**Supplementary materials**

**Supplementary methods**

The GALAXY chronic obstructive pulmonary disease (COPD) progression model implements a linked risk equation approach to predict COPD progression in terms of four COPD disease parameters: lung function (percentage predicted forced expiratory volume in 1 second [FEV1]), exacerbation frequency, dyspnea (modified Medical Research Council [mMRC] score and cough/sputum), and exercise capacity (6-minute walk distance [6MWD]) (**Supplementary** **Figure 1**). The linked-risk equations, developed based on analysis of the ECLIPSE study1-4, describe the relationships between these parameters and baseline population characteristics, their time-dependent inter-dependence, and finally the relationship between baseline population characteristics and these COPD disease parameters and the ultimate outcomes of HRQoL (St. George’s Respiratory Questionnaire [SGRQ]), mortality and costs. Data for baseline modified Medical Research Council (mMRC) dyspnea score, fibrinogen concentration, and 6-minute walk distance (6MWD) were not collected in the IMPACT trial so model inputs were derived using alternative methods. The proportion of patients with mMRC score ≥2 was approximated using the proportion of patients with a COPD Assessment Test (CAT) score ≥21 in the IMPACT intent-to-treat (ITT) population.5 Fibrinogen concentration and 6MWD at baseline were predicted using risk equations previously developed using data from the ECLIPSE study4,6, populated with patient characteristics from the IMPACT trial.

The GALAXY model uses linked-equations, meaning that treatment effects applied to one outcome (eg, FEV1) will also impact another outcome (eg, exacerbation frequency). To avoid double counting of treatment effects and ensure accurate cost-effectiveness estimates, model predictions for the individual treatment effects were adjusted to align with actual treatment effects observed in IMPACT. The FEV1 treatment effect was applied first, followed by treatment effect on moderate exacerbations, then that on severe exacerbations, and lastly the effect on the SGRQ for patients with COPD (SGRQ-C).

The GALAXY model is designed to use treatment effects relative to a reference rather than absolute effects, thus fluticasone furoate/umeclidinium/vilanterol (FF/UMEC/VI) was assessed using only the treatment effects relative to each individual comparator (FF/VI or UMEC/VI), which function as reference treatments. The outcomes predicted by the GALAXY risk equations before application of the relative treatment effect for FF/UMEC/VI represented the outcomes for patients who received the reference treatment (FF/VI or UMEC/VI). The relative treatment effects for FF/UMEC/VI, as observed in the IMPACT trial, versus UMEC/VI or FF/VI, were then applied in the model to predict disease progression and outcomes for FF/UMEC/VI. Because absolute treatment effect of either FF/UMEC/VI or the comparators was not explicitly included in the model, the predicted disease progression and resulting clinical outcomes with FF/VI or UMEC/VI regimens, as the reference treatments, were similar in each of the analyses.

Sensitivity analyses included setting the FEV1, exacerbation, and SGRQ-C treatment effects to upper or lower 95% confidence intervals (CI) and varying resource use/cost inputs (to 80% or 120% of the base case value). Scenario analyses included reducing the duration of treatment effect for FF/UMEC/VI to 1 year, setting a 5-year time horizon and 3-year treatment effect, setting a life-time horizon (25 years) and ongoing treatment effect, fully sourcing population characteristics from the IMPACT Spain subgroups, estimating utilities from the SGRQ-C predicted by the GALAXY model (using a published algorithm)7, varying the discount rate for costs and HRQoL (to 0% or 5%), and varying the discontinuation rate (to +/-10% of the base case value). A scenario analysis was also conducted to account for differing rates of pneumonia across treatment arms during IMPACT. Pneumonia rates were assumed to be treatment dependent and to not have a direct impact on mortality. An associated quality-adjusted life years (QALY) loss per pneumonia event (-0.011) was assumed to be the same as a decrement for moderate (non-hospitalized) exacerbation as per the National Institute for Health and Care Excellence (NICE) 2010 COPD guidelines. Pneumonia-related unit costs were Spain-specific and the weighted average of inpatient- and outpatient-managed pneumonia events. The proportion of pneumonia events requiring a hospitalization was assumed to be equal to that observed for the IMPACT ITT population and to be the same across treatment arms. Pneumonia-related unit costs were sourced from a 2004 observational study in Spanish patients and inflated to 2019 € (outpatient: €271.90; inpatient: €2156.75).8,9

The probabilistic sensitivity analysis (PSA) varied the coefficients of each risk equation using correlated draws from a Cholesky Decomposition table developed from the covariance matrices for each equation. The decomposition tables were applied using a random draw from a standard normal distribution (mean of 0, standard deviation of 1) for each coefficient. The random number was used to adjust the coefficient based on its own variability and its correlation with the other coefficients in that equation. The resulting adjusted values were applied as marginal differences between the mean estimate of the coefficient and the value to be applied in the current PSA draw. The output of the PSA was summarized using 95% ranges, a scatterplot of incremental costs and effectiveness, and cost-effectiveness acceptability curves for competing treatments included in the model.

**References**

1. Agusti A, Calverley PM, Celli B, et al. Characterisation of COPD heterogeneity in the ECLIPSE cohort. *Respir Res.* 2010;11:122.

2. Exuzides A, Colby C, Briggs AH, et al. Statistical Modeling of Disease Progression for Chronic Obstructive Pulmonary Disease Using Data from the ECLIPSE Study. *Med Decis Making.* 2017;37(4):453-468.

3. Risebrough NA, Briggs A, Baker TM, et al. Validating A Model To Predict Disease Progression Outcomes In Patients With COPD. *Value Health.* 2014;17(7):A560-561.

4. Vestbo J, Anderson W, Coxson HO, et al. Evaluation of COPD Longitudinally to Identify Predictive Surrogate End-points (ECLIPSE). *Eur Respir J.* 2008;31(4):869-873.

5. Jones PW, Adamek L, Nadeau G, Banik N. Comparisons of health status scores with MRC grades in COPD: implications for the GOLD 2011 classification. *Eur Respir J.* 2013;42(3):647-654.

6. Celli BR, Cote CG, Marin JM, et al. The body-mass index, airflow obstruction, dyspnea, and exercise capacity index in chronic obstructive pulmonary disease. *N Engl J Med.* 2004;350(10):1005-1012.

7. Starkie HJ, Briggs AH, Chambers MG, Jones P. Predicting EQ-5D values using the SGRQ. *Value Health.* 2011;14(2):354-360.

8. Bartolome M, Almirall J, Morera J, et al. A population-based study of the costs of care for community-acquired pneumonia. *Eur Respir J.* 2004;23(4):610-616.

9. Instituto Nacional de Estadistica (National Institute of Statistics). INEbase- Standard of living and living conditions (CPI)- Consumer price and housing indices. 2019; [www.ine.es/dyngs/INEbase/en/categoria.htm?c=Estadistica\_P&cid=1254735976604](http://www.ine.es/dyngs/INEbase/en/categoria.htm?c=Estadistica_P&cid=1254735976604). Accessed March 16, 2020.

**Supplementary Figure 1.** Model used for determining analysis outcomes

**Diagram

Description automatically generated**

**Notes:** aFEV1 (mL) was calculated using the risk equation at year ‘t’ and converted to FEV1% predicted based on the cohort profile; Adapted with permission from Briggs AH, Baker T, Risebrough NA, et al. Development of the Galaxy Chronic Obstructive Pulmonary Disease (COPD) Model Using Data from ECLIPSE: Internal Validation of a Linked-Equations Cohort Model. *Med Decis Making*, 37(4) 469–480. Copyright © 2017, Sage Publications. DOI: 10.1177/0272989X16653118.

**Abbreviations:** 6MWD, 6-minute walk distance; BMI, body mass index; CI, confidence interval; CVD, cardiovascular disease; FEV1, forced expiratory volume in 1 second; ITT, intent to treat; mMRC, modified Medical Research Council; QALYs, quality-adjusted life years; SD, standard deviation; SE, standard error; SGRQ, St George’s Respiratory Questionnaire.

**Supplementary Table 1.** Model input parametersa for the IMPACT ITT population

|  |  |
| --- | --- |
|  | **IMPACT ITT population (N=10,355)**b |
| **Baseline demographics and clinical characteristics** |  |
| Age (years), mean (SE) | 65.3 (0.08)c |
| Female, % | 34c |
| BMI (kg/m2), % |  |
| <21 | 17c |
| 21–30 | 58c |
| >30 | 25c |
| Height (cm), mean (SD) | 167.5 (9.25)c |
| Smoking status (current smokers), % | 35c |
| Any cardiovascular comorbidity, % | 44c |
| Any other comorbidity, % | 57c |
| mMRC dyspnea score ≥2, % | 37c,d |
| History of exacerbation, ≥1 moderate or severe in past year, % | 99.9 |
| Number of exacerbations in previous year, mean (SE) | 1.71 (0.01)c,e |
| Number of severe exacerbations in previous year, mean | 0.30c |
| Starting FEV1 % predicted, mean (SD) | 45.5 (0.15)c |
| Starting FEV1, L, mean | 1.215f |
| Fibrinogen (µg/dL), mean (SE) | 477.5 (2.37)g |
| Starting SGRQ total score, mean (SE) | 50.7 (0.25)c |
| 6MWD (m), mean (SE) | 365.8 (2.74)g |

**Notes:** aTreatment effect inputs were also included as in Table 1; bpatients received FF/UMEC/VI (n=4151), FF/VI (n=4134) or UMEC/VI (n=2070); cextracted from the IMPACT supplementary material (GSK, 2017); dapproximated using the proportion of patients with a CAT score ≥21 in the IMPACT ITT; eSE assumed to be 10% of mean; fbased on FEV1 % reported in IMPACT and formulae based on ECLIPSE to back-calculate the starting FEV1 value; gderived from GALAXY risk equation using ECLIPSE data.

**Abbreviations:** 6MWD, 6-minute walk distance; BMI, body mass index; CAT, chronic obstructive pulmonary disease assessment test; FEV1, forced expiratory volume in 1 second; FF, fluticasone furoate; ITT, intent to treat; mMRC, modified Medical Research Council; SD, standard deviation; SE, standard error; SGRQ, St George’s Respiratory Questionnaire; SGRQ-C, St George’s Respiratory Questionnaire for patients with COPD; UMEC, umeclidinium; VI, vilanterol.

**Supplementary Table 2.** Parameter distributions assigned in model probabilistic sensitivity analyses (PSA)

|  |  |
| --- | --- |
| **Input parameter** | **Distribution used in the PSA** |
| Coefficients for risk equations | Normal distributions, preserving correlation by using the GALAXY model risk equations’ variance–covariance matrices |
| Exacerbation cost per event | Gamma distribution, standard error assumed 20% of the point estimate |
| Health state costs (per year) | Gamma distribution, standard error assumed 20% of the point estimate |
| Discontinuation rate | Beta distribution, standard error assumed 20% of the point estimate |
| Treatment effects | Normal distribution, using 95% CI from the IMPACT trial |

**Supplementary Table 3.** Exacerbation history subgroup analysis results with FF/UMEC/VI versus FF/VI or UMEC/VI (Spanish IMPACT population)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **FF/UMEC/VI vs FF/VI** | | | | **FF/UMEC/VI vs UMEC/VI** | | | |
| **≥2 moderate or ≥1 severe exacerbation in the prior year** | | **<2 moderate and no severe exacerbations in the prior year** | | **≥2 moderate or ≥1 severe exacerbation in the prior year** | | **<2 moderate and no severe exacerbations in the prior year** | |
|  | **FF/UMEC/VI** | **FF/VI** | **FF/UMEC/VI** | **FF/VI** | **FF/UMEC/VI** | **UMEC/VI** | **FF/UMEC/VI** | **UMEC/VI** |
| **Cumulative number of exacerbations (3-year time frame)** | | | | | | | | |
| Moderate exacerbations | 3.221 | 3.571 | 3.413 | 4.018 | 2.922 | 3.571 | 3.409 | 4.018 |
| Severe exacerbations | 0.615 | 0.687 | 0.938 | 1.028 | 0.472 | 0.687 | 1.021 | 1.028 |
| Total exacerbations | 3.836 | 4.258 | 4.351 | 5.046 | 3.394 | 4.258 | 4.430 | 5.046 |
| Severe exacerbations PPPY | 0.215 | 0.241 | 0.334 | 0.368 | 0.165 | 0.241 | 0.365 | 0.368 |
| Total exacerbations PPPY | 1.342 | 1.494 | 1.550 | 1.805 | 1.188 | 1.494 | 1.582 | 1.805 |
| **Outcomes at the end of 3-year time frame** | | | | | | | | |
| LYs (undiscounted) | 2.858 | 2.850 | 2.806 | 2.795 | 2.858 | 2.850 | 2.801 | 2.795 |
| QALYs | 1.906 | 1.847 | 1.744 | 1.685 | 1.906 | 1.847 | 1.718 | 1.685 |
| **Costs per patient at the end of 3-year time frame** | | | | | | | | |
| Drug costs | €2777 | €2009 | €2735 | €1976 | €2777 | €2442 | €2729 | €2403 |
| Non-drug costs | €5371 | €5725 | €6869 | €7320 | €4715 | €5725 | €7246 | €7320 |
| Total costs | €8148 | €7734 | €9604 | €9296 | €7492 | €8167 | €9976 | €9723 |
| **Incremental results (FF/UMEC/VI vs comparator)** | | | | | | | | |
| Costs per patient | €414 | | €308 | | –€675 | | €252 | |
| QALYs | 0.059 | | 0.059 | | 0.059 | | 0.032 | |
| ICER (€ per QALY gained) | €7017 | | €5259 | | Dominant | | €7817 | |

**Abbreviations:** FF, fluticasone furoate; ICER, incremental cost-effectiveness analysis; LY, life years; QALY, quality-adjusted life years; UMEC, umeclidinium; VI, vilanterol.

**Supplementary Table 4.** Results for FF/UMEC/VI versus FF/VI and versus UMEC/VI in the IMPACT ITT population

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **FF/UMEC/VI vs FF/VI** | | **FF/UMEC/VI vs UMEC/VI** | |
|  | **FF/UMEC/VI** | **FF/VI** | **FF/UMEC/VI** | **UMEC/VI** |
| **Cumulative number of exacerbations (3-year time frame)** | | | | |
| Moderate exacerbations | 3.263 | 3.710 | 3.064 | 3.710 |
| Severe exacerbations | 0.702 | 0.777 | 0.581 | 0.777 |
| Total exacerbations | 3.965 | 4.487 | 3.645 | 4.487 |
| Severe exacerbations PPPY | 0.247 | 0.274 | 0.204 | 0.274 |
| Total exacerbations PPPY | 1.395 | 1.583 | 1.282 | 1.583 |
| **Outcomes at the end of 3-year time frame** | | | | |
| LYs (undiscounted) | 2.843 | 2.835 | 2.842 | 2.835 |
| QALYs | 1.857 | 1.797 | 1.850 | 1.797 |
| **Costs per patient at the end of 3-year time frame** | | | | |
| Drug costs | €2765 | €2000 | €2764 | €2431 |
| Non-drug costs | €5780 | €6155 | €5228 | €6155 |
| Total costs | €8546 | €8155 | €7992 | €8586 |
| **Incremental results (FF/UMEC/VI vs comparator)** | | | | |
| Costs per patient (95% CI)a | €391 (€48, €697) | | -€ 594 (-€1040, -€247) | |
| QALYs (95% CI)a | 0.060 (0.050, 0.071) | | 0.052 (0.042, 0.063) | |
| ICER (€ per QALY gained) (95% CI)a | €6502 (€814, €12,638)b | | Dominantb | |

**Notes:** a95% CI based on 5000 Monte Carlo probabilistic simulations; bbased on upper and lower limits of ICERs for each simulation.  
**Abbreviations:** CI, confidence interval; FF, fluticasone furoate; ICER, incremental cost-effectiveness ratio; ITT, intent to treat; LY, life year; PPPY, per patient per year; QALYs, quality-adjusted life years; UMEC, umeclidinium; VI, vilanterol.

**Supplementary Table 5.** Sensitivity analyses for FF/UMEC/VI versus FF/VI or versus UMEC/VI in the IMPACT ITT population

|  |  |  |
| --- | --- | --- |
| **ICER per QALY** | **FF/UMEC/VI vs FF/VI** | **FF/UMEC/VI vs UMEC/VI** |
| **Base case** | €6502 | Dominant |
| **Sensitivity analyses** |  |  |
| Set FEV1 treatment effect to upper 95% CI | €5969 | Dominant |
| Set FEV1 treatment effect to lower 95%CI | €7132 | Dominant |
| Utilities estimated from SGRQ-C (original GALAXY approach) | €7300 | Dominant |

**Abbreviations:** CI, confidence interval; FEV1, forced expiratory volume in 1 second; FF, fluticasone furoate; ITT, intent to treat; SGRQ-C, St George’s Respiratory Questionnaire for patients with chronic obstructive pulmonary disease; UMEC, umeclidinium; VI, vilanterol

**Supplementary Table 6**. List of independent ethic committees/institutional review boards for IMPACT Study

|  |  |
| --- | --- |
| **Country** | **Independent ethic committee/institutional review board** |
| Argentina | * Investigaciones en Alergia y Enfermedades Respiratorias, Buenos Aires * IMAI Research, Buenos Aires * CECIC Comité de Ética de CER Investigaciones Clínicas, Buenos Aires * Comite Independiente de etica Fundacion Rusculleda, Cordoba * Comité Independiente de ética para ensayos en Farmacología Clinica del centro Medico Dra, Buenos Aires * CIDEA, Buenos Aires * Hospital Municipal de Agudos de Bahia Blanca "Dr. Leonidas Lucero", Bahia Blanca * Comité de Ética en Investigación CER Salud de la Fundación Respirar Salud, Buenos Aires * Instituto de Investigacion Clinica de Mar del Plata, Buenos Aires * Escuela Latinoamericana, Comité de Bioética, Buenos Aires * Comité de Ética en Investigación, Buenos Aires * Centro Medico Vitae, Buenos Aires * Comite de Etica independiente Patagonico, La Pampa * Centro de Enfermedades Respiratorias e Investigaciones, Buenos Aires * Centro de Osteopatias Medicas, Buenos Aires * Hospital Italiano de Cordoba, Cordoba * CEIC Dr. Carlos A Barclay, Buenos Aires * Ave Pulmo, Buenos Aires |
| Australia | * Bellberry Limited, Dulwich * Royal Adelaide Hospital Research Ethics Committee, Adelaide * Monash Health, Clayton * Bellberry Limited, Eastwood |
| Austria | * Ethikkommission des Landes Oberoesterreich, Linz |
| Belgium | * Universitair Ziekenhuis Gent, Ethisch Comité, Gent |
| Brazil | * Hospital Universitario Clementino Fraga Filho-UFRJ, Rio De Janeiro * Hospital das Clinicas da Faculdade de Medicina da USP – HCFMUSP, Sao Paulo * CEP do Hospital Alemao Oswaldo Cruz, Sao Paulo * Pontificia Universidade Catolica do Rio Grande do Sui (PUC-RS), Porto Alegre * CEP UNIFESP, Sao Paulo * CEPH – FURB, Blumenau * Comissão de Etica e Pesquisa do Hospital Geral Otávio de Freitas, Recife * Faculdade de Medicina do ABC, Santo Andre * Comitê de Ética em Pesquisa com Seres Humanos UFSC, Florianópolis * Irmandade da Santa Casa de Misericórdia de Porto Alegre, Porto Alegre |
| Canada | * Institutional Review Board Services, Aurora * Health Research Ethics Board, University of Alberta, Edmonton * Colchester East Hants Health Centre, Truro * Concordia Hospital, Winnipeg * Hamilton Integrated Research Ethics Board, Hamilton * Comité d'éthique de la recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec, Quebec * Research Ethics Review Committee, Edmonton * University of Manitoba Biomedical Research Ethics Board, Winnipeg |
| Chile | * Comite Etico Cientifico Servicio de Salud Viña del Mar-Quillota, Viña del Mar * Comité de Evaluación Ético Científico, Valparaíso * Comité Ético Científico Servicio de Salud Metropolitano Central, Santiago * Comité de Etica Cientifico del Servicio de Salud Metropolitano Oriente, Providencia/Santiago * Comité de Ética Científico Servicio de Salud del Maule, Talca * Hospital Regional de Concepción Dr. Guillermo Grant Benavente, Concepción * Comité de Evaluación Ético Científico SSMSO, Santiago * Comité Ético Científico del Servicio de Salud Talcahuano, Talcahuano * Comite Etico Cientifico Del Servicio de Salud Metropolitano Norte, Santiago |
| China | * Medical Ethic Committee of Nanjing Drum Tower Hospital, Nanjing * Medical Ethic Committee of Tianjin Medical University General Hospital, Tianjin * Medical Ethic Committee of The General Hospital of Shenyang Military Region, Shenyang * Clinical Research Ethic Committee of Guangdong General Hospital, Guangzhou * Medical Ethic Committee of Nanjing First Hospital, Nanjing * Medical Ethic Committe of Peking Third University, Beijing * Daping hospital, Third Military Medical University, Chongqing * Medical Ethic Committee of The First Hospital of Shanxi Medical University, Taiyuan * Medical Ethic Committee of Jiangsu Province Hospital, Nanjing * Hai Nan Provincial People's Hospital, Department of Respiratory Medicine, Haikou * Wuxi People's Hospital, Wuxi * Institutional Review Board of the second affiliated hospital of Nanchang university, Nanchang * Shanghai Pulmonary Hospital, Shanghai * Beijing Chao-Yang Hospital, Beijing * West China Hospital, Chengdu * Medical Ethic Committee of Fuzhou General Hospital of Nanjing Military Command, Fuzhou * Clinical Research of Ethic Committee of the First Affiliated Hospital Of Jinan University, Guangzhou * Medical Ethic committee of The First Affiliated Hospital of Nanchang University, Nanchang * Ruijin Hospital affiliated to Shanghai Jiao Tong University, Shanghai * The 3rd Xiangya Hospital, Changsha * Qingdao Municipal Hospital – Institutional Review board, Qingdao * Xinqiao Hospital, Chongqing * Peking University First Hospital, Beijng * Clinical Research Ethic Committee of Shengjing Hospital of China Medical University, Beijing * EC Committee of Hangzhou First People’s Hospital, Hangzhou * Medical Ethic Committee of The Third Affiliated Hospital Of Guangzhou Medical University, Guangzhou * Affiliated Hospital of Guangdong Medical College, Zhanjiang * Shandong University Qi Lu Hospital, Jinan * Jiangxi Provinvcial People`s Hospital, Nanchang * Medical Ethic Committee of The First Affiliated Hospital Of Sun Yat-sen University, Guangzhou * Clinical Research Ethic Committee of Beijing Anzhen Hospital of Capital Medical University, Beijing * Jinan Central Hospital Affiliated to Shandong University, Jinan * Clinical Research Ethic Committee of The Second Hospital of Hebei Medical University, Shijiazhuang * Ethics Committee of 1st Affiliated Hospital of The Fourth Military Medical University, Xian * Ethics Committee of Second Hospital of Jilin University, Changchun * Shengjing Hospital of China Medical University, Shenyang * Clinical Research Ethic Committee of Guangzhou First People's Hospital, Guangzhou * Medical Ethic Committee of The First Affiliated Hospital of Guangzhou Medical University, Guangzhou * General Hospital of Ningxia Medical University, Yinchuan * The Institutional Review Board of 1st Affiliated Hospital of Guangxi Medical University-Nanning-China, Nanning * 1st Affiliated Hospital of the third Military Medical University, Chongqing |
| Colombia | * IPS Caja de Compensación Familiar CAFAM, Bogota D.C * Fundación ESENSA – Neumo investigaciones SAS, Bogota D.C * Clinica Colsanitas S.A., Bogota * Centro de Investigación Clinica del Country, Bogota * Clinica de la Costa Ltda, Barranquilla * Fundación Neumológica Colombiana, Bogota |
| Czechia | * Ethics Committee for the Multi-centric Clinical Trials of the University Hospital Motol, Praha * Nemocnice Rudolfa a Stefanie Benesov, Benesov * Fakultni nemocnice v Motole, Praha * Nemocnice Jihlava, Jihlava * Nemocnice Tabor, Tabor * Fakultni nemocnice Hradec Kralove, Hradec Kralove * Fakultni nemocnice a LF UP Olomouc, Olomouc |
| Denmark | * De Videnskabsetiske Komitéer for Region Hovedstaden, Hillerød |
| Finland | * Keski-Suomen sairaanhoitopiiri, Jyvaskyla |
| France | * CPP Ile de France VIII – Hôpital Ambroise Paré, Boulogne-Billancourt |
| Germany | * Ethik-Kommission der Landesaerztekammer Hessen, Frankfurt * Ethik-Kommission des Fachbereichs Medizin, Frankfurt am Main |
| Hong Kong | * Prince of Wales Hospital, Joint CUHKNTEC Clinical Research Ethics Committee, Hong Kong * Queen Mary Hospital, Hong Kong * Queen Elizabeth Hospital, Research Ethics Committee (KC/KE), Hong Kong * Tuen Mun Hospital, NTW Cluster Clinical & Research Ethics Committee, Hong Kong * Princess Margaret Hospital, Kowloon West Cluster Research Ethics Committee (KWC-REC), Hong Kong |
| Israel | * Carmel Medical Center, Haifa * Haemek MC, Afula * Barzilai Medical Centre, Ashkelon * Helsinki Committee, Jerusalem * Kaplan Medical Center Oncology Institute, Rehovot * Wolfson Medical Center, Holon * Shaare Zedek Medical Center, Institutional Helsinki Committee, Jerusalem * Rabin Medical Center, Tikva * Tel Aviv Sourasky Medical Center, Tel Aviv * Meir Medical Center, Kfar Saba * Assaf Harofeh Medical Center, Zerifin * The Helsinki Committee of Sheba Medical Organization, Ramat Gan * Maccabi Health Services, Helsinki Committee, Tel Aviv |
| Japan | * Kameda Clinic, Kamogawa * Gifu Prefectural General Medical Center, Institutional Review Board, Gifu * Shin-Nihonbashi Ishii Clinic, Institutional Review Board, Tokyo * National Hospital Organization, Central Review Board, Tokyo * Okayama Rosai Hospital, Okayama * Review Board of Human Rights and Ethics for Clinical Studies, Tokyo * Chiaki Internal Medicine and Respiratory Clinic, Hokkaido * Japan Community Health care Organization Hokkaido Hospital, Hokkaido * AMC Nishi-umeda Clinic, Osaka * Matsusaka City Hospital, Institutional Review Board, Matsusaka * Hirokuni Clinic, Tokyo * Tokushukai Group, Tokyo * Clinical Research Tokyo Hospital, Tokyo * Japanese Red Cross Takayama Hospital, Takayama * Tokyo Center Clinic, Tokyo * Machida Municipal Hospital, Machida * Shoda Hospital, Annaka * Yokkaichi Municipal Hospital, Yokkaichi * Ijinkai Takeda General Hospital, Kyoto * Hiroshima Prefectural Hospital, Hiroshima * Social Medical Corporation Keiaikai Nakagami Hospital, Institutional Review Board, Okinawa * Ome Municipal General Hospital, Tokyo * Yamagata City Hospital SAISEIKAN, Yamagata * Hiratsuka Kyosai Hospital, Hiratsuka * Nihonbashi Sakura Clinic, Tokyo * Yodogawa Christian Hospital, Osaka * Kobe City Medical Center West Hospital, Kobe * Shin-Nihonbashi Ishii Clinic, Institutional Review Board, Tokyo * Kishiwada City Hospital, Institutional Review Board, Kishiwada * Kurobe City Hospital, Institutional Review Board, Kurobe * Oji General Hospital, Tomakomai * Medical Corporation Sugiura Hospital, Institutional Review Board, Kawaguchi * Japan Organization of Occupational Health and Safety Toyama Rosai Hospital, Toyama * Nagaoka Nishi Hospital, Niigata * Tosei General Hospital, Aichi * Social Medical Corporation Keiaikai Nakagami Hospital, Okinawa * Takamatsu Municipal Hospital, Takamatsu * Tokyo-Eki Center-building Clinic, Tokyo * Koizumi Clinic of Respiratory and Internal Medicine, Sapporo * Morioka Tsunagi Onsen Hospital, Morioka * Yokohama City University Medical Center, Yokohama * Social Corporation Keigakukai Minamiosaka Hospital, Osaka * Chubu Rosai Hospital, Nagoya * Makita Hospital, Institutional Review Board, Sapporo * Matsumoto Respiratory And Internal Medicine Clinic, Hokkaido * Shinko Hospital, Kobe * Medical Corporation Medvue Tokyo Chidori Hospital, Tokyo * Nakamoto Clinic, Noda * Onomichi Municipal Hospital, Onomichi * Japan Koukan Hospital, Institutional Review Board, Kawasaki * Yamanashi Prefectural Central Hospital, Institutional Review Board, Kofu * KKR Takamatsu Hospital, Takamatsu * Sakaide City Hospital, Sakaide * Nakatani Hospital, Himeji * Kanazawa Municipal Hospital, Kanazawa * Ishikawa Prefectural Central Hospital, Kanazawa * Hokkaido P.W.F.A.C Asahikawa-kosei General Hospital, Hokkaido * Saiseikai Kurihashi Hospital, Kuki * Saint Luke's International Hospital, Tokyo * Daido Hospital, Nagoya * Kakogawa Central City Hospital, Kakogawa * Japan Community Healthcare, Sanjo * Ochanomizu University, Tokyo * Clinical Research Tokyo Hospital, Institutional Review Board, Tokyo * South Miyagi Medical Center, Miyagi * Sugiura Clinic, Kawaguchi * Medical Corporation Koyukai Nishi Hospital, Hyogo * Ochanomizu University, Tokyo * Meijo Hospital, Nagoya * JR Sapporo Hospital, Sapporo * Shizuoka General Hospital, Shizuoka * Obihiro Kokyukika Naika Hospital, Obihiro * Toyota Memorial Hospital, Toyota * Japanese Red Cross Society Wakayama Medical Center, Wakayama * Kanto Central Hospital Of The Mutual Aid Association Of Public School Teachers, Tokyo * Miyagi Kousei Kyokai Saka General Hospital, Shiogama * Tohoku Medical and Pharmaceutical University Wakabayashi Hospital, Sendai * Saiseikai Suita Hospital, Suita * Terada Clinic Internal Respiratory Medicine, Himeji * Iizuka Hospital, Fukuoka * Kobe City Medical Center General Hospital, Institutional Review Board, Kobe * Rakuwakai Otowa Hospital, Kyoto * K-You Health Care Co. Kirigaoka Tsuda Hospital, Institutional Review Board, Kitakyushu * Medical Corporation Sugiura Hospital, Institutional Review Board, Kawaguchi * JCHO Kanazawa Hospital, Kanazawa * Nihonbashi Sakura Clinic, Tokyo * Sagamihara Kyodo Hospital, Kanagawa * Hiro Clinic Omori, Tokyo * Shin-Nihonbashi Ishii Clinic, Institutional Review Board, Tokyo * Current: Medical Corporation Sugiura Hospital, Institutional Review Board, Kawaguchi/ Initial: Yoshiike Clinic, Yokosuka |
| Korea | * The Catholic University of Korea, Incheon * Gangnam Serverance Hospital, Seoul * Ewha Womans University Mokdong Hospital, Seoul * Chungbuk National University Hospital, Cheongju-si * Seoul National University Boramae Medical center, Seoul * Hallym University Sacred Heart Hospital, Anyang- * Severance Hospital, Seoul * National Health Insurance Service Ilsan Hospital, Goyang-si * The Catholic University of Korea Saint Vincent's Hospital, Suwon * Chung-Ang University Hospital, Seoul * VHS Medical Center, Seoul * Seoul National University Bundang Hospital, Seongnam-si * Catholic University of Korea – Saint Paul's Hospital, Seoul * Korea University Anam Hospital, Seoul * Chonbuk National University Hospital, Jeonju-si * Soon Chun Hyang University Bu Cheon Hospital, Bucheon-Si * Gachon University Gil Medical Center, Incheon * Kyung Hee University Medical Center, Seoul * Hallym University Medical Center, Seoul * Wonju Severance Christian Hospital, Wonju-si * Seoul National University Hospital, Seoul * Konkuk University Medical Center, Seoul * Saint Mary's Hospital, OBGY, Seoul |
| Netherlands | * Institutional Review Board/Ethics Committee Catharina Ziekenhuis, Eindhoven |
| New Zealand | * Ministry of Health, Wellington |
| Norway | * REK, Regionale komiteer for medisinsk og helsefaglig forskningsetikk, Oslo |
| Peru | * Comite Institucional de Bioteica (CIS) Via Libre, Lima * Comite Institucional de Etica en Investigacion Hospital Arzobispo Loayza, Lima * Comité Institucional de Etica en la Investigacion del Hospital Nacional Cayetano Heredia, Lima |
| Philippines | * Philippine Heart Center, Institutional Review Board, Quezon City * The Medical City, Pasig City * Lung Center of the Philippines, Quezon * West Visayas State University Medical Center, Iloilo City * Manila Central University- FILEMON D. TANCHOCO Medical Foundation Hospital, Caloocan City |
| Poland | * Komisja Bioetyczna przy Okręgowej Izbie Lekarskiej w Gdańsku, Gdańsk |
| Puerto Rico | * Chesapeake Institutional Review Board, Columbia * VA Caribbean Healthcare System Research and Development Committee/Human Studies Subcommittee Institutional Review Board, San Juan |
| Romania | * Comisia Nationala de Bioetica a medicamentelor si a Dispozitivelor Medicale, Bucuresti |
| Russia | * Ryazan State Medical University, Ryazan * Siberian State Medical University, Tomsk * Krasnoyarsk State Medical University, Krasnoyarsk * Municipal Health Care Institution Clinical Hospital for Emergency Medical Care, Yaroslavl * Kazan Scientific Research Institution of Epidemiology and Microbiology of Rospotrebnadzor, Kazan * Regional Clinical Hospital, Local Ethics Committee of State budget institution of Ryazan region, Ryazan * State Educational Institution of the Highest Professional Education, "Chita State Medical Academy”, Chita * Ethics Committee of State Educational Institution of Additional Professional Education, Irkutsk State Institution of Postgraduate Physici, Irkutsk * LLC Alliance Biomedical – Russian Group, Saint Petersburg * MUZ Clinical Hospital #2, Yaroslavl * Ethics Committee of City Hospital #6, Pyatigorsk * Primorskaya Krayevaya Clinical Hospital #1, Vladivostok * Voronezh Regional Clinical Hospital, Voronezh * Novosibirsk State Regional Clinical Hospital, Novosibirsk * Belgorod Regional Clinical Hospital, Belgorod * Ural state medical academy, Ekaterinburg * Family Clinic "Health Poem", Saint-Petersburg * City Clinical Hospital #4, Ivanovo * Vladivostok State Medical Univercity, Vladivostok * Clinical hospital at station Barnaul RRR PLC, Barnaul * Out-patients’ clinic #1 of President of Russia, Moscow * Far Easte sientific centre phisiology end pathology respiration, Blagovetchensk * Ulyanovsk Regional Clinical Hospital, Ulyanovsk * Saratov Regional Clinical Hospital, Saratov * Multiprofile Clinical Hospital #2, Krasnodar * Local Ethics Comittee of Saint Petersburg State Medical university, Saint Petersburg * City clinical Hospital #24, Moscow * Regional Clinical Hospital, Vladimir * Novgorod Regional Clinical Hospital, Novgorod * Republican Hospital nom Baranov, Ethics comitee, Petrozavodsk * Ethics Committee of the LLC PharmacoNadzor, Saint-Petersburg * Kazan State Medical University” Of Ministry of Healthcare and social development of Russian Federati, Local Ethics Committee of State Budget Educational institution of Higher professional education, Kazan |
| Singapore | * National Healthcare Group, Domain Specific Review Board, Singapore * Centralised Institutional Review Board, Singapore |
| South Africa | * Pharma Ethics, Lyttelton Manor * University of Stellenbosch, Human Research Ethics Committee 2, Tygerberg * University of Cape Town, Human Research Ethics Committee, Observatory |
| Spain | * Corporación Sanitaria Parc Taulí, Barcelona |
| Sweden | * Regionala Etikprövningsnämnden i Göteborg, Göteborg |
| Thailand | * Khonkaen University, Khonkaen * Ministry of Public Health, Nonthaburi * Institutional Review Board, Faculty of Medicine, Chulalongkorn University, Bangkok * Prince of Songkla University, Songkhla * Research Ethics Committee, Faculty of Medicine, ChiangMai University, Intravaroros Road |
| Turkey | * Ege University Medical Faculty, Clinical Research Ethics Committee, Izmir |
| Ukraine | * Institute of Phthisiatry and Pulmonology, Local Ethic Committee, Kyiv * Communal Institution "Road Clinical Hospital #2", Kyiv * “Consultative and diagnostic center” of Desnyansky district, Kyiv * City Clinical Hospital No 1, Mykolayiv * City Clinical Hospital No 27, Kharkiv * Municipal Clinical Hospital # 1, Vinnitsia * Sumy Regional Clinical Hospital, Sumy * Municipal Institution "Odesa Regional Clinical Hospital", Odesa * City Clinical Hospital #13, Kharkiv |
| United Kingdom | * NRES Committee North East, Newcastle & North Tyneside 1, Jarrow |
| United States | * Chesapeake Institutional Review Board, Columbia * Human Studies Subcommittee – Bay Pines VA Healthcare System, Bay Pines * Louisiana State University Health Sciences Center-Shreveort, Los Angeles * Western Institutional Review Board, Puyallup * Biomedical Research Alliance of New York Institutional Review Board, New York * Berkshire Medical Centre Institutional Review Board, Pittsfield * Yale University human Investigation committee, New Haven * McGuire Institutional Review Board, Richmond * Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals, Houston * LSU Health Sciences Center Office of Research Services, New Orleans * Edward Hines Jr. VA Hospital / James A Lovell FHCC .Institutional Review Board, Hines * Northwestern University Institutional Review Board, Chicago * The Research Integrity Office, Oregon Health and Science University (OHSU) Institutional Review Board, Portland * Research Compliance Office, Stanford University, Palo Alto * Saint Luke's Hospital Institutional Review Board, Chesterfield * Southern Arizona VA Health Care System Institutional Review Board, Tucson * Kansas City VA Medical Center, Missouri * William Jennings Bryan Dorn Veterans' Medical Center Institutional Review Board, Columbia * Duke University Medical Center, Durham * Saint Luke's Hospital Duluth Institutional Review Board, Duluth * University of Texas Health Science Center San Antonio, San Antonio * Mercy Hospital Saint Louis insititutional Review Board, Saint Louis * Human Studies Subcommittee, Veterans Affairs (VA) Long Beach Health Care System, Long Beach * Virtua General Institutional Review Board, Virtun Center for Learning, Mount Laurel * Office of Research Subjects, HealthPartners Institute for Education and Research, Saint Paul * Creighton University School of Medicine Institutional Review Board, Omaha * University of Cincinnati Institutional Review Board, University Hall, Cincinnati * Kansas City Veterans Administration Medical Center Institutional Review Board, Kansas City * Moses Cone Health System, The Institutional Review Board Committee for Human Research Protections, Greensboro * Human Studies SubCommittee (HSS), West Haven * Mayo Clinic Institutional Review Board, Rochester * Program for the Protection of Human Subjects- lcahn School of Medicine at Mount Sinai, New York * Office of The Human Research Protection Program (OHRPP), UCLA Medical Institutional Review Board, Los Angeles * University of Florida Institutional Review Board, Gainesville * Cresent City Institutional Review Board, New Orleans * Copernicus Group Institutional Review Board, Durham * Saint Francis Hospital & Medical Center Institutional Review Board, Hartford |
| Viet Nam | * The Institutional Science and Ethics Committee in Biomedical research at National Lung Hospital, Ha Noi * Nhan Dan Gia Dinh Hospital, Ho Chi Minh * University Medical Center of Ho Chi Minh City, Ho Chi Minh * Pham Ngoc Thach Hospital, Ho Chi Minh * Bach Mai Hospital, Hanoi * Cho Ray hospital, Ho Chi Minh |