Closer Look

MEMORANDUM

UCSD Diabetes Public Forum provides update on ViaCyte's phase 1/2 trial of VC-01 - February 28, 2015

Executive Highlights

- About 125 physicians, patients, parents, and community members gathered at the UC San Diego Diabetes Public Forum in La Jolla, CA on Monday to discuss updates on ViaCyte's phase 1/2 clinical trial of VC-01, its cell replacement therapy for type 1 diabetes (stem-cell derived, beta cell progenitor cells encapsulated in an implanted immune protective device).
- Four patients are currently participating in the trial (three of whom attended the meeting) and a fifth is already lined up. The protocol currently calls for between three and six patients in the first cohort.
- During the first phase of this trial, researchers are administering only sub-therapeutic doses of VC-01, as the goal is to test for safety (the next phase will test for efficacy).

Physicians, patients, parents, and community members gathered at the UC San Diego Diabetes Public Forum in La Jolla, CA on Monday to discuss the latest updates on ViaCyte's phase 1/2 clinical trial (ClinicalTrials.gov Identifier: NCT02239354) of VC-01, its cell replacement therapy for type 1 diabetes (stem-cell derived, beta cell progenitor cells encapsulated in an implanted immune protective device). Speakers included ViaCyte CEO Dr. Paul Laikind (ViaCyte, San Diego, CA), Dr. Lawrence Goldstein, Dr. Jeremy Pettus, and Dr. Michael Gottschalk (all from University of California, San Diego, CA); Dr. Maike Sander (University of California, San Diego, CA) moderated the discussion. We learned that four patients with type 1 diabetes are currently enrolled in this two-year trial (three of whom attended the event), and a fifth patient is lined up. The company has approval for up to six patients in the first cohort; they are planning to expand the trial to include a cohort of 40 people at multiple sites in its second phase. The first patient was implanted with the device last October, and Dr. Pettus indicated that patients from all over the world have expressed interest in participating in the trial. The Forum's speakers made clear that during this first phase of the trial, patients are receiving only sub-therapeutic doses of VC-01, as the goal is to test for safety and determine how to improve the procedure (the next phase will test for efficacy). In this first phase, two "dose-ranging" size (half the size of a credit card) and four small "sentinel" (dime-sized) units were implanted in patients' backs during an hour-long outpatient procedure. For reference, Dr. Pettus noted that between six and eight large units implanted at the same time would be required to establish complete insulin independence. ViaCyte later noted to us that the number is estimated to be four to six of these units.

While the speakers did not share any data, we are excited to have learned more about the details of ViaCyte's trial. Many Forum attendees were eager to learn when VC-01 might become widely available, and Dr. Laikind noted that it could be expected to hit markets within three to six years. This suggests that ViaCyte is on track for its goal of a phase 2b/3 study in late 2016/early 2017 and a BLA in late 2019/early 2020; six-month data from the phase 1/2 study is expected by late 2016, though the study will continue beyond that point with the implant remaining in place for two years. While the field of cell-based therapies for type 1 diabetes has certainly seen its share of disappointments, the significant support for ViaCyte's efforts from respected players like Janssen, JDRF, and the California Institute for Regenerative Medicine (CIRM) gives us plenty of cause for optimism. We found the discussion at this meeting to be highly stimulating, and we look forward to closely following the trial's progress.

- **In the first phase of the trial, two larger devices and four smaller devices were implanted in patients' backs in an hour-long outpatient procedure.** The large units are

about half the size of a credit card and are the "workhorses" containing the majority of the cells. The small units are dime-sized "sentinels" intended to be removed at 4 weeks, 12 weeks, 24 weeks, etc. after implantation in order to monitor the health and maturation of the implanted cells.

- **The VC-01 devices appear very sturdy** - impressively, the devices and encapsulated cells did not rupture when researchers placed them in cadavers and hurled baseballs at them at 60 miles per hour. However, Dr. Pettus did say that the cells are easily ruptured by needles, citing this as a reason that the back was chosen as the site of implantation (as it is out of the way of insulin needles, etc.).
- **In response to a question from a community member, Dr. Laikind said that ViaCyte has had a very positive experience working with the FDA.** Having worked in the world of biotechnology for 30 years, Dr. Laikind said he has never been in a more cooperative situation with the FDA. He noted that in a pre-Investigational New Drug Application (IND) meeting, officials at the FDA offered to work in real-time with researchers at ViaCyte to complete protocols and added that the FDA accepted ViaCyte's almost 10,000-page IND application in just 30 days.
- **Dr. Laikind also mentioned that ViaCyte's work on VC-01 would not be possible without the support of key partners and investors.** Last August, ViaCyte signed a rights agreement giving Janssen a future right to evaluate a transaction related to VC-01 in exchange for an upfront payment of $20 million. JDRF and The California Institute for Regenerative Medicine (CIRM) have also been generous funders, giving ViaCyte over $15 million and $40 million, respectively, over the past decade. Most recently, ViaCyte received a $16.6 million CIRM grant this past September.

Close Concerns Questions

Q: When is it expected that trial results will be shared?

Q: How will patients' insulin be titrated down? (e.g., would they automatically start at 50% of their normal insulin dose?)

Q: How much will the trial cost?

Q: How long is ViaCyte's current financial runway?

-- by Leda Espinoza, Emily Regier, and Kelly Close