“iPancreas: Internet based on-demand artificial pancreas app-generator to accelerate clinical trials research”

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The objective of this project is to translate the OHSU artificial pancreas (AP) technology for use by other research groups through the creation of iPancreas, an Internet-based on-demand AP app generator. The OHSU AP is comprised of (1) a continuous glucose sensor, (2) two pumps to deliver insulin and glucagon, and (3) a smart phone running custom software that includes a control algorithm to automate delivery of insulin and glucagon in response to the continuous glucose sensor data. We have shown that the OHSU AP is effective at improving glycemic control in type 1 diabetes. More research groups are doing research on the AP, yet many are hindered because they lack the time, resources and technical expertise required to develop an AP. We will make iPancreas available to the research community, enabling them to rapidly develop their own custom AP that will run on an Android smart phone. Researchers will procure their own glucose sensors and insulin/glucagon pumps from commercial partners, and use iPancreas to integrate their own control algorithm, user interface, and patient alarms. Using the iPancreas API and Cloud Server, researchers will load their design files onto our server, perform a remote compilation, and then receive a file via email that can run an AP on a smart phone. iPancreas reduces time required to develop an AP from years to weeks and reduces cost to near zero. iPancreas will be designed by our engineering team, evaluated in a clinical study, and then released to the research community.