Diabetes is now estimated to be about 400 million people worldwide. Diabetes results in substantial morbidity and mortality and patients with disease have a two- to four-fold increased risk for the development of microvascular and macrovascular complications vs the general population. Diabetes-related morbidity and mortality is largely due to failure to achieve and maintain glycemic control; and lack of control over blood glucose is often due to poor adherence to antidiabetic treatment. The requirement for self-injection has been repeatedly shown to be a barrier to treatment adherence in many patients with diabetes. Recognition of the importance of this problem has prompted development of new approaches to treatment delivery with the potential to greatly simplify diabetes management.

Development of an “artificial pancreas” has been a long-standing goal for treatment of patients with diabetes who require insulin therapy. It would consist of a continuous glucose monitor linked to an insulin pump. There has been movement toward this goal with a system that senses low blood glucose levels and decreases insulin delivery. However, it cannot yet automatically release more insulin when blood glucose is high. Glucagon-like peptide-1 receptor agonists have been shown to be highly effective for the treatment of diabetes, but they require injection by the patient. Newer agents in this class, including semaglutide, albiglutide, dulaglutide, and taspoglutide, require only once weekly injection, and efpeglenatide can be administered once monthly. A small implantable osmotic pump that delivers exenatide and only needs to be replaced annually is now in late-stage development and may be available this year. All of these new developments have the potential to greatly decrease patient burden and improve both adherence and outcomes for patients with diabetes.