



Clinical Review

The American Diabetes Association released a report presenting the key findings of the *Economic Cost of Diabetes in the USA* at a press conference on Capitol Hill March 22, 2018. According to this report, expenses for diagnosed diabetics totaled \$327 Billion in 2017 or \$237 Billion due to direct medical costs for diagnosed diabetics and \$90 Billion due to reduced productivity. This represents a 26% increase in economic costs of diabetes from 2012 to 2017 and is due to both the increased prevalence of the disease and the increased cost per person living with diabetes.¹

This comes as no surprise to nurse consultants and clinicians as we witnessed the rise toward epidemic proportions of people in the USA diagnosed with this chronic and incurable disease. Approximately 29 million people in the USA have the diagnosis of diabetes and another 86 million people are considered prediabetic. Unfortunately, there are many individuals who are diabetics but have yet to be diagnosed and multiple individuals who have been diagnosed but are noncompliant with treatment regimens.

There are several barriers to treatment, such as need for lifestyle changes like diet, weight management and exercise as well as cost for medications & endocrine surveillance. The unfortunate result is often development of complications due to the effects of diabetes on the body. These comorbid conditions can lead to organ failure such as end stage renal disease requiring the need for dialysis or serious heart disease requiring the need for heart assist devices or culminate in the need for organ transplants in either condition. Some other comorbid conditions related to diabetes are peripheral vascular disease and peripheral neuropathy resulting in surgical interventions and inpatient hospital stays to treat vascular disease or high cost medications administered lifelong to manage neuropathic pain and diabetic retinopathy which can lead to blindness due to blood vessel damage to retina. Lastly, short-term complications can also develop and require inpatient treatment to manage the condition. Some examples are hypoglycemia, hyperglycemia or diabetic ketoacidosis.

Numerous people continue to receive the same treatments as in prior years although drug therapy has evolved considerably as have the costs of these new medications. Increasingly, physicians are prescribing treatment with the new medications administered on a weekly basis. The average listed costs below associated with these drugs are AWP prices for one year of treatment based on patient weight of 225lbs so pricing will vary with different weights & drug markup. It is also important to note that some of the longer acting drugs require supplementation with short acting drugs based on blood sugar levels. Type I diabetes is typically treated with injectable Insulin from one of the three types based upon onset, peak and duration of the drugs. Some examples are Humalog; \$4,054, Novolog; \$12,247, Novolog Mix; \$12,691, Humulin R; \$2000, Novolin R; \$6114, Humulin N; \$6,114, Novolin N; \$6,114, Lantus; \$11,978, Toujeo; \$11,968, and Humalog Mix; \$12,641. Typical treatment of Diabetes Type II is with oral medications but it may also be treated with injectable

medications as well. Some examples of oral medications are Metformin; \$10,423, Glucotrol; \$1,385, Glipizide; \$285, DiaBeta; \$2,289, Tradjenta; \$7,406, Onglyza; \$7,348, Januvia; \$6,186, Starlix; \$1,399, Farxiga; \$6,689, Jardiance; \$6,695, Invokana; \$6,690, and Avandia; \$2,440. Injectable medications to treat Type II diabetes are Tanzeum; \$8,143, Trulicity; \$11,391, Byetta; \$10,299, Adlyxin; \$129,104 and Victoza; \$11,777. Aside from using an Insulin pump, diabetics must still monitor daily blood sugars and follow up with an endocrinologist that requires labs and diagnostic testing which represents additional claim activity. Many employers are now considering the long-term benefits of providing wellness care and disease management programs to prevent diabetes or reverse current symptoms before long-term consequences occur.

WHAT'S NEW

Kymriah (Tisagenlecleucel-T)

CAR T cell or Chimeric Antigen Receptor therapy is a new type of immunotherapy developed for treatment of cancer. One such agent is Kymriah, received approval by the FDA in August 2017 for treatment of Acute Lymphoblastic Leukemia (ALL) that has relapsed or is refractory to standard treatment and FDA approved for treatment of Non Hodgkin Lymphoma (NHL) on May 1, 2018. T cells are a type of immune cells collected from the patient via a procedure called apheresis. During apheresis, the patient's blood flows through the apheresis device and white blood cells, which include T cells are filtered and collected. The remaining blood infuses back into the patient. The T cells collected are then genetically engineered in the lab by attaching a special receptor that binds to a particular protein found in cancer cells. Once the alteration of T cells has been completed they are infused back into the patient enabling the new cells to bind to the corresponding antigen or receptor site unique to the cancer cells resulting in destruction of these cancer cells.

While this new type of biologic is an exciting breakthrough in the treatment of cancer, it comes with a high price. The manufacturer has suggested a price of \$475k for this single infusion treatment currently approved for pediatric patients and not indicated for anyone over age 25. However, this price does not include other associated charges so the actual cost to payers could be \$500k to over \$1M. The newly approved indication is for treatment of adults with relapse or refractory diffuse large B-cell lymphoma (DLBCL). The expectation is that health plans will make independent coverage determinations based on the clinical and economic benefits of this drug. Interesting to note that the manufacturer has already provided an outcome based approach to reimbursement with CMS that allows for full coverage only when the patient responds to Kymriah by the end of the first month of treatment.²

¹ <http://www.diabetes.org/newsroom/press-releases/2018/economic-cost-study-call-to-congress-2018.html>

² <https://www.fiercepharma.com/financials/car-t-and-other-gene-therapies-need-new-payment-model-says-experts-scripts>