The VP (Ventriculoperitoneal) Shunt Circuit

Cramer, Jennifer

VP Shunts are used to treat Hydrocephalus and are prone to many issues due to blockage and infection. They cease to stop working properly within the first year of implantation in 30-40% of patients. Surgeons have no way of knowing when an issue has occurred unless a patient begins to show symptoms of Hydrocephalus again. A circuit would need to be created that could be implanted into the body and communicate with a remote server in order to address this issue. It is possible to create such a circuit using a Darlington pair transistor that could act as an amplifier of current and switch on a Bluetooth circuit board when there is no liquid flowing in a shunt due to blockage. The Bluetooth circuit board could then communicate with a smart phone which could then communicate a message to any remote server in the world. A circuit was created using a 5.2V battery to power a circuit that contained a Darlington pair connected to a Bluetooth circuit board. The circuit was created on a Printed Circuit Board using soldering techniques. When no liquid was present the circuit was activated to send a text message to a cell phone that there was an issue. When there was liquid present the circuit remained off. This circuit would allow for a surgeon to be alerted when an issue is present in a VP shunt which would increase quality of life for patient's with VP Shunts.

Awards Won: