SPURRING INNOVATION IN RARE DISEASES

America's biopharmaceutical research companies are committed to bringing new treatment options to rare disease patients. Developing medicines for rare diseases presents scientific and operational challenges. Recognizing this, Congress passed the Orphan Drug Act (ODA[i]) to provide key incentives that encourage rare disease research and development (R&D). Despite the progress made, there is still unmet medical need for many rare disease patients and their families. To support continued rare disease R&D, policymakers must maintain critical policy incentives which have brought hundreds of treatment options to rare disease patients.

WHAT ARE RARE DISEASES?

In the United States, as defined by the ODA, a disease that affects fewer than 200,000 Americans is considered a rare or an orphan disease. Although rare diseases each may individually only impact a relatively small number of patients, their impact on public health is far-reaching.[ii] Collectively, rare diseases affect about 30 million Americans – or roughly 1 in 10.[iii, iv]

Approximately 7,000 different rare diseases are known today, with many more still likely to be identified. It is estimated 80% of rare diseases are genetic in origin and the vast majority impact children.[v] What's more, 85% to 90% of rare diseases are considered "serious or life threatening."[vi]

RARE DISEASES BY THE NUMBERS

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RARE DISEASES AFFECT ABOUT **30 MILLION AMERICANS—**

THAT'S AROUND 1 IN 10[6]

Source: GAO: GAO, "Orphan Drugs: FDA Could Improve Designation Review Consistency; Rare Disease Drug Development Challenges Continue," https://www.gao.gov/products/GAO-19-83, November 2018.

APPROXIMATELY

7,000

RARE DISEASES ARE KNOWN TO EXIST TODAY [7]

Source: GAO: GAO, "Orphan Drugs: FDA Could Improve Designation Review Consistency; Rare Disease Drug Development Challenges Continue," https://www.gao.gov/products/GAO-1983, November 2018.

The FDA has approved

MORE THAN 600 MEDICINES FOR RARE DISEASES

since the passage of the Orphan Drug Act.

Source: U.S. Food and Drug Administration. "Developing Products for Rare Diseases & Conditions." https://www.fda.gov/industry/developing-products-rare-diseases-conditions

Less than 10%

of known rare diseases have available treatments.

Source: Center for Drug Evaluation and Research. "Rare disease cures accelerator." U.S. Food and Drug Administration. https://www.fda.gov/drugs/regulatory-science-research-and-education/rare-disease-cures-accelerator

PROMISE IN THE PIPELINE:

MORE THAN

700

MEDICINES IN DEVELOPMENT FOR RARE DISEASES [10]

Source: PhRMA, Medicines in Development, 2021

Learn more on Progress against Rare Diseases at PhRMA.org/RareDiseases

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Rare Disease Drug Development: Complexities and Challenges

Although biopharmaceutical researchers have made tremendous progress in advancing innovation for rare diseases, fewer than 10% of these diseases have an available treatment option and significant unmet needs remain for patients. What's more, for many with a rare disease, simply getting a diagnosis can be a complicated, lengthy and frustrating journey. Inadequate availability and access to diagnostic tools and limited awareness of rare diseases among physicians can often make it difficult to identify and diagnose many of these illnesses. On average, it can take more than six years and be an often-burdensome process for a rare disease patient to receive an accurate diagnosis.[vii]

Rare diseases are often biologically complex and much remains unknown about the underlying causes and the natural history of many of these unique conditions. While some rare diseases have been identified and characterized over time, increasingly linked to genetic abnormalities or other factors, many more diseases continue to have no known cause or have only more recently been identified as a disease. Other rare diseases may have multiple causal pathways, may interact with environmental factors, or may be highly interrelated with different, though very similar diseases. Even within a particular rare disease, there can be many variations or subtypes resulting in different clinical manifestations and disease progressions translated in a highly heterogeneous patient population and a need for individually tailored treatment approaches.

Additionally, as the affected treatment population is inherently small and there is often a lack of experience and familiarity with rare diseases among physicians, identifying eligible patients, recruiting and retaining patients for clinical trials can be extremely difficult. Furthermore, patient experiences and disease progression can vary significantly within an individual rare disease considering the many subtypes or variations of these diseases, making evaluation of treatment outcomes among those participating in clinical trials a particular challenge. Importantly, there are also significant difficulties in recruiting enough clinical trial volunteers to show statistically significant results in such small patient populations.[viii]

Owing to these range of challenges, on average, it typically takes four years longer for rare disease medicines to successfully advance through clinical trials and to U.S. Food and Drug Administration (FDA) approval relative to non-rare disease medicines.[ix]

Despite these challenges, America's biopharmaceutical companies are leveraging new technologies and growing scientific understanding to develop groundbreaking therapies for rare diseases. In fact, about 30% of the medicines in the drug development pipeline are focused on rare diseases.[x]

Facilitating Rare Disease Drug Development

The ODA has been crucial in driving innovation in the treatment of rare diseases. The ODA was enacted in 1983 to address the lack of incentives to foster development of new treatments for rare diseases.

The ODA policies to encourage orphan drug development include an R&D tax credit for 25% of qualified clinical trial costs, as well as an exclusive right to market the same drug for same disease or condition for seven years after FDA approval.[xi] In addition, federal funding is available through grants to perform clinical trials of orphan-designated products, which is particularly critical for small and emerging companies. Since the enactment of the ODA in 1983, the FDA has approved more than 600 orphan drugs, in contrast to fewer than 10 medicines for rare diseases in the decade prior to its enactment.[xii] While the ODA has encouraged incredible progress, given the inherent challenges associated with orphan drug development and the tremendous need that remains, the policies first established by the ODA have never been more critically needed in driving new treatments for patients. Additionally, the Prescription Drug User Fee Act (PDUFA) helps further advance the development and review of new medicines, including those for rare diseases.

FDA Approved Orphan Drugs Pre and Post Passage of the ODA

(as of March 2022)

"That groundbreaking law [The ODA] was designed specifically to provide incentives for the development of drugs for people with rare diseases. The ODA has actually changed the face of drug research."

– Dr. Janet Woodcock, U.S. Food and Drug Administration [xiii]

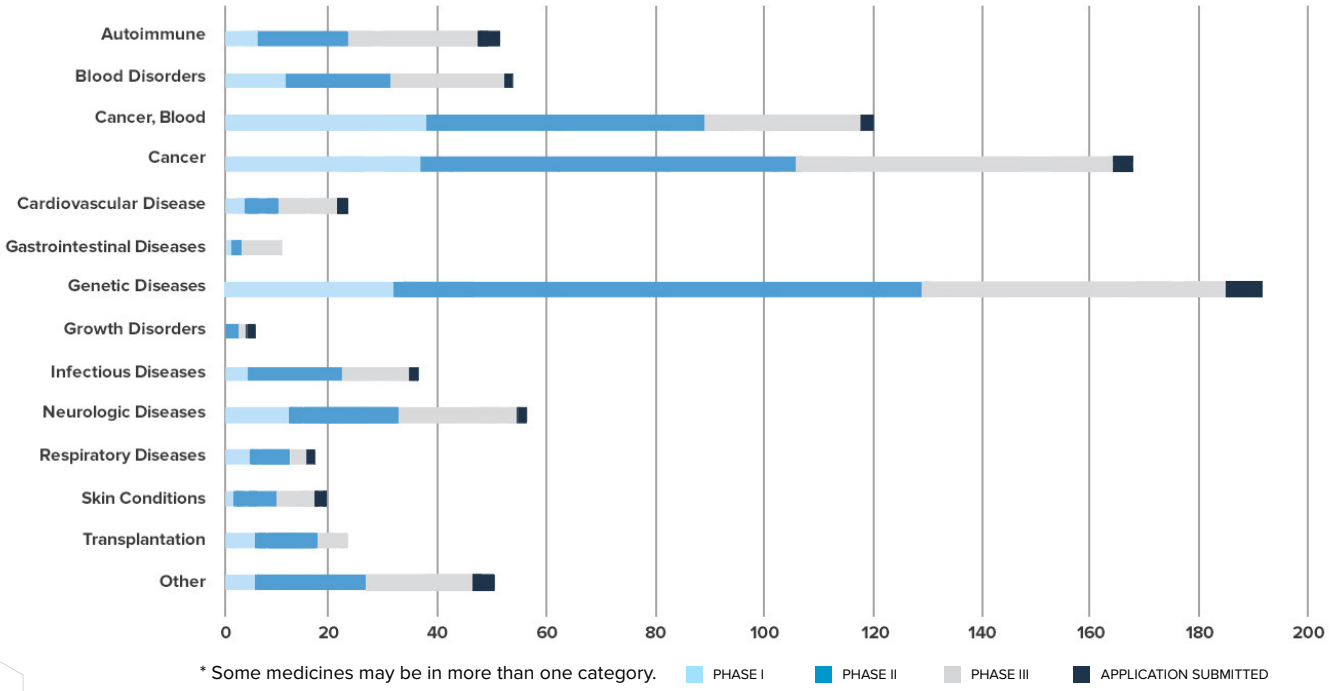
Recent Advances and Future Progress

Over the last decade, significant advances across a range of rare diseases are offering tremendous hope and progress for patients with treatment options where few or none were previously available – for example:

- Remarkable progress has been made in the past decade in both improving and extending the lives of cystic fibrosis (CF) patients. The FDA has approved four therapies that are designed to correct the malfunctioning protein that results from mutations in the CFTR gene. These treatments are available for patients with a range of mutations associated with the disease, including the most common that is estimated to represent 90% of the CF population.[xiv]
- Significant advances have been made in bringing patients targeted therapies for many forms of rare blood cancers, such as chronic lymphocytic leukemia, chronic myeloid leukemia, follicular lymphoma, acute myeloid leukemia, multiple myeloma and many more.[xv]
- A gene therapy is now available providing the first treatment for patients with a form of ultra-rare childhood blindness associated with a specific genetic mutation and offering the opportunity to restore vision loss.[xvi]
- First time treatment for an increasing cause of heart failure in older adults, disproportionately impacting African Americans, called transthyretin amyloid cardiomyopathy, is decreasing hospitalizations and significantly increasing survival in patients.[xvii]
- As a result of continued research of medicines already FDA-approved for a range of other inflammatory conditions, a wide-range of disease-modifying treatments are now approved to treat patients with all forms of Juvenile Idiopathic Arthritis (JIA). Collectively, these treatments provide JIA patients the best opportunity to slow disease progression and prevent significant disability later in life.[xviii]

Despite this progress, there remains substantial unmet medical need for patients. The biopharmaceutical industry is committed to advancing new medicines for patients with rare diseases and conditions, and the pipeline has never been more promising. There are more than 700 medicines currently in development for rare diseases and conditions.[xix]

Medicines in Development for Rare Diseases*



To ensure continued progress in developing new medicines for the many complex and challenging rare diseases where we lack treatments and improve the lives of patients, it is critical to maintain incentives as provided in the ODA.

Learn more on Progress against Rare Diseases at PhRMA.org/RareDiseases

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