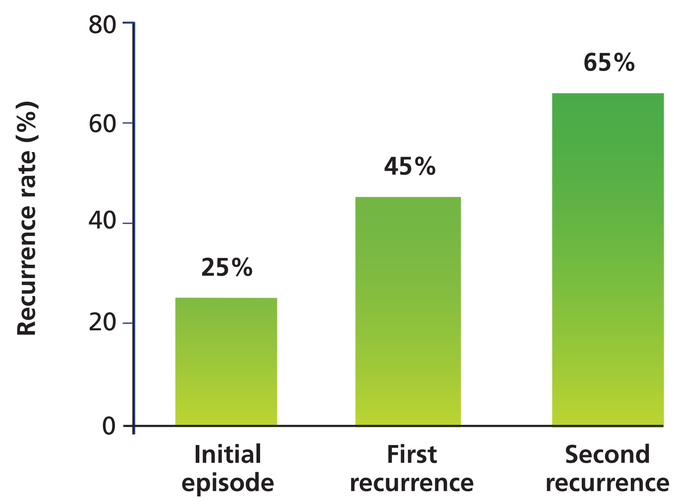
Regulatory Considerations in Commercializing a Non-Antibiotic Microbiota-Based Drug Targeted for Recurrent *Clostridium difficile* Infection

Background

Clostridium difficile infection (CDI) is the leading cause of healthcare acquired diarrhea, and is linked to perturbations of the intestinal microbiota initiated by antibiotics. Approximately, 20% to 30% of patients will go on to experience recurrence, with each additional episode predisposing to further recurrence. No drug is currently indicated for recurrent CDI.

Figure 1: Clostridium difficile Recurrence



Adapted from Kelly CP, 2012.[1]

The risk of recurrence increases significantly with each subsequent recurrence of Clostridium difficile infection.

Rebiotix

Rebiotix was founded in 2011 with the goal of revolutionizing the treatment of challenging gastrointestinal disease by harnessing the power of the microbiome.

RBX2660 (microbiota suspension)

Lead product RBX2660 is a non-antibiotic drug targeted at recurrent CDI.

Regulatory Categorization

RBX2660 is the first in an entirely new category of biologic drugs designed to reverse pathogenic processes responsible for disease through the transplantation of live human-derived microbes.

The company initially applied to the U.S Food and Drug Administration (FDA) for categorization of RBX2660 as a human tissue. Ultimately it was categorized as a biologic regulated by the Center for Biologics Evaluation and Research (CBER).

Clinical Program

PUNCH CD Study: First multicenter study of RBX2660

- Primary objective was to assess the safety of RBX2660.
- Secondary objectives included gathering information on efficacy, quality of life and cost-effectiveness of the drug.
- Conducted under an FDA Investigational New Drug Application
- Completed in July 2014

Randomized Controlled Trial

- Randomized controlled double-blind placebo-controlled trial scheduled to start in fall 2014
- Ground-breaking, first trial of its kind

FDA Special Designations

- **Fast Track:** Provides for expedited FDA review and increases the likelihood of first-cycle approval and subsequent earlier market access.

- **Orphan Drug:** Rebiotix is the only company with a microbiota therapy for recurrent CDI with orphan designation. Provides 7-year exclusivity.

Financial Impact

- Raised total of $30 million in venture capital since inception.
- Expected to sustain pivotal clinical research to advance RBX2660 toward commercialization.

Conclusion

- Rebiotix has successfully adapted expedited FDA programs largely focused on HIV and cancer to aid in development of a microbiota-based drug targeted at unmet of medical needs posed by recurrent CDI.

References

[1]Kelly CP. Can we identify patients at high risk of recurrent Clostridium difficile infection? *Clin Microbiol Infect.* 2012;18 (Suppl6):21-27.

Founded	Fast Track designation	First enrollment in the PUNCH CD Study	Orphan Drug designation	PUNCH CD study completed	Closed on $25 million series B funding
2011	June 2013	August 2013	March 2014	July 2014	August 2014