



White Paper – The Vdex Protocol in a Significant Sample of Patients

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Confidential

Introduction

Vdex was formed based on a simple idea: diabetes care could be better. Indeed, it must be. One need only look at the trajectory of the costs of caring for patients with this disease over the last decade to realize the truth of what diabetes entrepreneur, Alfred Mann, said, “Left unchecked, diabetes will bankrupt the world.”

While there has been an explosion of new medications receiving FDA approval to treat diabetes, average care population-wide is unchanged. In fact, at the most severe level of disease, care is actually worse than it was 20 years ago. Costs inexorably rise and care gets no better. And, it’s not as if the care was good 20 years ago.

Today, a person with diabetes loses on average, about 10 years of life to the disease, and the last few years of that already shortened life are ridiculously depressing: dialysis, injections, multiple daily finger pricks, hypoglycemia, fatigue, nausea, significantly elevated risk of cancer, heart disease, stroke, amputation, blindness, etc. That’s what a diabetic can look forward to in the latter stages of the disease. For many, death is preferable to living with advanced disease.

Vdex decided to try something very different from the conventional treatments. Utilizing some newer technology, along with an unappreciated therapeutic agent, Vdex developed a protocol based upon sound clinical principles. That protocol has been applied and refined through testing on more than 500 patients. This purpose of this report is to present some clinical data about the results obtained using the Vdex protocol in a significant patient sample.

Objective

It is Vdex’ belief that their proprietary protocol has very broad application, that most patients are candidates for the protocol, and that ultimately the protocol represents a very significant advancement in the treatment for the very widespread problem of diabetes. The objective of this study was to examine the Vdex protocol in a significant sample of patients. Vdex wanted to observe the results of more widespread use, as preparation for its recommendation of nearly universal use in its facilities.

The Data Set

The data set, compiled in 2020, is comprised of 76 patients from Vdex offices in California, New Mexico and Kentucky. Sixty-nine, or 91%, of the patients studied were Type 2 diabetics, and the balance were Type 1. The gender breakdown was 40 males (53%) and 36 females (47%).

The average age of the patient population was 57 years old, and the range was from 21 years old to 82. The level of blood sugar control before starting with Vdex, as measured by HbA1c, was an average of 10.4 with a range from 6.7 to 14. Note, that Vdex’ HbA1c testing equipment only reads to a maximum of 14, and there were 13 patients whose initial HbA1c was 14, so

some were likely considerably higher. Most ethnicities were represented though there were few Asians and Blacks. Most patients were White and Hispanic.

Patients were chosen for inclusion in the study based upon being medically qualified, meaning they passed an FEV-1 lung function test, and having successfully completed the protocol, which usually lasts about 3 – 4 months. The biggest reason patients did not complete the protocol, and hence, are not part of this study, was the failure of their insurance plans to cover the main therapeutic agent, Afrezza.

Results

Summarizing the results, Vdex reported:

Average starting HbA1c:	10.4	
Average lowest HbA1c attained:	6.6	
Total drop in HbA1c:	3.8	in <u>about 104 days</u> .

While these gross numbers are impressive, perhaps more impressive is that 72% of patients attained an HbA1c of 7 or below. This is the target promulgated by the American Diabetes Association and a level that less than 30% of all patients industry-wide ever reach.

Two other HbA1c treatment landmarks used at Vdex are: 1) an HbA1c of 6.3 or less, which is the level below which microvascular damage is attenuated and 2) an HbA1c below 5.7 which is a level that renders a patient back into a normal (i.e. non-diabetic) range.

43% of patients attained an HbA1c below which little microvascular damage occurs and 18% of patients reached an HbA1c level back in the normal, i.e. nondiabetic, range.

Discussion

In previewing these results with unaffiliated physicians, Vdex has been met with extreme skepticism. Most doctors have said these results are either too good to be true or had to be accompanied by severe hypoglycemia. Neither is true. Not a single patient has had a severe hypoglycemic event.

Others claim every patient can achieve these results with diet, exercise, weight loss and conventional treatment. While that may be true, the history of sustained, successful diet, exercise and weight loss among all people, diabetics included, is a story of failure. Few people today have their diabetes well-controlled.

The dramatic improvement in patients in this group likely cannot be attributed to changes in behavior. Most were older and relatively set in their ways, the average age being over 57 years old. While they did receive education about the importance of healthy eating and exercise, most were reluctant to change how they eat or their exercise habits. One indication of that is that average body weight did not fall during the course of treatment. Rather the average patient actually gained about 3 pounds throughout the study period.

Each patient presented to Vdex after being referred from another physician where their level of blood glucose control was much worse. None were newly diagnosed by Vdex. Generally, the referring physicians had followed the ADA-recognized treatment protocol. These results occurred only after patients were switched to the Vdex protocol.

One very revealing point is that several patients included in this study actually completed the protocol, achieved impressive results only to discontinue later. When switched back to their previous treatment, all saw their blood glucose go back out of control. Clearly, there was something about the Vdex protocol that worked.

Other Benefits

General Wellbeing. Vdex tracked HbA1c as it is the most widely recognized metric for control of blood glucose. In addition, in most patients Vdex tracked other relevant measures such as

blood pressure, weight, sleep patterns, urination and overall reports of well-being. As reported above, Vdex did not see weight loss in the results, but rather a small gain in weight. Somewhat surprising in that context, there was a marked benefit in blood pressure. Pretreatment average blood pressure for the group was 139/82. Posttreatment patients saw an 11-point drop in systolic pressure and a slight improvement in diastolic pressure, resulting in an average BP of 128/79. Reports of much improved sleep occurred in nearly 100% of patients as they were waking less to urinate. Overall, patients reported feeling “much better” while following the Vdex protocol.

Neuropathy. An unexpected benefit was seen in patients suffering with neuropathy. While not all providers tracked this variable, for those who did, most saw a very significant improvement in their patients’ condition once their HbA1c got down well below 7. Several patients reported that their neuropathy “completely resolved,” but nearly all reported a significant improvement.

Traditionally, neuropathy has been very difficult to treat successfully. Medications can help with symptoms, but the underlying disease process is ongoing and patients eventually get worse. Many experts feel the damage is irreparable. Vdex has seen an unmistakable and highly significant improvement in patients’ neuropathy. This only makes sense. For those whose neuropathy is caused by uncontrolled blood sugar levels, as it is in nearly all people with diabetes, once those sugar levels are well-controlled, the problem appears to resolve naturally.

Reduced medications. Traditional treatment of Type 2 diabetes involves several different medications taken throughout the day. This “diabetes burden” is, in part, responsible for patients’ low compliance rate with the recommendations of their healthcare providers. Vdex noted that patients exhibited much higher rates of compliance. Patients seemed to appreciate the simplicity and ease of use of the Vdex protocol.

A key aspect of the Vdex protocol is the reduction of other antihyperglycemic agents that patients have been prescribed before coming to Vdex. Thus, it is much simpler for patients to comply with. Because some of those other agents can leave patients feeling unwell, when switched to the Vdex protocol, many patients immediately reported feeling better.

Better & Quicker Results. The impressive changes in blood glucose control among these patients occurred in about 100 days. Vdex believes future results will be both greater in magnitude and achieved in less time. Healthcare providers are reluctant to embrace the Vdex protocol and to dose as aggressively as recommended. They have a well-established fear of insulin. Afrezza is insulin, after all. It was true with every Vdex provider that once they understood the protocol and developed more experience with it, they would apply it more aggressively. As a result, their patients would see changes in HbA1c much quicker. Also, as the providers learned how safe the protocol is, they were more likely to seek better BG control for their patients, driving HbA1cs to lower levels.

Vdex believes with its protocol, it can reduce most patients' HbA1c levels below 6.5 safely. In other words, these patients would be rendered physiologically non-diabetic while on therapy. It is expected that this can occur in 30 – 60 days, rather than the 100 days seen in this study.

Covid. One last factor in this study was the Covid-19 Pandemic. Much of this data was gathered in the Summer of 2020 at the height of the pandemic. At that time, patients were more likely to miss appointments and were less attentive to their diabetes condition as they were more focused on their fear of Covid. Vdex expects it would have seen even better results during normal times.

Summary

The Vdex protocol has been employed with more than 500 patients now without a single, severe hypoglycemic event. There is high confidence that it is safe. The only significant side effect is a slight cough that some patients experience when first inhaling a powder. Vdex has developed techniques to minimize this effect so it should not be a significant factor in patients staying with the protocol.

The conventional management of diabetes patients cannot produce the level of blood glucose control seen in this study. With millions of patients treated conventionally, this reality is well-documented. Almost every physician will attest to it. It is not uncommon for physicians to celebrate a 1 – 1 ½ point reduction of a patient's HbA1c, but it is almost unheard of to see a 3-point reduction, to say nothing of a 4-point, 5-point, or greater, reduction. Such reductions are routine with the Vdex protocol. Even for the many patients who were prevented from completing the protocol due to a lack of insurance coverage, multi-point reductions were common using samples alone for a relatively short time.

The significant obstacle to broad adoption of Afrezza is insurance coverage for the medication. Vdex believes these results are representative of what the diabetes patient population could achieve through its protocol. With the many more patient success stories that will follow, Vdex believes this will be the impetus for change. It is well understood that lower HbA1c levels equate to fewer complications from the disease and lower costs. Through use of the Vdex protocol, the incentives of all the relevant parties align: insurance plans see better blood glucose control which will lower the costs of care; patients see better, easier, safer results; and Vdex has an almost limitless opportunity for growth.

Most importantly, the disease of diabetes cries out for a solution. The trajectory of this disease must be stopped. It is not enough to bring a patient with an HbA1c of 9 or 10 down to 7. Vascular damage, which begets all the complications of the disease, is still occurring at an HbA1c of 7. Patients are still likely to have complications. Patients are still likely to die from the disease.

A different solution to the problem is necessary. A real solution would bring the patient's HbA1c below about 6.3 where vascular damage is much reduced. A real solution would bring the patient's HbA1c down to the normal range in many cases. That's how one really tames the disease of diabetes. The Vdex protocol appears to be that real solution.

Having now applied its protocol to a wider patient population, Vdex has seen no obstacles to broad adoption among people with diabetes, other than insurance coverage for the main therapeutic agent, Afrezza. Note however, that Vdex is fully compensated for its medical services in treating patients. Even if an insurance plan ultimately denies coverage for the therapy, the medical provider is compensated for its services.

The most striking feedback from patients was their gratitude. They had finally found someone who could control their disease. They could finally stop being consumed by thinking and dealing with their diabetes. A number commented that they had never thought they could feel so good. Others said they no longer felt diabetic. Some simply broke down in tears.

Every patient should have the option of the Vdex protocol.