

Medicine Dosing Device



“I brought it with me to Malawi and am showing it to the doctors here... Dr. Jean thinks it’s a really great idea.”
 - Kim Bennett, Team Mongoose and BTB international intern

Global Health Challenge

At the end of 2006 an estimated 2.3 million children were living with HIV/AIDS; 2 million of them were in sub-Saharan Africa. A significant problem in effectively treating pediatric AIDS patients in Africa is that the liquid anti-retroviral medications for young children are must be custom dosed based on the patient’s weight. To be safe and effective, a precise dose must be drawn up in a syringe and given consistently. Many children are cared for by elderly grandparents who may be illiterate, have poor eyesight, have poor manual dexterity, or lack understanding of why the correct dosage is important. These adults are often unable to accurately adhere to the complicated medicine dosing instructions. Thus, children do not always receive the optimal dose of medication and are at risk for over- or under-dosing. Consequences of each of these errors are potentially fatal.

Appropriate Solution

BIOE 451 Senior Design Team Mongoose in collaboration with the Baylor International Pediatric AIDS Initiative (BIPAI) designed a simple solution that can be ‘set’ by the doctor or pharmacist at the clinic to deliver only the correct dosage each time without regard to a caregiver’s literacy, visual acuity or manual dexterity. The device, known as the “ABC Pump”, also provides compliance monitoring by tracking the number of doses delivered. The relatively low cost and ease of use make it suitable for deployment to the developing world. Initial device testing occurred here in the U.S. to assess the ease of use in the elderly population. Team members conducted surveys among members of the target group to gain valuable feedback in finalizing their design. A prototype version of the pump was recently field tested in Malawi by a team supported by Beyond Traditional Borders. Team Mongoose was guided and mentored by Dr. Maria Oden, Dr. Gordon Schutze, Dr. Catherine Ambrose, and Dr. Mark Kline.

Current Status

Recent field tests conducted in Malawi yielded extremely positive results. The most resounding question was: “When will it be available?” We are improving the design based on the feedback received from the field. As a result of these trials, a second generation pump was developed with the intent to have an adequate number of units available to increase the number of field trials conducted in the near future. Patent applications for this device have been filed. Options for commercializing this device are being explored.

BEYOND TRADITIONAL BORDERS



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

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