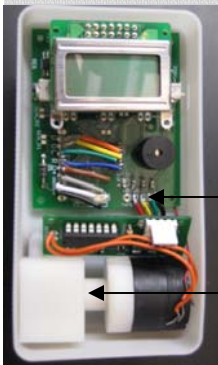


IV Drip Monitor


 Motor Driving
Circuit Board

 Motor and
Clamp

"There is a need for a cost-effective and automatic fluid regulating device to make IV infusions safer in the developing world."

-Design Team Documentation

Global Health Challenge

Currently in developing countries there is often no affordable, reliable solution for monitoring and controlling intravenous therapy (IV). Although IV therapy is a vital component of healthcare, clinics are often understaffed and cannot continuously monitor IV fluid administration to patients. If a clamp slips, or if an IV line becomes kinked, an improper amount of fluid can be given to the patient, causing otherwise preventable injury. This is especially true for small children, who are most susceptible to the adverse affects of over-infusion. Often connected to adult sized IV bags, children are at a high risk for being over-hydrated, which often leads to death.

Appropriate Solution

As part of BIOE 451, Bioengineering Senior Design, an interdisciplinary group of bioengineers and electrical engineers created a design concept for a low-power, low-cost machine that would monitor the infusion drip rate of an IV and adjust it accordingly through physical clamping. The IV Drip Monitor would clip on to a normal IV drip chamber and the physician would then set the appropriate drip rate and volume to be infused. Using infra red sensors to detect each drop of fluid and a motorized clamp to control the rate of fluid flow, the IV Drip Monitor would continuously detect the drip rate and clamp to adjust to the physician-set rate.



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Current Status

The IV Drip Monitor currently has the ability for users to set the drip rate and volume and detect the flow rate. Bioengineering students are working to integrate the motorized clamp to control the flow-rate and an alarm that will sound when the patient has been appropriately hydrated, the IV bag is empty, or when the drip rate deviates by than 30% of the set drip-rate. The current prototype takes into account human-factors engineering to ensure improve ease of use and reliability. The IV Drip Monitor will be field-tested in July 2010 in Malawi and Lesotho. This project was mentored by Dr. Maria Oden, Dr. Zhong and Dr. Wise.

An initiative for the advancement of appropriate, high-value innovations in global health biotechnology

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