

Low Cost, Platform Technology, for POC diagnosis of Infectious Diseases for Base of Pyramid Populations

(Bench to Bedside)



SLS Cell Cure Technologies

Predictive Diagnostics & Cell Therapies

S.L.S. Cell Cure Technologies Private Limited

(Company Registration No. U73100TG2012PTC083318)

Team (having >75 years of Cumulative Experience)



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Dr.Shivraj Dasari (Founder 50% stake holder, full time director)

- Ph.D in Microbiology
- 27+ years international experience in Healthcare, Biopharma
- Founder, 50% equity

Dr.Livy.A.Shivraj, (Founder 50% stake holder, full time director)

- Ph.D in Microbiology, MBA (Holds 11 patents)
- 20+ years international experience in Biotech, Biopharma
- Co-Founder, 50% equity

Employees:

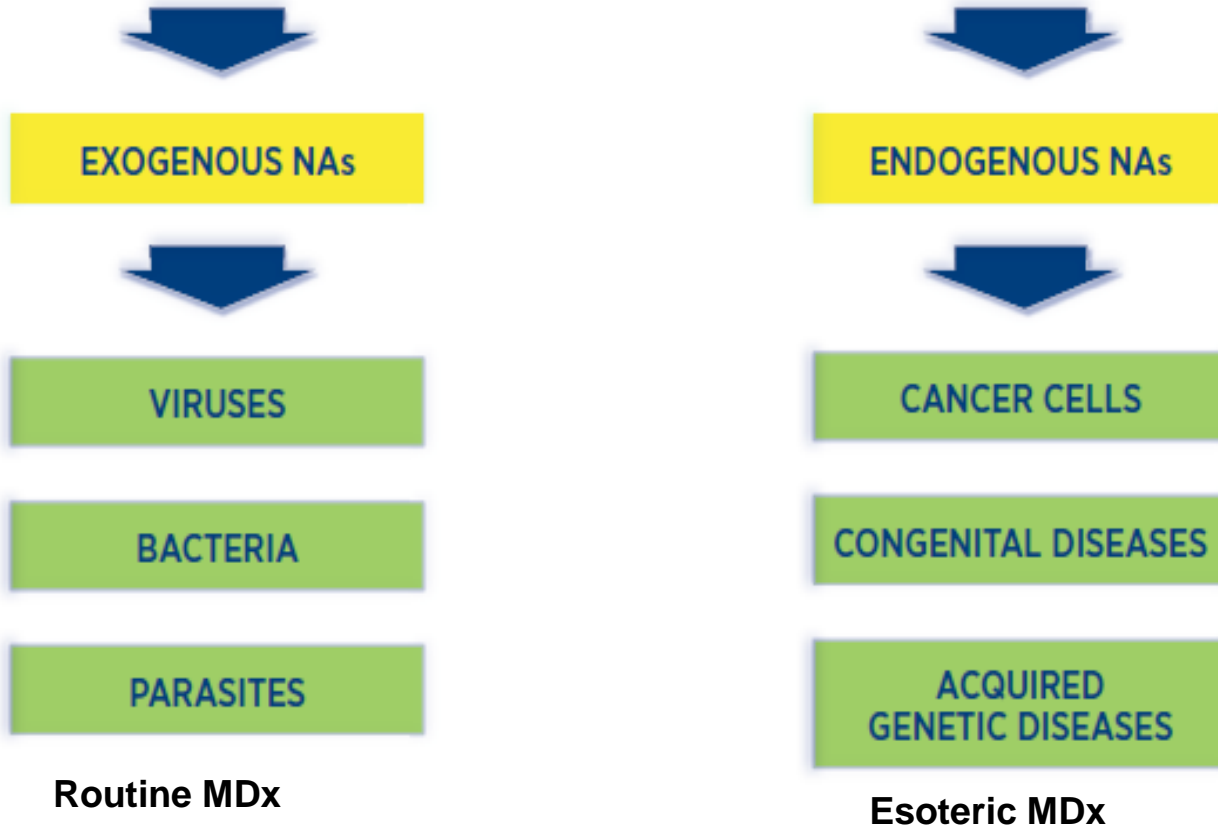
Ms.Arthi Chaudhary

- M.Sc in Biotechnology
- Scientific Officer
- **Ms.Yashoda Kopuri,**
- M.Sc in Microbiology
- Scientific Officer,
- **Ms.Padma,** Lab. Assistant.
- **Ms. Antamma,** Lab. Attender.



Human Molecular Diagnostics

DETECTING NUCLEIC ACIDS (NAs) IN THE HUMAN BODY



The Problem - Dengue

- Mosquito-borne infection, causing major global public health crisis
 - Annual economic burden in India of over US\$ one billion

Dengue claims three lives in a week in Anantapur

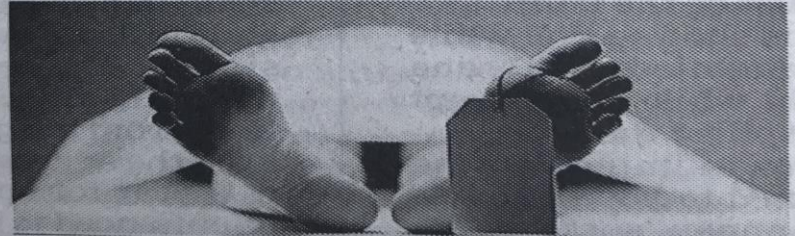
EXPRESS NEWS SERVICE @Anantapur

THREE girls from Anantapur district reportedly died due to dengue last week, with two breathing their last on Friday.

A week ago, four-year-old Meenakshi, from Narpala mandal was admitted to Anantapur Government Hospital with high fever. As there was no sign of recovery, she was referred to Kurnool Government Hospital, where she died on Friday. K Aparna, 11, of Ganganagar, too died on the same day at Saint John's Hospital in Bengaluru. Three-year-old Ayesha of Rayadurg who showed symptoms of the vectore-bourne disease died at Bellary Government Hospital on October 1. In the last three months, 565 people admitted to government hospitals in the district showed symptoms of dengue.

Dengue passed off as 'unknown fever'?

Several Kolkatans have complained that their relatives, who were diagnosed with dengue and died because of the mosquito-borne disease, were issued death certificates showing 'unknown fever' as the cause of death. With large number of dengue deaths already putting big pressure on the Mamata Banerjee administration to prevent spread of the disease, the issuance of false death certificates is seen by many as a technique to divert the brewing anger of the people.

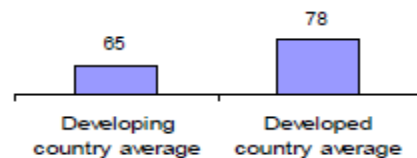
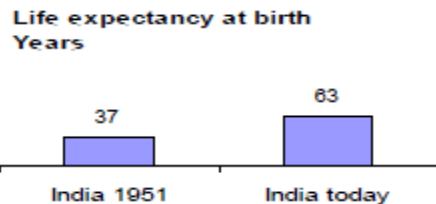


Key Health Indicators

Though there has been significant improvement...

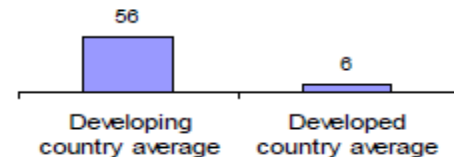
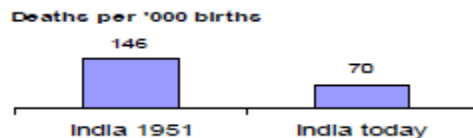
India has a long way to go to meet world standards

Life expectancy



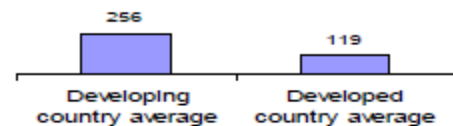
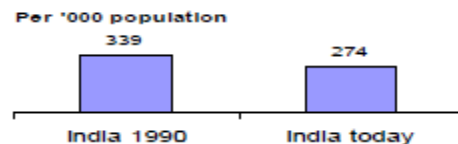
Infant mortality

Infant mortality



Morbidity

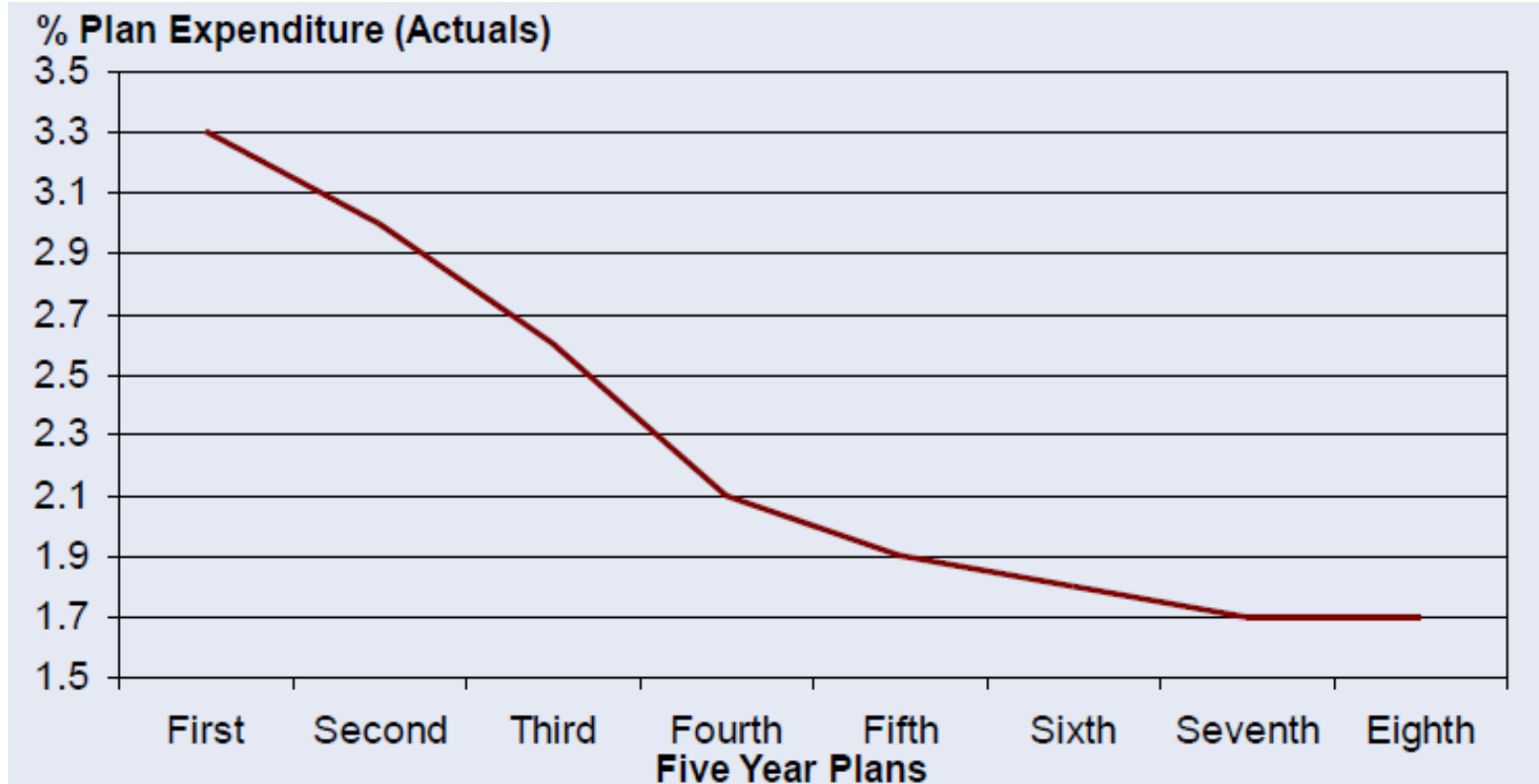
DALYs*



*Disability adjusted life years

Central Government Expenditure on Health Declining

Healthcare Delivery systems



Where does the Money Come From Now?

Hurdles in Indian Rural Healthcare

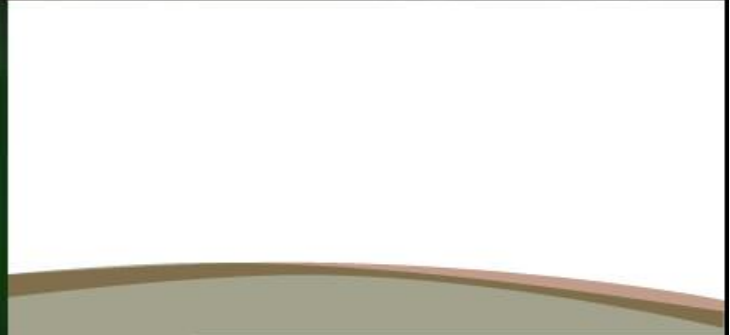
- Infrastructure creation- Expensive; Even, if created, specialists not willing to work in rural areas
- Accessibility- Modern healthcare facility available only at 300-500 kms away from their homes
- Affordability- Poor earn their livelihood income on daily basis; Can't afford to reach far places to avail healthcare facility

Result: Medical facilities never reach rural populace which constitutes 70% of population in India

As millions move to cities that cannot house them



Its air and water is not fit to consume
for humans



We are into Social Entrepreneurship space....



The Problem - Dengue

- Mosquito-borne infection, causing major global public health crisis
 - Annual economic burden in India of over US\$ one billion
- Of four dengue virus serotypes (DEN-1, 2, 3, 4) types 2 & 3 cause life-threatening dengue shock syndrome requiring ICU admission
 - No diagnostic methods in the market are delivering this level of specificity
- We have developed a species-specific panel for simultaneous detection of four Dengue species
 - Simple to use
 - Sensitive (98%)
 - Specificity(100%)
 - Low-cost (1/2 the cost of ELISA)
 - Administered at patient's bed side



Solution :Technology Overview - *Dengsure (1-4)*TM (USP/ Product Differentiator)

- *Dengsure (1-4)*TM, is a NAAT based POC(Point of Care) panel.
- Simultaneously evaluate the four distinct species of Dengue virus
- Detection can be completed in less than one hour (*Compared to 48 hrs ,Current Norm*)
- Simplicity (visual result), Sensitivity (98%) and Specificity (100%)
- Does not require sophisticated lab or highly skilled manpower
- Targets BOP (Base of Pyramid) populations
- Improves substantially on any existing solutions to the problem (60% of the cases do not need ICU admission)
- Technology is Validated by Diagnosing more than 300 Samples against Realtime PCR.
- Technology is being offered as service launched in Aug'2017.



Equipment needed for *Dengsure 1-4*^{TR}



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Micro Centrifuge*



Syringe*



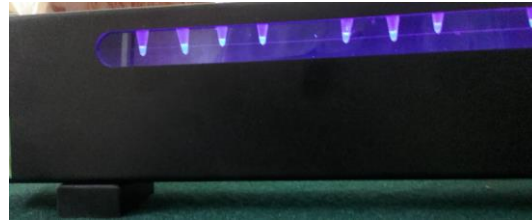
Vacutainer*



Plastic ware*



Dry heat bath*



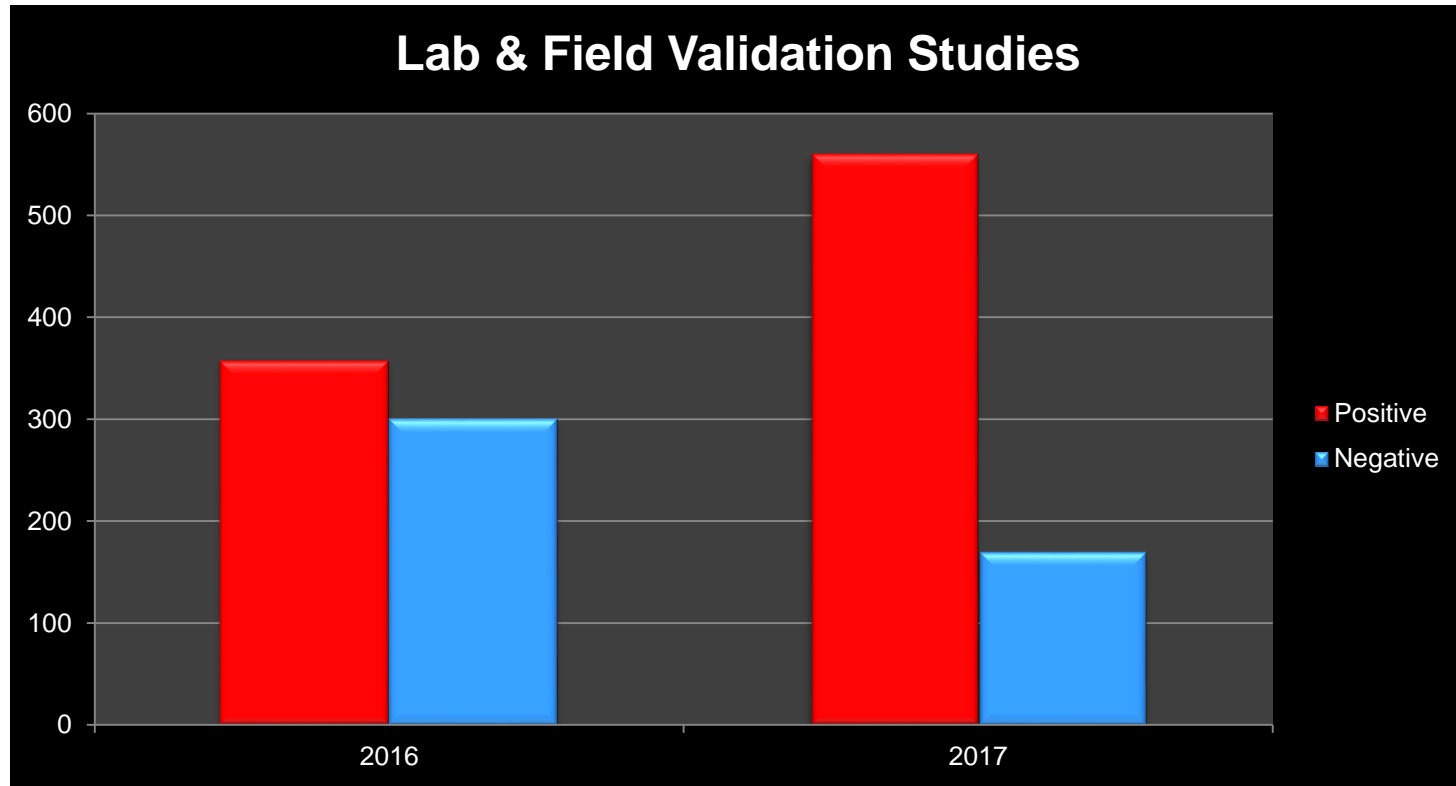
Black Box for viewing Results*

We supply the following Reagents (Home Brews) :

- Primers
- DNTP's
- Master Mix
- Sybrgreen

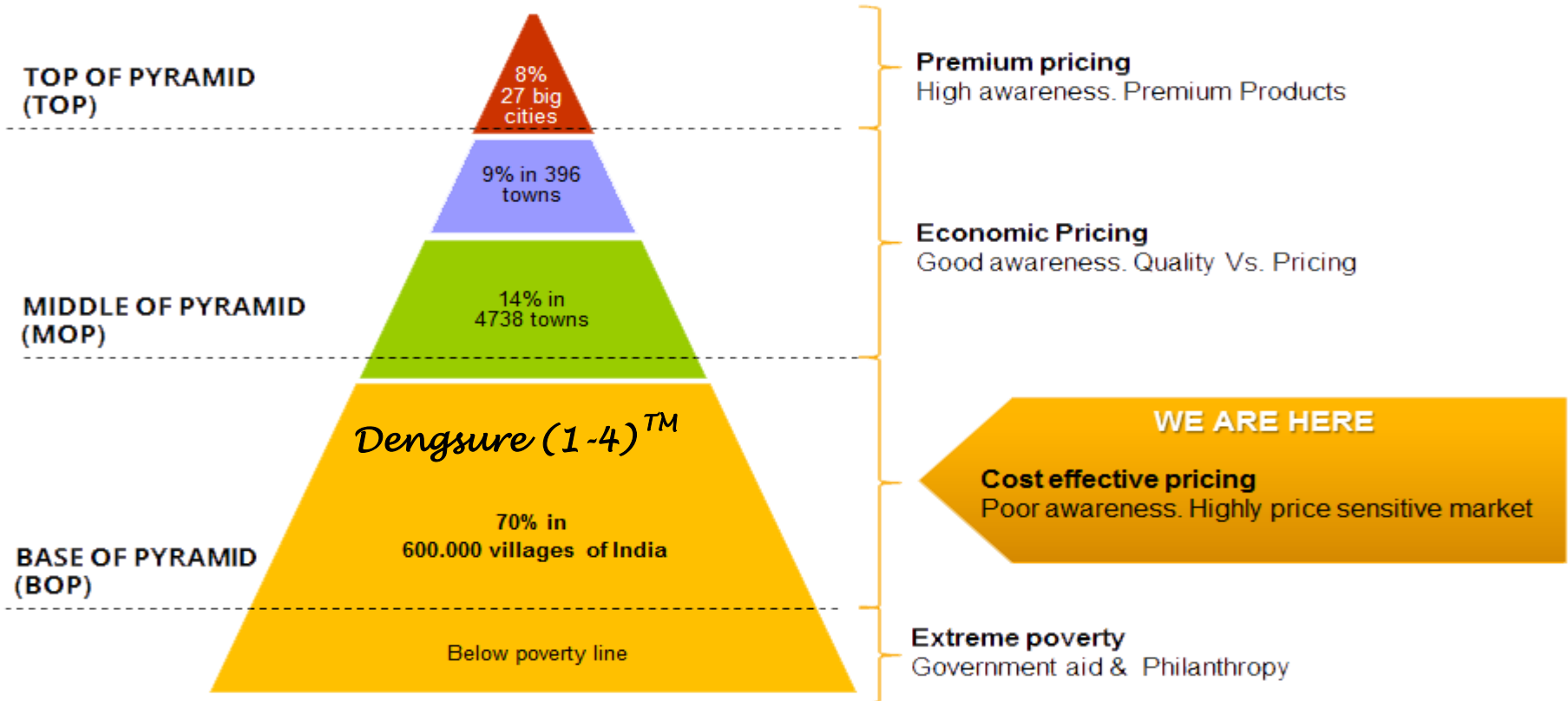
*outsourced items

Validation Studies on *Dengsure 1-4*^{TR}



- 2016- Lab validation studies carried out at NIMS, Punjagutta Hyderabad
- 2017- Field Validation Studies carried out at Kakinada & Hyderabad.

Business Model – Cost-Effective Pricing



Size of the Market Opportunity

- There are annually about 4-6 million cases of Dengue in India,
- **2018** - Targeting 20,000 cases. At Rs.1800/- per *Dengsure (1-4)*TM panel, we will be making estimated revenues of Rs.3.6 Crores
- **Year 3** - Target pan India market of about 100,000 cases. The opportunity is about Rs. 15-17 Crores
- **Year 5** - Target ASEAN markets of about 500,000 cases. The opportunity is about to Rs.75-90 Crores



Go To Market Strategy, Customer Acquisition Strategy.

- **Customer Profile:** Rural Hospitals; Clinics; Self Help Groups; NGO's;
- Direct Marketing Strategy – To avoid Price escalation ,through Conventional Distributor, Retailer concept (**Non-Conventional Healthcare Delivery Model**). Face book, Website, Twitter, Linkedin,
- We are also keen to develop Local Franchise Model.
- Create Low Price, High Quality products/Services
- Transparency while Testing ;
- Real-time Reporting @ patient's bedside.
- Providing Jobs for marketing & Sales among Local rural Youth.
- Technology-easy to scale into other BOP Markets.
- Without being a threat to local industries.





Reaching the bottom of the pyramid

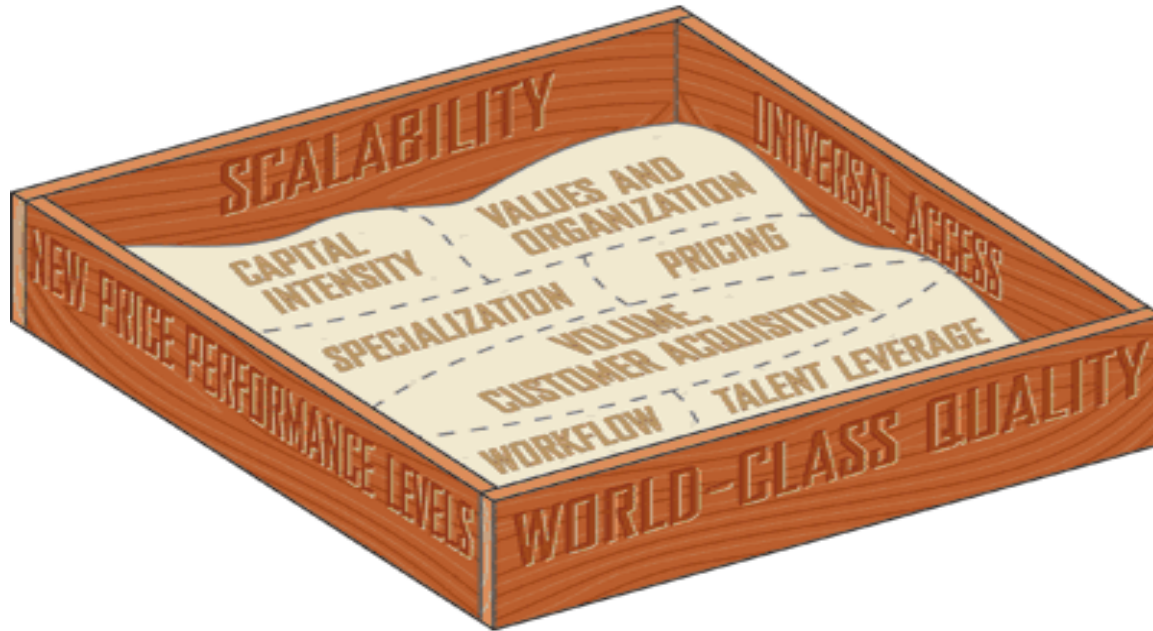
Challenge !!!



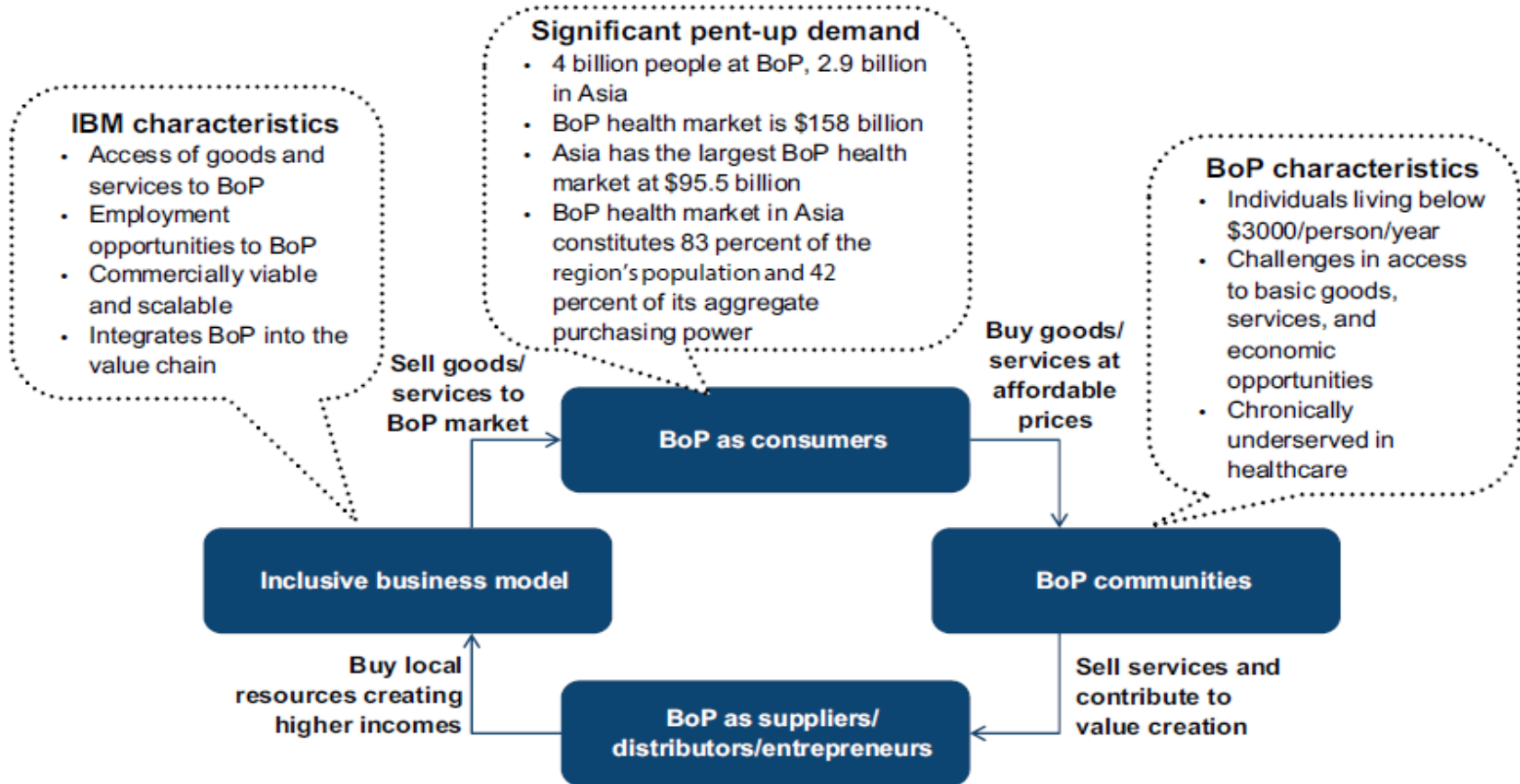
Doing now what patients need next

Exhibit 2: The Innovation Sandbox for Health Care in India

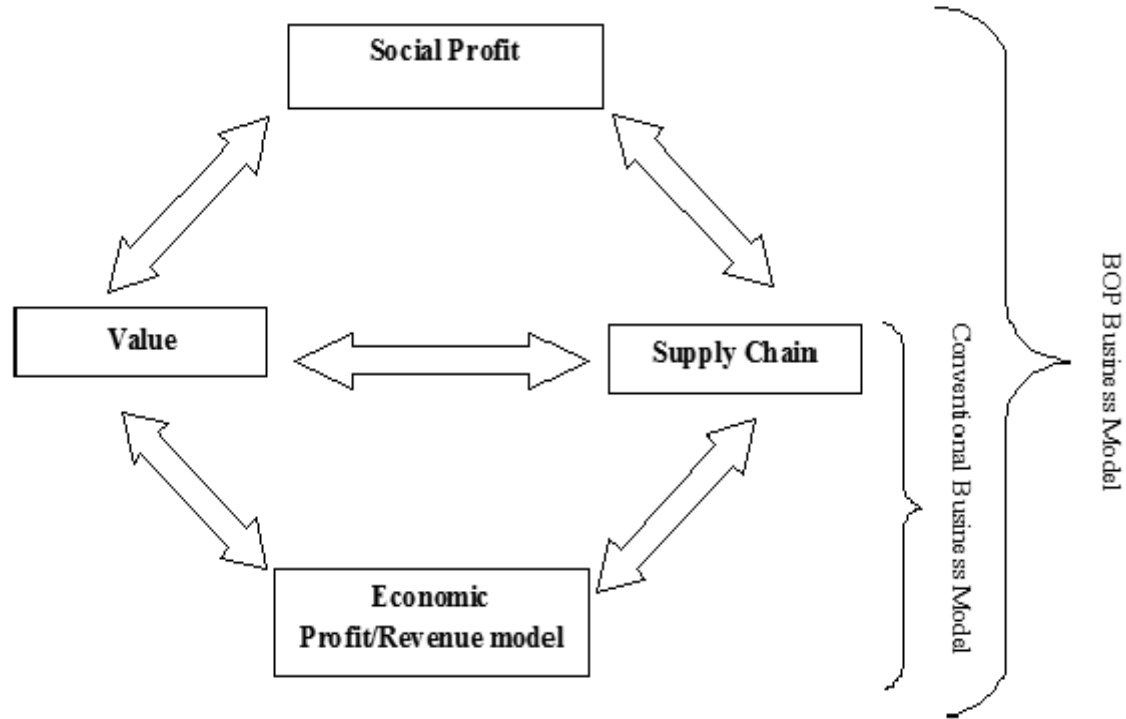
This diagram shows the “sandbox” of constraints and experimentation for the health-care industry. The four sides of the box represent the core requirements for successful health-care delivery in a market such as India. Within those constraints, significant creativity is possible in the seven interrelated business model innovations shown in the sand.



Integration of Low income communities in the healthcare value chain



Components of a Conventional vs BOP business model



Our BOP (Base of Pyramid) Model



Can we pull some educated communities out of poverty!

Current Traction - Launched in 2017

- Launched *Dengsure (1-4)*TM Services 2017.
- Started making Small revenues in E. Godavari, & Other Coastal Districts of A.P.
- Submitted Contract to Govt. of A.P For offering our services in all 13, Districts of A.P.
- Submitted Detailed Project Report to Govt. of Telangana, Got Provisional Allotment letter offering us 6 acres of land in recently launched Medical devices park at Patancheru, near Hyderabad.
- Want to expand footprint with current investment to Telangana, A.P. & Karnataka, T.N.

Product List – Molecular POC (Point Of Care) Panels

Human DNA	POC (Proof of Concept)	Validation Vs Rt-PCR	Market Readiness
Human DNA: HPV-6,11,16,18; HBV, CMV, HSV, Varicella zoster	CMV,HPV	Undergoing Validation	
Human RNA: HIV, Dengue, (<i>Densure1 -4</i>) Chikungunya, H5N1, H1N1,SARS,HCV	HIV, Dengue,H1N1, H5N1	HIV, Dengue-Completed	Dengue, HIV, offered as service
Human Bacterial: TB, Cholera, Salmonella, Shigella, E.Coli (O157:H7)	TB, Salmonella,	TB,	TB is offered as service
Protozoan: Malaria(Vivax, Falciparum), (<i>VivFal</i>)	Done	Done	Offered as service
Animal DNA/RNA etc	??	-	-
Agriculture DNA/RNA etc	??	-	-

Competitive Landscape

Characteristic	ELISA (Competitor Method)	<i>Dengsure (1-4)</i> TM (Innovation)
Affordability	Costly & Long TAT (Turn Around Times)	TAT <1hr; ½ price & Patient's bedside
Sensitivity	70%-80% (highly cross reactive), Window period!	98% can detect 6 viral copies /ml of freshly infected blood
Specificity	~90% (high false positives due to above reason)	100% since 6 primers of 8 regions used
User friendly	Needs Experts	Minimum Training.
Robust & Rapid	Requires cold chain	No need of cold chain
Equipment Free	Requires ELISA readers, washers, Air conditioned lab	Can be used near patient bed side. Water bath/Dry block
Deliverable to end user	Requires central lab, sample transportation.	Easily deliverable to end user.

*As recommended by WHO- 'ASSURED' criteria for a Diagnostic Test

Measuring Social Impact

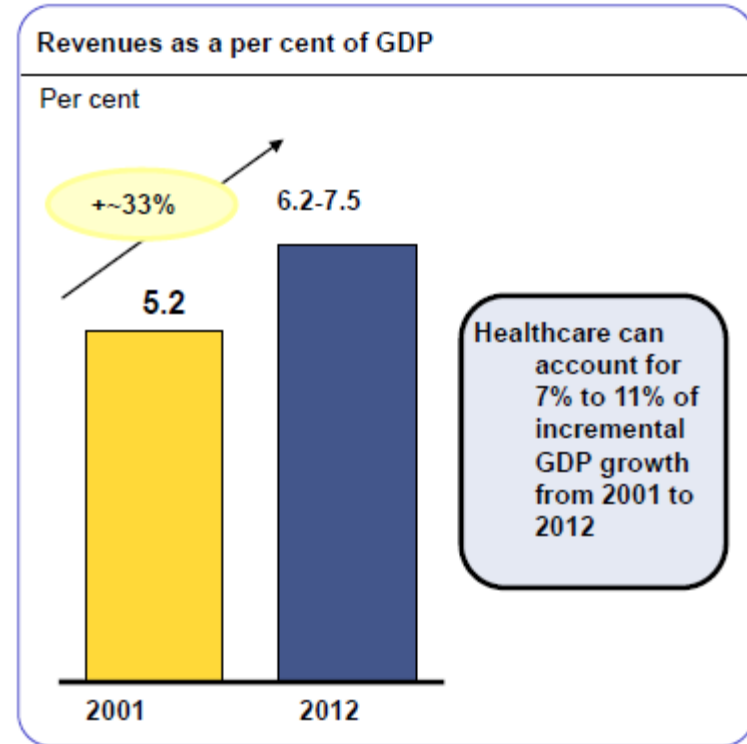
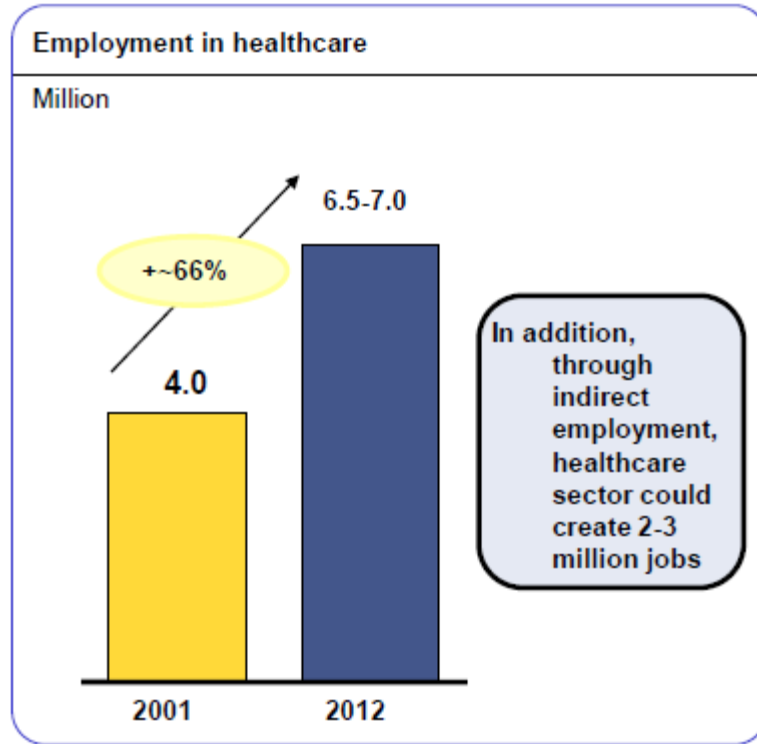


Social Impact

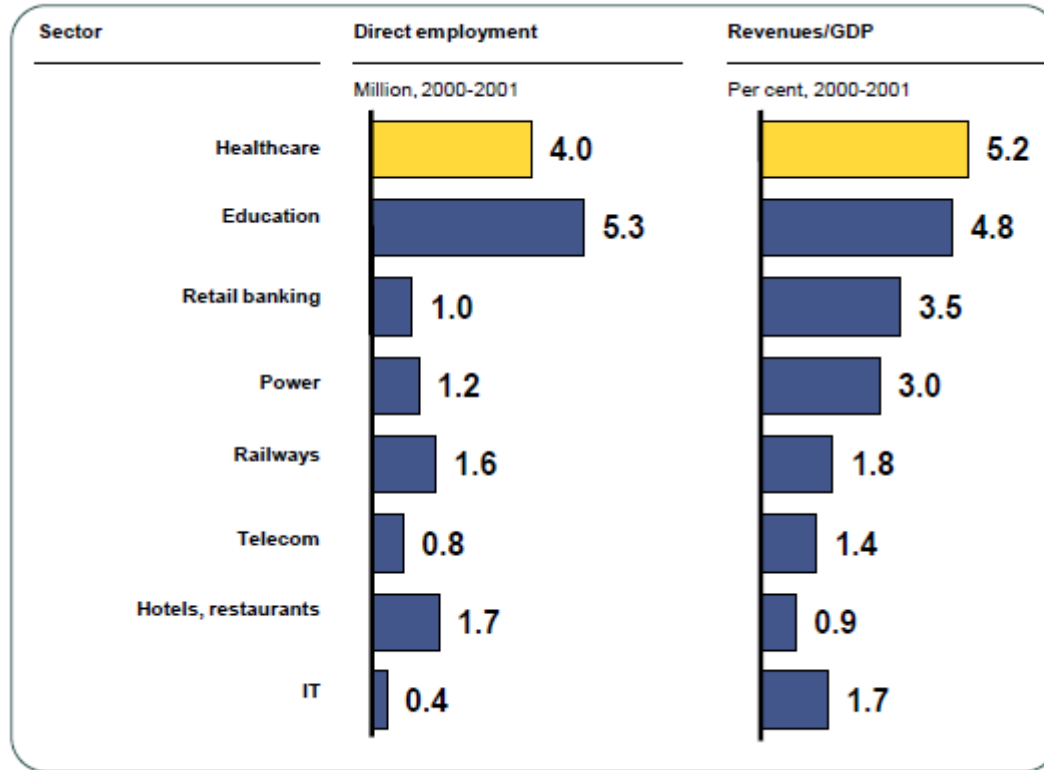
Criteria for evaluating the social impact

Category	Criteria	Analysis
Potential Market size	-Wide applicability(Being Platform technology – applicable across Healthcare, Agriculture, Veterinary care etc)	A)Review based on the existing technology
Economic, Environmental & Social impact	<ul style="list-style-type: none"> -Effectiveness in providing early & accurate diagnosis, -Efficiency (delivers savings) -High safety for staff (no special precautions needed, Universal safety precautions needed), -Job creation potential at rural levels 	B)Technology comparison with ELISA and PCR platforms requiring highly sophisticated labs and highly skilled manpower
Ease of operation & maintenance	<ul style="list-style-type: none"> -Limited skills required for operation, even High school children can be trained -No sophisticated lab space required, can be operated in farm houses also, very small foot print. -High quality of end product 	B)Technology comparison with ELISA and PCR platforms requiring highly sophisticated labs and highly skilled manpower
Affordability	<ul style="list-style-type: none"> -Low upfront cost (only water bath,/ heating block required) -Low operational cost, (no spares, fuel maintenance) 	B)Technology comparison with ELISA and PCR platforms requiring highly sophisticated labs and highly skilled manpower
Ease of marketing & Distribution	<ul style="list-style-type: none"> -Ease of adoption in rural settings -Fits into the current regimen -Ease of scalability. 	C)Review based on existing business models of key players

Healthcare – Significant contributor in employment generation

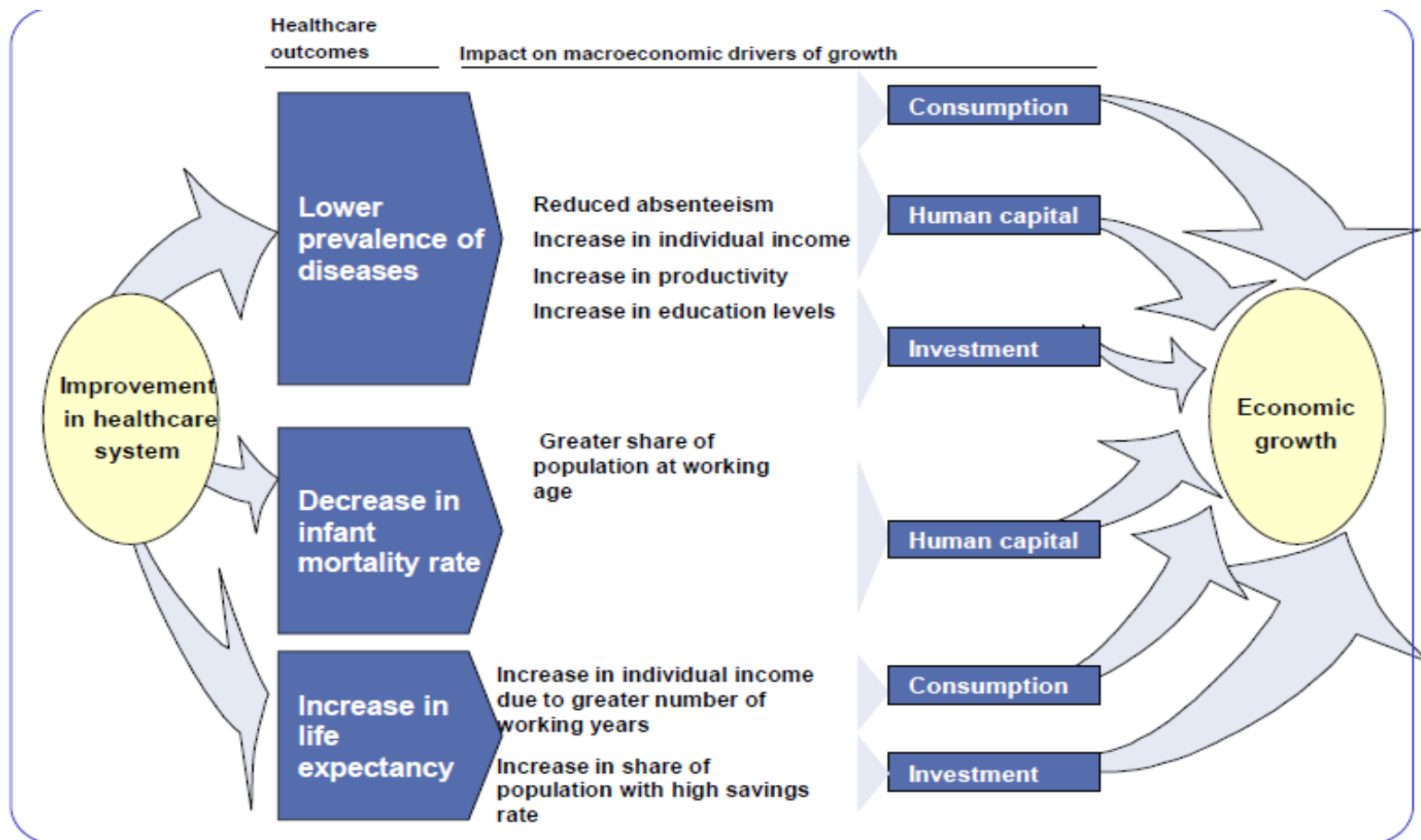


The Healthcare Delivery Sector Plays An Important Role In The Economy Today



Healthcare is the largest service industry in terms of revenues and the second largest after education in terms of employment

Improvement in health can Impact long term Economic growth through Multiple Channels



Awards.....



Villgro Cash award-2016



**Best innovation Award,
XLR8, Tirupathi, Govt.of
A.P-2017**



**Hot 100 awards of 2017-
Mumbai**

Awards@ Intl.Innovation Fair, Sept' 2017



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Dr. Shivraj Discussing about the Dengue innovation with Hon.Chief Minister of A.P Shri. Chandra Babu Naidu Garu @International Innovation fair, Vizag. Sept'2017.

Silver Medal for best innovation @ International Innovation fair, Vizag. Sept'2017.


Awards: Best innovation @ National Conference on Social Innovation- Pune, Nov2017.



Dr. Shivraj Dasari, Receiving the Best innovator Certificate from Union Minister of Education, Shri. Prakash Javdekar, & Dr. R. Mashelkar.



Dr. Shivraj Dasari, speaking at the National Conference on Social Innovation, Pune, Nov 2017.

The image features the Indian national flag, the Tiranga, on the left side. It consists of three horizontal stripes of equal width: saffron at the top, white in the middle, and dark green at the bottom. In the center of the white stripe is the Ashoka Chakra, a blue wheel with 24 spokes. The background of the entire image is a solid green color with a faint, repeating pattern of the Ashoka Chakra.

Not only does India have the capacity and capability to significantly raise the standards of healthcare, but to raise it to levels which makes it the global healthcare destination

A Healthy India is a Wealthy India



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Thank you

S.L.S. Cell Cure Technologies Private Limited,

(Company Registration No. **U73100TG2012PTC083318**)

shivraj23@yahoo.com



Rivers Die.....





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Proactive Diagnostics & Cell Therapy



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