

TECHNOLOGIES FOR CLINICALLY RELEVANT PHYSIOLOGICAL MEASUREMENTS IN DEVELOPING COUNTRIES

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World map of disease prevalence removed due to copyright restrictions.

*****Presented by Sameer Hirji *****

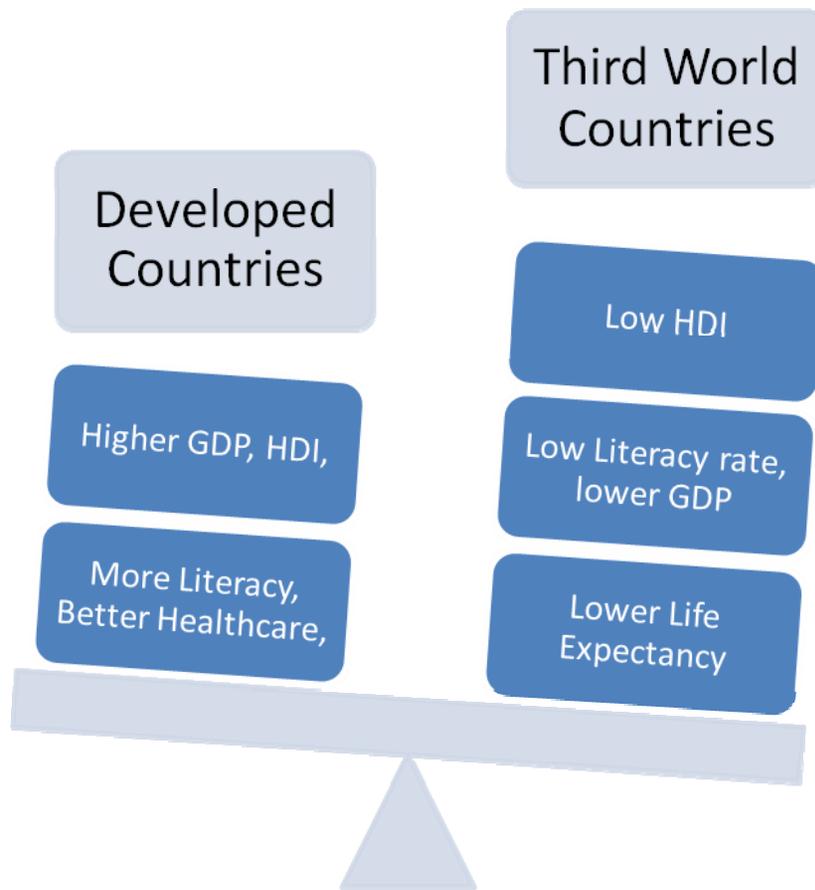
Focus Areas

- ✓ **Bottlenecks** in Developing countries

- ✓ **Factors for successful implementation** of Health care Technologies
 - Capital cost
 - Spare parts
 - Consumables
 - Embedded Service Contracts
 - Brain Drain Syndrome
 - Myths and Misconceptions

- ✓ Role of **CURE (Competition for Underserved, Resources-Poor Economies)** as a blueprint for Success. *“A not-for-profit business plan competition that develops new medical devices that specifically target unique needs of people in developing countries.”*

Comparison of Bottlenecks



Statistical Data (WB 2001)

- *Of 5 Billion people in LDC's*
 - *1 Bn illiterate*
 - *1 Bn Lack Safe water access*
 - *2.5 Bn poor sanitation*
- *Avr. Life Expectancy in LDC is 38 yrs compared to greater than 75 yrs in Developed Countries*
- *GDP per Capita spent on Health is < \$100 compared to \$4000 in USA and \$2000 in Europe*
- *Increased Excellent private Clinics / Hospitals in LDC's since 1991.*

"BUT WHY IS LIFE EXPECTANCY SO LOW?"

Barriers to Health Care Technology based on EWH Survey

- **High Capital Cost** e.g. Single MRI machine can cost US\$10 000 000, or about 0.5 % GDP of Sierra Leone (compared to 0.0001% of US GDP), reliable power and electricity
 - Solution: Donation of Used Machinery, Foreign Govt Funding, Govt Expend.
 - **Problems??????**
- **Embedded Service Contracts and Spare Parts** e.g. Need regular maintenance due to frequent use (Flow Cytometers) , Lack of replacement parts (12.3%) , expensive, Experts to repair, No manuals, no specialized Equipment training
- **Consumables** e.g. No potential for reuse, LDC's have low budget (\$0.30 per patient), Equipment specific items, non- functional/idle equipments, transportation costs
- **Brain drain Syndrome:** Skilled staff move to developed countries

QUES: How do we tackle this issue? What measures do we need to take?

Blueprint for Success

- **Physiological Measurements-** important tool for diagnosis and treatment
- **Alternate Designs** should avoid consumables, require little specialization, no extensive infrastructure, require infrequent service
- Development Initiative by **Duke-EWH CURE (One of the largest in the country)**
- **WINNER** receives **\$100 000** for a year of incubation in Pratt School of Eng.
- **Process Involves:**
 - Needs Assessment through on the ground market research in Developing Countries (**Customer**)
 - Non- profit business development with national panel of experts (**Business Plan**)
 - Develop **prototype** through formal design class.

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