Bayesian analyses informed by IPF trial data can be used to extrapolate survival estimates in patients with non-IPF PF-ILD

**METHODS**

- **AIM**
  - To develop models of long-term survival in patients with PF-ILD in the INBUILD trial using propensity score-matched long-term IPF data.
  - Propensity score matching was used to weight and match patients with IPF from four nintedanib trials (TOMORROW, INPULSIS 1, and 2, and the long-term extension INPULSIS-ON) trial to patients with PF-ILD in the INBUILD trial.
  - Seven traditional survival models were fitted to the matched, weighted IPF data and the three best-fitting models, according to standard statistical tests, were used to generate informative priors for the shape parameter of the Bayesian model.
  - Three distributions were then fitted to the PF-ILD data and extrapolated over the long-term.

**RESULTS**

- **Gamma**, log-logistic and Weibull survival models were the best fit for the matched IPF data.
- The Weibull model gave a lower estimate of median OS and 5-year survival estimates compared to the other models.
- Compared with survival estimates based on INBUILD data only, the Bayesian estimates of median OS in PF-ILD provided less variation and uncertainty.

**CONCLUSION**

- Using Bayesian analyses informed by IPF trial data provides robust 5-year survival estimates for patients with non-IPF PF-ILD treated with nintedanib in placebo.
- Our results are consistent with clinical experience and real-world evidence from patients with IPF.9,10
- These estimates can be used to inform future decision-making in the absence of long-term PF-ILD data.

**DISCLOSURES**

- Bi and Al are employees of Boehringer Ingelheim Limited. TRM has received industry support from Boehringer Ingelheim, Novartis, and Nippon Boehringer. LB has received honoraria and non-financial support from Boehringer Ingelheim. JD, KA, and MD are employees of Boehringer Ingelheim International GmbH.

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The analysis was supported by Boehringer Ingelheim International GmbH (BI). The authors state that they are responsible for the scientific content of the research. BI provided the INBUILD dataset, and Nippon Boehringer provided input on the scientific analysis. BI and Novartis provided funding for the INBUILD study and INPULSIS trials. The study was conducted by a steering committee with members from diverse backgrounds.

- Based on the provided information, it appears that the document contains a scientific study on the long-term survival of patients with progressive fibrosing interstitial lung disease (PF-ILD) who are not suffering from idiopathic pulmonary fibrosis (IPF). The study utilizes Bayesian survival analysis to extrapolate survival estimates from matched IPF data to non-IPF patients with PF-ILD. The researchers aim to develop models of long-term survival in patients with PF-ILD using propensity score-matched long-term IPF data.

The document outlines the methods, including propensity score matching, traditional survival models, and Bayesian survival analysis. It also discusses the results, emphasizing the use of Gamma, log-logistic, and Weibull survival models as the best fit for the matched IPF data. The authors conclude that their Bayesian analyses provide robust 5-year survival estimates for non-IPF PF-ILD treated with nintedanib in placebo, with results consistent with clinical experience and real-world evidence from patients with IPF. These estimates can be used to inform future decision-making in the absence of long-term PF-ILD data.

**References**


**Abbreviations**

- BSA: Body surface area
- IPF: Idiopathic pulmonary fibrosis
- PF-ILD: Progressive fibrosing interstitial lung disease
- PB2: Progression-blocking factor
- RBM: Respiratory bronchiolitis
- UIP: usual interstitial pneumonia
- NLOP: non-IDF

**Disclosures**

- The authors have no conflicts of interest to disclose.

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**Interactive Elements**

- [Interactive Data](#)

**Image Description**

The image contains a chart illustrating the survival estimates for matched IPF data, with comparisons between placebo and nintedanib groups using Gamma, log-logistic, and Weibull distributions. The chart shows the survival curves over time, with annotations indicating the statistical methods used (Gamma, log-logistic, and Weibull). The data is presented in a clear, visual format, allowing for easy comparison and analysis of survival outcomes.