study drug without major protocol deviations. Data was imputed with last observation carried forward. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from the analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via the manufacturer's proprietary device for 26 weeks.Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Tiotropium**
Number of Participants Analyzed [units: participants]	**387**	**382**
Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149 Compared to Tiotropium [units: Liters] Least Squares Mean (Standard Error)	**1.46 (0.011)**	**1.39 (0.011)**

No statistical analysis provided for Trough Forced Expiratory Volume In One Second (FEV1) After 26 Weeks of Treatment With QVA149 Compared to Tiotropium

7. Secondary: Baseline Transitional Dyspnea Index (BDI/TDI) Focal Score at Week 12 and Week 26 [Time Frame: Baseline, Week 12, Week 26]

Measure Type	Secondary
Measure Title	Baseline Transitional Dyspnea Index (BDI/TDI) Focal Score at Week 12 and Week 26
Measure Description	A trained assessor interviewed the patient and graded the degree of impairment due to dyspnea (difficulty breathing). BDI/TDI focal score is based on three domains: functional impairment, magnitude of task and magnitude of effort and captures changes from baseline. BDI was measured at day 1 prior to the first dose with domain scores ranging from 0=very severe to 4=no impairment and a total score ranging from 0 to 12(best). TDI captures changes from baseline. Each domain is scored from -3=major deterioration to 3=major improvement to give an overall TDI focal score of -9 to 9. Higher numbers indicate a better score. A mixed model was used with treatment as a fixed effect with Baseline Dyspnea Index Score and FEV1 prior to

	inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators as covariates and included baseline smoking status, baseline inhaled corticosteroids and region as fixed effects with center nested within region as a random effect.
Time Frame	Baseline, Week 12, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward but not more than 14 weeks and data within 4 weeks of day 1 were not carried forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**442**	**443**	**435**	**445**	**200**
Baseline Transitional Dyspnea Index (BDI/TDI) Focal Score at Week 12 and Week 26 [units: Score on a scale] Least Squares Mean (Standard Error)					
BDI_ baseline for Week 12	**6.45 (0.100)**	**6.28 (0.096)**	**6.21 (0.097)**	**6.43 (0.094)**	**6.53 (0.154)**
TDI Week 12	**2.44 (0.158)**	**2.18 (0.157)**	**2.04 (0.158)**	**1.81 (0.158)**	**1.22 (0.215)**
BDI_baseline for Week 26 (n=439,440,424,441,193)	**6.45 (0.101)**	**6.28 (0.097)**	**6.22 (0.097)**	**6.46 (0.095)**	**6.56 (0.157)**
TDI Week 26 (n=439,440,424,441,193)	**2.72 (0.170)**	**2.47 (0.171)**	**2.52 (0.172)**	**2.21 (0.171)**	**1.63 (0.230)**

No statistical analysis provided for Baseline Transitional Dyspnea Index (BDI/TDI) Focal Score at Week 12 and Week 26

8. Secondary: Percentage of Patients With a Clinically Important Improvement of at Least 1 Point in TDI Focal Score After 26 Weeks of Treatment [Time Frame: Baseline, Week 26]

Measure Type	Secondary

Measure Title	Percentage of Patients With a Clinically Important Improvement of at Least 1 Point in TDI Focal Score After 26 Weeks of Treatment
Measure Description	A trained assessor interviewed the patient and graded the degree of impairment due to dyspnea (difficulty breathing) at Week 12 and Week 26. TDI focal score is based on three domains: functional impairment, magnitude of task and magnitude of effort. The BDI (baseline) was measured at Day 1. The TDI captures changes from baseline. Each domain is scored from -3 (major deterioration) to 3 (major improvement) to give an overall TDI focal score of -9 to 9.
Time Frame	Baseline, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler

	(SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**
Percentage of Patients With a Clinically Important Improvement of at Least 1 Point in TDI Focal Score After 26 Weeks of Treatment [units: Percentage of participants]	**68.1**	**64.6**	**63.7**	**59.2**	**57.5**

No statistical analysis provided for Percentage of Patients With a Clinically Important Improvement of at Least 1 Point in TDI Focal Score After 26 Weeks of Treatment

9. Secondary: St. George's Respiratory Questionnaire (SGRQ) Total Score After 12 and 26 Weeks of Treatment [Time Frame: Week 12, Week 26]

Measure Type	Secondary
Measure Title	St. George's Respiratory Questionnaire (SGRQ) Total Score After 12 and 26 Weeks of Treatment
Measure Description	SGRQ is a health related quality of life questionnaire consisting of 51 items in three areas: symptoms (respiratory symptoms and severity), activity (activities that cause or are limited by breathlessness) and impacts (social functioning and psychological disturbances due to airway disease). The total score is 0 to 100 with a higher score indicating poorer health status. A mixed model was used with treatment as a fixed effect with Baseline SGRQ and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	Week 12, Week 26

Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward but not more than 14 weeks and data within 4 weeks of day 1 were not carried forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Indacaterol (QAB149)**	**Glycopyrronium (NVA237)**	**Tiotropium**	**Placebo**

Number of Participants Analyzed [units: participants]	**448**	**446**	**441**	**454**	**205**
St. George's Respiratory Questionnaire (SGRQ) Total Score After 12 and 26 Weeks of Treatment [units: Score on a scale] Least Squares Mean (Standard Error)					
12 Weeks	**37.56 (0.659)**	**38.55 (0.662)**	**39.40 (0.663)**	**39.94 (0.658)**	**41.55 (0.900)**
26 Weeks (n=441,443,430,450,196)	**37.01 (0.679)**	**38.10 (0.680)**	**38.19 (0.686)**	**39.14 (0.677)**	**40.02 (0.941)**

No statistical analysis provided for St. George's Respiratory Questionnaire (SGRQ) Total Score After 12 and 26 Weeks of Treatment

10. Secondary: Percentage of Patients With a Clinically Important Improvement From Baseline of at Least 4 Units in the SGRQ Total Score After 26 Weeks of Treatment [Time Frame: Baseline, Week 26]

Measure Type	Secondary
Measure Title	Percentage of Patients With a Clinically Important Improvement From Baseline of at Least 4 Units in the SGRQ Total Score After 26 Weeks of Treatment
Measure Description	SGRQ is a health related quality of life questionnaire consisting of 51 items in three areas: symptoms (respiratory symptoms and severity), activity (activities that cause or are limited by breathlessness) and impacts (social functioning and psychological disturbances due to airway disease). The total score is 0 to 100 with a higher score indicating poorer health status.
Time Frame	Baseline, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, that included all participants who received at least one dose of study drug, with data available for analysis. Missing data were imputed with Last Observation Carried Forward but not more than 14 weeks and data within 4 weeks of day 1 were not carried forward.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Indacaterol (QAB149)**	**Glycopyrronium (NVA237)**	**Tiotropium**	**Placebo**
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**

Percentage of Patients With a Clinically Important Improvement From Baseline of at Least 4 Units in the SGRQ Total Score After 26 Weeks of Treatment [units: Percentage of participants]	**63.7**	**63.0**	**60.5**	**56.4**	**56.6**

No statistical analysis provided for Percentage of Patients With a Clinically Important Improvement From Baseline of at Least 4 Units in the SGRQ Total Score After 26 Weeks of Treatment

11. Secondary: Percentage of Nights With "No Night Time Awakenings" Over 26 Weeks [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of Nights With "No Night Time Awakenings" Over 26 Weeks
Measure Description	A day with no night time awakenings is defined from the diary data as any day where the patient did not wake up due to COPD symptoms. The percentage of nights is calculated by the number of days with no nighttime awakenings/total number of days with evaluable data X 100. A mixed model was used with treatment as a fixed effect with baseline Percent days and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, all randomized participants who received study drug, with evaluable diary data (at least 40 days) for analysis.

Reporting Groups

	Description

Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**418**	**413**	**399**	**422**	**198**
Percentage of Nights With "No Night Time Awakenings" Over 26 Weeks [units: Percentage of nights] Least Squares Mean (Standard Error)	**63.68 (1.473)**	**62.48 (1.479)**	**58.64 (1.500)**	**60.00 (1.469)**	**53.67 (2.047)**

No statistical analysis provided for Percentage of Nights With "No Night Time Awakenings" Over 26 Weeks

12. Secondary: Percentage of Days With "No Daytime Symptoms" Over 26 Weeks [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of Days With "No Daytime Symptoms" Over 26 Weeks
Measure Description	A day with no day time symptoms is defined from the diary data as any day where the patient recorded no coughing, no wheezing, no sputum production and no breathlessness during the previous 12 hours (approximately 8AM to 8PM). The percentage of days is calculated by the number of days with no daytime symptoms/total number of days with evaluable data X 100. A mixed model was used with treatment as a fixed effect with baseline Percent of days and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, all randomized participants who received study drug, with evaluable diary data (at least 40 days) for analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**415**	**410**	**395**	**418**	**195**
Percentage of Days With "No Daytime Symptoms" Over 26 Weeks [units: Percentage of days] Least Squares Mean (Standard Error)	**7.49 (0.931)**	**9.17 (0.933)**	**6.40 (0.948)**	**5.54 (0.928)**	**4.44 (1.294)**

No statistical analysis provided for Percentage of Days With "No Daytime Symptoms" Over 26 Weeks

13. Secondary: Percentage of "Days Able to Perform Usual Daily Activities" Over 26 Weeks [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of "Days Able to Perform Usual Daily Activities" Over 26 Weeks
Measure Description	Patients answered the question "Did your respiratory symptoms stop you performing your usual activities today?-Not at all in their daily diary. The percentage of days is calculated by the number of days patient is able to perform daily activities/total number of days with evaluable data X 100. A mixed model was used with treatment as a fixed effect with baseline Percent of Days and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a

	random effect.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the Full Analysis Set, all randomized participants who received study drug, with evaluable diary data (at least 40 days) for analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**415**	**410**	**395**	**418**	**195**
Percentage of "Days Able to Perform Usual Daily Activities" Over 26 Weeks [units: Percentage of days] Least Squares Mean (Standard Error)	**45.97 (1.578)**	**40.94 (1.582)**	**40.10 (1.607)**	**37.52 (1.572)**	**34.49 (2.197)**

No statistical analysis provided for Percentage of "Days Able to Perform Usual Daily Activities" Over 26 Weeks

14. Secondary: Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication at Week 12 and Week 26 [Time Frame: Baseline, Week 12, Week 26]

Measure Type	Secondary
Measure Title	Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication at Week 12 and Week 26
Measure Description	The number of puffs of rescue medication taken in the previous 12 hours was record in patient diary in the morning and in the evening for 26 weeks. The total number of puffs per day was calculated and divided by the number of days with data to determine the mean daily number of puffs of rescue medication for each patient. Rescue medication data recorded during the 14 day run-in was used to calculate the baseline. A negative change from baseline indicates improvement. A mixed model was used with treatment as a fixed effect with baseline number of puffs and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	Baseline, Week 12, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or

another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the full analysis, consisting of all randomized participant who received study drug, with data available for analysis at Week 12 and Week 26.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Indacaterol (QAB149)**	**Glycopyrronium (NVA237)**	**Tiotropium**	**Placebo**
Number of Participants Analyzed [units: participants]	**420**	**420**	**413**	**427**	**203**
Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication at Week 12 and Week 26					

[units: Puffs per day] Least Squares Mean (Standard Error)					
Change from Baseline (BL) at Week 12	**-1.82 (0.102)**	**-1.46 (0.102)**	**-1.22 (0.103)**	**-1.28 (0.102)**	**-0.83 (0.141)**
Change from BL at Week 26 (n=419,416,403,424,199)	**-1.88 (0.105)**	**-1.57 (0.106)**	**-1.22 (0.107)**	**-1.34 (0.105)**	**-0.92 (0.147)**

No statistical analysis provided for Change From Baseline in the Mean Daily Number of Puffs of Rescue Medication at Week 12 and Week 26

15. Secondary: Change From Baseline (BL) in the Daytime and Night Time Rescue Medication Use (Number of Puffs) Over 26 Weeks [Time Frame: Baseline, Week 26]

Measure Type	Secondary
Measure Title	Change From Baseline (BL) in the Daytime and Night Time Rescue Medication Use (Number of Puffs) Over 26 Weeks
Measure Description	The number of puffs of rescue medication taken in the previous 12 hours was record in patient diary in the morning and in the evening for 26 weeks. The total number of puffs in the morning and evening were calculated and divided by the number of days with data to determine the mean daily number of daytime and nighttime puffs. A mixed model was used with treatment as a fixed effect with baseline number of puffs and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline (BL) ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	Baseline, Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.

Participants from the full analysis, consisting of all randomized participant who received study drug, with data available for analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**
Change From Baseline (BL) in the Daytime and Night Time Rescue Medication Use (Number of Puffs) Over 26 Weeks [units: Puffs] Least Squares Mean (Standard Error)					

Daytime Change from BL (n=415,410,395,418,195)	**-1.11 (0.061)**	**-0.96 (0.062)**	**-0.75 (0.063)**	**-0.83 (0.061)**	**-0.58 (0.086)**
Nighttime Change from BL (n=418,413,399,422,198)	**-0.78 (0.049)**	**-0.63 (0.049)**	**-0.48 (0.050)**	**-0.52 (0.049)**	**-0.34 (0.069)**

No statistical analysis provided for Change From Baseline (BL) in the Daytime and Night Time Rescue Medication Use (Number of Puffs) Over 26 Weeks

16. Secondary: Percentage of "Days With no Rescue Medication Use" Over 26 Weeks [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of "Days With no Rescue Medication Use" Over 26 Weeks
Measure Description	A day with no rescue medication use is defined from the diary data as any day where the patient recorded no rescue medicine use during the previous 12 hours. The percentage of days is calculated by the number of days with no rescue medicine use/total number of days with evaluable data X 100. A mixed model was used with treatment as a fixed effect with baseline number of puffs and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the full analysis set (all randomized participants who received at least one dose of study drug) with evaluable data (at least 40 days of diary data) available for analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**418**	**411**	**397**	**419**	**196**
Percentage of "Days With no Rescue Medication Use" Over 26 Weeks [units: Percentage of days] Least Squares Mean (Standard Error)	**47.09 (1.752)**	**44.81 (1.764)**	**37.74 (1.790)**	**36.51 (1.752)**	**34.76 (2.437)**

No statistical analysis provided for Percentage of "Days With no Rescue Medication Use" Over 26 Weeks

17. Secondary: Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 4 Hours at Day 1 and Week 26 [Time Frame: From 5 minutes to 4 hours post-dose Day 1 and Week 26]

Measure Type	Secondary
Measure Title	Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 4 Hours at Day 1 and Week 26
Measure Description	FEV1 was measured with spirometry conducted according to internationally accepted standards. Measurements were made at 5, 15, and 30 minutes; and 1, 2, and 4 hours post-dose. The standardized AUC FEV1 was calculated as the sum of trapezoids divided by the length of time. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	From 5 minutes to 4 hours post-dose Day 1 and Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from full analysis set, all randomized participants who received study drug, with data available for analysis. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler

	(SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**464**	**471**	**464**	**473**	**228**
Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 4 Hours at Day 1 and Week 26 [units: Liters] Least Squares Mean (Standard Error)					
Day 1	**1.52 (0.006)**	**1.46 (0.006)**	**1.49 (0.006)**	**1.44 (0.006)**	**1.30 (0.008)**
Week 26 (n=433,418,412,435,186)	**1.57 (0.010)**	**1.46 (0.010)**	**1.43 (0.010)**	**1.44 (0.010)**	**1.23 (0.015)**

No statistical analysis provided for Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 4 Hours at Day 1 and Week 26

18. Secondary: Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 12 Hours at Day 1 and Week 26 [Time Frame: From 5 minutes to 12 hours post-dose Day 1 and Week 26]

Measure Type	Secondary
Measure Title	Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 12 Hours at Day 1 and Week 26
Measure Description	FEV1 was measured with spirometry conducted according to internationally accepted standards. Measurements were made at 5, 15, and 30 minutes; and 1, 2, 4, 8, 12 hours post-dose. The standardized AUC FEV1 was calculated as the sum of trapezoids divided by the length of time. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	From 5 minutes to 12 hours post-dose Day 1 and Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the 24 hour serial spirometry subset of the full analysis set (all randomized participants who received study drug) with data available for analysis. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from the analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler

	(SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**64**	**64**	**63**	**70**	**31**
Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 12 Hours at Day 1 and Week 26 [units: Liters] Least Squares Mean (Standard Error)					
Day1	**1.50 (0.017)**	**1.40 (0.017)**	**1.42 (0.018)**	**1.38 (0.017)**	**1.24 (0.023)**
Week 26 (n=60,55,58,67,27)	**1.52 (0.027)**	**1.39 (0.027)**	**1.39 (0.028)**	**1.39 (0.027)**	**1.18 (0.036)**

No statistical analysis provided for Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 12 Hours at Day 1 and Week 26

19. Secondary: Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 23 Hours 45 Minutes at Week 26 [Time Frame: From 5 minutes to 23 hours 45 minutes post-dose Week 26]

Measure Type	Secondary
Measure Title	Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 23 Hours 45 Minutes at Week 26
Measure Description	FEV1 was measured with spirometry conducted according to internationally accepted standards. Measurements were made at 5, 15, and 30 minutes; and 1, 2, 4, 8, 12, 23 hours 15 minutes and 23 hours 45 minutes post-dose. The standardized AUC FEV1 was calculated as the sum of trapezoids divided by the length of time. A mixed model was used with treatment as a fixed effect with baseline FEV1 and FEV1 prior to inhalation and FEV1 60 minutes post inhalation of two short acting bronchodilators (components of reversibility at Day -14) as covariates. The model also included baseline smoking status (current/ex-smoker), baseline ICS use (Yes/No) and region as fixed effects with center nested within region as a random effect.
Time Frame	From 5 minutes to 23 hours 45 minutes post-dose Week 26
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Participants from the 24 hour serial spirometry subset of the full analysis set (all randomized participants who received study drug) with data available for analysis. Data within 6 hours of rescue medication use or 7 days of systemic corticosteroid use is excluded from the analysis.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**60**	**55**	**58**	**67**	**27**
Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 23 Hours 45 Minutes at Week 26 [units: Liters] Least Squares Mean (Standard Error)	**1.46 (0.026)**	**1.35 (0.027)**	**1.35 (0.027)**	**1.36 (0.026)**	**1.15 (0.036)**

No statistical analysis provided for Standardized FEV1 (With Respect to Length of Time) Area Under the Curve (AUC) From 5 Minutes to 23 Hours 45 Minutes at Week 26

20. Secondary: 24 Hour Holter Monitoring in a Subset of Patients [Time Frame: Week 12, Week 26]

Measure Type	Secondary
Measure Title	24 Hour Holter Monitoring in a Subset of Patients
Measure Description	24-hourly mean heart rate was performed using a Holter Monitor at Weeks 12 and 26 in a subgroup of patients. Mixed model: heart rate = treatment + baseline heart rate + baseline smoking status + baseline ICS use + region + center (region) + error. Center was included as a random effect nested within region. The 24-hourly mean heart rate is the mean heart rate over the 24 hour period, derived using hourly mean heart rate beats per minute.
Time Frame	Week 12, Week 26
Safety Issue	Yes

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Safety Set Holter Group-a subset of the Safety participants that included all randomized participants who received at least one dose of study drug and participated in the 24 hour Holter monitoring with evaluable data available for analysis. No participants in the Titotropium arm participated in the Holter Monitoring.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDPPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a SDDPI for 26 weeks.Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via a SDDPI for 26 weeks.

	Participants remained on a stable dose of inhaled corticosteroid (ICS) and Salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Placebo
Number of Participants Analyzed [units: participants]	**59**	**52**	**55**	**24**
24 Hour Holter Monitoring in a Subset of Patients [units: beats per minute] Least Squares Mean (Standard Error)				
Week 12 (n=35,38,27,15)	**80.8 (1.5)**	**79.9 (1.35)**	**79.4 (1.57)**	**78.9 (1.95)**
Week 26 (n=36,36,26,16)	**79.8 (1.68)**	**78.6 (1.57)**	**80.5 (1.75)**	**77.0 (2.09)**

No statistical analysis provided for 24 Hour Holter Monitoring in a Subset of Patients

21. Secondary: Rate of Moderate or Severe COPD Exacerbation [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Rate of Moderate or Severe COPD Exacerbation
Measure Description	Rate of moderate or severe exacerbations per year = total number of moderate or severe exacerbations / total number of treatment years
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
No text entered.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	**Indacaterol (QAB149)**	**Glycopyrronium (NVA237)**	**Tiotropium**	**Placebo**
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**
Rate of Moderate or Severe COPD					

Exacerbation [units: Exacerbations per year]	**0.46**	**0.59**	**0.52**	**0.45**	**0.75**

No statistical analysis provided for Rate of Moderate or Severe COPD Exacerbation

22. Secondary: Percentage of Patients With at Least One Moderate or Severe COPD Exacerbation Over the 26 Week Treatment Period [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of Patients With at Least One Moderate or Severe COPD Exacerbation Over the 26 Week Treatment Period
Measure Description	No text entered.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Full Analysis Set includes all randomized participants who received at least one dose of study drug.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**
Percentage of Patients With at Least One Moderate or Severe COPD Exacerbation Over the 26 Week Treatment Period [units: Percentage of participants]	**17.9**	**21.6**	**18.8**	**17.7**	**25.8**

No statistical analysis provided for Percentage of Patients With at Least One Moderate or Severe COPD Exacerbation Over the 26 Week Treatment Period

23. Secondary: Percentage of Participants With COPD Exacerbations Requiring Hospitalization or Treatment With Systemic Corticosteroids and/or Antibiotics But no Hospitalization [Time Frame: 26 Weeks]

Measure Type	Secondary
Measure Title	Percentage of Participants With COPD Exacerbations Requiring Hospitalization or Treatment With Systemic Corticosteroids and/or Antibiotics But no Hospitalization

Measure Description	No text entered.
Time Frame	26 Weeks
Safety Issue	No

Population Description

Explanation of how the number of participants for analysis was determined. Includes whether analysis was per protocol, intention to treat, or another method. Also provides relevant details such as imputation technique, as appropriate.
Full Analysis Set included all randomized participants who received at least one dose of study drug.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Measured Values

	Indacaterol and				

	Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Number of Participants Analyzed [units: participants]	**474**	**476**	**473**	**480**	**232**
Percentage of Participants With COPD Exacerbations Requiring Hospitalization or Treatment With Systemic Corticosteroids and/or Antibiotics But no Hospitalization [units: Percentage of participants]					
Requiring hospitalization	**2.1**	**2.5**	**1.9**	**1.0**	**3.0**
Corticosteroids_Antibiotics-No hospitalization	**16.7**	**19.7**	**17.8**	**16.9**	**23.3**

No statistical analysis provided for Percentage of Participants With COPD Exacerbations Requiring Hospitalization or Treatment With Systemic Corticosteroids and/or Antibiotics But no Hospitalization

Serious Adverse Events

Hide Serious Adverse Events

Time Frame	No text entered.
Additional Description	No text entered.

Reporting Groups

	Description
Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Serious Adverse Events

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Total, serious adverse events					
# participants affected / at risk	**22/474 (4.64%)**	**26/476 (5.46%)**	**29/473 (6.13%)**	**19/480 (3.96%)**	**13/232 (5.60%)**
Blood and lymphatic system disorders					
Anaemia † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Lymphadenopathy † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Cardiac disorders					
Acute coronary syndrome † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**

Angina pectoris † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Angina unstable † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Atrial fibrillation † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Bradycardia † [1]					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Cardiac arrest † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Cardiac failure † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**3/476 (0.63%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Cardiac failure congestive † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Cardio-respiratory arrest † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Cardiomegaly † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Cor pulmonale † [1]					
				0/480 (0.00%)	**0/232 (0.00%)**

# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)		
Coronary artery disease † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	2/473 (0.42%)	0/480 (0.00%)	0/232 (0.00%)
Coronary artery insufficiency † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	0/473 (0.00%)	1/480 (0.21%)	0/232 (0.00%)
Left ventricular dysfunction † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	1/232 (0.43%)
Myocardial infarction † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	1/473 (0.21%)	0/480 (0.00%)	0/232 (0.00%)
Supraventricular tachycardia † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	1/473 (0.21%)	0/480 (0.00%)	0/232 (0.00%)
Ventricular extrasystoles † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Ear and labyrinth disorders					
Vertigo † [1]					
# participants affected / at risk	1/474 (0.21%)	0/476 (0.00%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Eye disorders					
Age-related macular degeneration † [1]					
# participants affected / at risk	1/474 (0.21%)	0/476 (0.00%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Gastrointestinal disorders					

Abdominal hernia † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Abdominal pain upper † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Anal fistula † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Colonic polyp † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Gastrointestinal haemorrhage † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Haemorrhoidal haemorrhage † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Inguinal hernia † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**2/480 (0.42%)**	**0/232 (0.00%)**
Mesenteric panniculitis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Oesophageal ulcer † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
General disorders					

Chest pain † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Non-cardiac chest pain † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**2/473 (0.42%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Temperature intolerance † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Hepatobiliary disorders					
Cholecystitis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Cholelithiasis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**2/480 (0.42%)**	**0/232 (0.00%)**
Infections and infestations					
Bronchitis † 1					
# participants affected / at risk	**1/474 (0.21%)**	**2/476 (0.42%)**	**3/473 (0.63%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Cellulitis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Dengue fever † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Empyema † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**

Gastroenteritis viral † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Herpes zoster † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Injection site abscess † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Liver abscess † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Lobar pneumonia † 1					
# participants affected / at risk	**1/474 (0.21%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Lower respiratory tract infection † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Lower respiratory tract infection bacterial † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Moraxella infection † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Oral candidiasis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**

Pneumonia † 1					
# participants affected / at risk	**2/474 (0.42%)**	**2/476 (0.42%)**	**3/473 (0.63%)**	**3/480 (0.63%)**	**3/232 (1.29%)**
Respiratory tract infection bacterial † 1					
# participants affected / at risk	**2/474 (0.42%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Respiratory tract infection viral † 1					
# participants affected / at risk	**1/474 (0.21%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Septic shock † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Upper respiratory tract infection † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Upper respiratory tract infection bacterial † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Urosepsis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Injury, poisoning and procedural complications					
Contusion † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Fall † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**

Femoral neck fracture † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Femur fracture † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Hip fracture † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Muscle injury † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Rib fracture † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Spinal compression fracture † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Traumatic intracranial haemorrhage † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Investigations					
Blood albumin decreased † 1					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Prostatic specific antigen increased † 1					

# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	1/473 (0.21%)	0/480 (0.00%)	0/232 (0.00%)
Metabolism and nutrition disorders					
Hyperglycaemia † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Hypokalaemia † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Musculoskeletal and connective tissue disorders					
Back pain † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	0/473 (0.00%)	0/480 (0.00%)	1/232 (0.43%)
Osteoporosis † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	1/473 (0.21%)	0/480 (0.00%)	0/232 (0.00%)
Neoplasms benign, malignant and unspecified (incl cysts and polyps)					
Bladder cancer † [1]					
# participants affected / at risk	0/474 (0.00%)	0/476 (0.00%)	0/473 (0.00%)	0/480 (0.00%)	1/232 (0.43%)
Brain neoplasm malignant † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)
Bronchial carcinoma † [1]					
# participants affected / at risk	0/474 (0.00%)	1/476 (0.21%)	0/473 (0.00%)	0/480 (0.00%)	0/232 (0.00%)

Colon cancer † [1]					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Hepatic neoplasm malignant † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Laryngeal cancer † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Lung neoplasm malignant † [1]					
# participants affected / at risk	**1/474 (0.21%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Prostate cancer † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Nervous system disorders					
Cerebrovascular accident † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Dizziness † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Syncope † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Transient ischaemic attack † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Psychiatric disorders					

Substance abuse † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Reproductive system and breast disorders					
Benign prostatic hyperplasia † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Breast mass † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Respiratory, thoracic and mediastinal disorders					
Acute respiratory failure † [1]					
# participants affected / at risk	**1/474 (0.21%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Chronic obstructive pulmonary disease † [1]					
# participants affected / at risk	**10/474 (2.11%)**	**15/476 (3.15%)**	**9/473 (1.90%)**	**7/480 (1.46%)**	**7/232 (3.02%)**
Hydrothorax † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**1/480 (0.21%)**	**0/232 (0.00%)**
Pleural effusion † [1]					
# participants affected / at risk	**0/474 (0.00%)**	**1/476 (0.21%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Respiratory failure † [1]					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**2/473 (0.42%)**	**1/480 (0.21%)**	**0/232 (0.00%)**

Vascular disorders					
Aortic stenosis † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**1/232 (0.43%)**
Arteriosclerosis † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Hypertension † 1					
# participants affected / at risk	**0/474 (0.00%)**	**0/476 (0.00%)**	**1/473 (0.21%)**	**0/480 (0.00%)**	**0/232 (0.00%)**
Peripheral ischaemia † 1					
# participants affected / at risk	**1/474 (0.21%)**	**0/476 (0.00%)**	**0/473 (0.00%)**	**0/480 (0.00%)**	**0/232 (0.00%)**

† Events were collected by systematic assessment
1 Term from vocabulary, MedDRA

Other Adverse Events

Hide Other Adverse Events

Time Frame	No text entered.
Additional Description	No text entered.

Frequency Threshold

Threshold above which other adverse events are reported	5%

Reporting Groups

	Description

Indacaterol and Glycopyrronium (QVA149)	QVA149 110/50 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Indacaterol (QAB149)	QAB149 150 µg capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Glycopyrronium (NVA237)	NVA237 50 µg capsules for inhalation delivered once daily via a single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Tiotropium	Tiotropium 18 µg capsules for inhalation delivered once daily via HandiHaler® device for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.
Placebo	Matching Placebo capsules for inhalation delivered once daily via single-dose dry powder inhaler (SDDPI) for 26 weeks. Participants remained on a stable dose of inhaled corticosteroid (ICS) and salbutamol/albuterol was available for use as rescue medication throughout the study.

Other Adverse Events

	Indacaterol and Glycopyrronium (QVA149)	Indacaterol (QAB149)	Glycopyrronium (NVA237)	Tiotropium	Placebo
Total, other (not including serious) adverse events					
# participants affected / at risk	**166/474 (35.02%)**	**189/476 (39.71%)**	**185/473 (39.11%)**	**172/480 (35.83%)**	**102/232 (43.97%)**
Infections and infestations					
Nasopharyngitis † [1]					
# participants affected / at risk	**31/474 (6.54%)**	**35/476 (7.35%)**	**46/473 (9.73%)**	**40/480 (8.33%)**	**23/232 (9.91%)**
Upper respiratory tract infection † [1]					

# participants affected / at risk	**20/474 (4.22%)**	**31/476 (6.51%)**	**20/473 (4.23%)**	**24/480 (5.00%)**	**13/232 (5.60%)**
Upper respiratory tract infection bacterial † 1					
# participants affected / at risk	**10/474 (2.11%)**	**12/476 (2.52%)**	**15/473 (3.17%)**	**22/480 (4.58%)**	**13/232 (5.60%)**
Respiratory, thoracic and mediastinal disorders					
Chronic obstructive pulmonary disease † 1					
# participants affected / at risk	**131/474 (27.64%)**	**144/476 (30.25%)**	**146/473 (30.87%)**	**133/480 (27.71%)**	**87/232 (37.50%)**
Cough † 1					
# participants affected / at risk	**26/474 (5.49%)**	**38/476 (7.98%)**	**18/473 (3.81%)**	**21/480 (4.38%)**	**8/232 (3.45%)**

† Events were collected by systematic assessment
1 Term from vocabulary, MedDRA

Limitations and Caveats

Hide Limitations and Caveats

Limitations of the study, such as early termination leading to small numbers of participants analyzed and technical problems with measurement leading to unreliable or uninterpretable data
No text entered.

More Information

Hide More Information

Certain Agreements:

Principal Investigators are **NOT** employed by the organization sponsoring the study.

There **IS** an agreement between Principal Investigators and the Sponsor (or its agents) that restricts the PI's rights to discuss or publish trial results after the trial is completed.

The agreement is:

☐ The only disclosure restriction on the PI is that the sponsor can review results communications prior to public release and can embargo communications regarding trial results for a period that is **less than or equal to 60 days**. The sponsor cannot require changes to the communication and cannot extend the embargo.

☐ The only disclosure restriction on the PI is that the sponsor can review results communications prior to public release and can embargo communications regarding trial results for a period that is **more than 60 days but less than or equal to 180 days**. The sponsor cannot require changes to the communication and cannot extend the embargo.

Other disclosure agreement that restricts the right of the PI to discuss or publish trial results after the trial is completed.

☑ **Restriction Description:** The terms and conditions of Novartis' agreements with its investigators may vary. However, Novartis does not prohibit any investigator from publishing. Any publications from a single-site are postponed until the publication of the pooled data (i.e., data from all sites) in the clinical trial.

Results Point of Contact:

Name/Title: Study Director
Organization: Novartis Pharmaceuticals
phone: 862-778-8300

No publications provided by Novartis

Publications automatically indexed to this study:

Kulich K, Keininger DL, Tiplady B, Banerji D. Symptoms and impact of COPD assessed by an electronic diary in patients with moderate-to-severe COPD: psychometric results from the SHINE study. Int J Chron Obstruct Pulmon Dis. 2015 Jan 7;10:79-94. doi: 10.2147/COPD.S73092. eCollection 2015.

Responsible Party: Novartis (Novartis Pharmaceuticals)
ClinicalTrials.gov Identifier: NCT01202188 History of Changes

Other Study ID Numbers:	**CQVA149A2303** 2009-017772-25 (EudraCT Number)
Study First Received:	September 13, 2010
Results First Received:	February 7, 2013
Last Updated:	August 26, 2013
Health Authority:	United States: Food and Drug Administration Argentina: Administracion Nacional de Medicamentos, Alimentos y Tecnologia Medica Argentina: Human Research Bioethics Committee Argentina: Ministry of Health Australia: Department of Health and Ageing Therapeutic Goods Administration Australia: Human Research Ethics Committee Australia: National Health and Medical Research Council Bulgaria: Bulgarian Drug Agency Bulgaria: Ministry of Health Canada: Health Canada China: Food and Drug Administration Finland: Ethics Committee Finland: Ministry of Social Affairs and Health Finland: Finnish Medicines Agency France: Afssaps - Agence française de sécurité sanitaire des produits de santé (Saint-Denis) France: Direction Générale de la Santé France: French Data Protection Authority France: Haute Autorité de Santé Transparency Commission France: Institutional Ethical Committee France: Ministry of Health France: National Consultative Ethics Committee for Health and Life Sciences Germany: Ethics Commission Germany: Federal Institute for Drugs and Medical Devices Germany: Federal Ministry of Education and Research Germany: Federal Ministry of Food, Agriculture and Consumer Protection Germany: German Institute of Medical Documentation and Information Germany: Ministry of Health Germany: Paul-Ehrlich-Institut Guatemala: MSPAS - Ministerio de Salud Pública y Asistencia Social: Programa Nacional de Farmacovigilancia Hungary: Research Ethics Medical Committee Hungary: National Institute of Pharmacy India: Central Drugs Standard Control Organization India: Department of Atomic Energy

India: Drugs Controller General of India
India: Indian Council of Medical Research
India: Institutional Review Board
India: Ministry of Health
India: Ministry of Science and Technology
India: Science and Engineering Research Council
Japan: Ministry of Health, Labor and Welfare
Mexico: Ethics Committee
Mexico: Federal Commission for Protection Against Health Risks
Mexico: Federal Commission for Sanitary Risks Protection
Mexico: Ministry of Health
Mexico: National Council of Science and Technology
Mexico: National Institute of Public Health, Health Secretariat
Netherlands: Independent Ethics Committee
Netherlands: Dutch Health Care Inspectorate
Netherlands: Medical Ethics Review Committee (METC)
Netherlands: Medicines Evaluation Board (MEB)
Netherlands: The Central Committee on Research Involving Human Subjects (CCMO)
Panama: Ministry of Health
Philippines: Department of Health
Philippines: Bureau of Food and Drugs
Poland: Office for Registration of Medicinal Products, Medical Devices and Biocidal Products
Poland: Ministry of Health
Poland: Ministry of Science and Higher Education