Case Study

Idiopathic Pulmonary Fibrosis (IPF): Enriching Patient Population to Drive Trial Success

Background:

Idiopathic Pulmonary Fibrosis (IPF) is a chronic progressive lung disease characterized by scarring (fibrosis) of lung tissue, resulting in reduced intake of oxygen. It is a rare disease of unknown cause that affects 13 to 20 out of every other 100,000 people, primarily adults.

Imaging in IPF

A key requirement in idiopathic pulmonary fibrosis clinical trials is identifying and enrolling the right patients into the study. Study designs incorporate a set of criteria –inclusion and exclusion – to enroll in or out subjects, through a process called population enrichment.

In IPF clinical trials, imaging is one of the key diagnostic tests used to screen subjects. High resolution CT (HRCT) is the imaging modality of choice for the diagnosis of IPF. In some cases, when HRCT diagnosis is not conclusive, a review of lung biopsy tissue by a pathologist may be required to confirm the diagnosis of IPF. This requirement makes IPF clinical trials uniquely complex. The imaging review of chest HRCT in IPF studies requires special training of radiologists and significant clinical experience in reading lung HRCT scans. The same is true for pathology.

Additionally, there are published guidelines by scientific experts and societies that are used by radiologists and pathologists for the review of images and biopsy specimens. These guidelines allow a harmonized and standardized way to confirm a diagnosis of IPF. While these guidelines are aimed at standardizing the diagnosis of IPF in clinical trials and the clinic, there still exist challenges associated with getting experts to agree on the diagnosis in some cases.

Minimizing reader discordance and central-site reader discordance is one of the challenges in clinical trial imaging studies. Perceptive's imaging core lab, has developed a comprehensive reader selection and training program to harmonize the central review process for IPF studies and other rare disease indications. This program is enhanced periodically based on lessons learned from current studies.

Study Implementation

Perceptive Imaging played a vital role in multiple phase 2/3 IPF studies being conducted by a clinical trial sponsor seeking regulatory approval for the first-ever treatment of IPF. The imaging biomarker data was critical to the sponsor's success as it supported the studies' key goal to enrich the IPF patient population in the study. To ensure the accuracy of the imaging reads, Perceptive's imaging core lab identified and recruited world-class radiologists and pathologists to participate as independent reviewers as part of the central read model.

Perceptive Imaging was responsible for supporting two data streams during these studies, i.e. radiology and pathology, which required a unique set of scientific and operational expertise. The two data streams required logistics expertise since the data came in through two different workflows and were routed to different sets of readers. While the data streams were unique, the final decision reported to the sites required a combination of assessments from both data streams.

Moreover, if there was discordance in the diagnosis of IPF between radiologists and pathologists, a hospital-style multi-disciplinary discussion (MDD) session was arranged virtually (vMDD), to facilitate discussion between the readers and an independent clinician. The goal of this session was to make a final decision based on consensus between all the parties. The latter was very well received by the investigators, since it emulated clinical practice in a trial setting.

Results

Perceptive's management of multiple data streams, comprehensive IPF training program for internal stakeholders and partners, and reporting of unified results, combined with internal scientific expertise and strong collaboration with KOLs, led to the delivery of reliable clinical trial imaging data that demonstrated the efficacy of the IRP compound and was key to the success of these studies and their subsequent regulatory approvals.