



# Reaching the Unreached

ANNUAL REPORT 2016



*Our VISION is to promote social and economic inclusion by ensuring that marginalised communities have equal access to healthcare services and educational opportunities.*

A MESSAGE FROM

# Dr. Kiran Mazumdar Shaw

Dear Readers,

Biocon Foundation has been making an enduring impact in enabling social and economic inclusion through its health, education and community development programs, for over a decade now. We have endeavoured to create a comprehensive and integrated ecosystem that can deliver affordable and effective healthcare to underserved rural and urban communities in India. Our efforts in education have been directed at improving the quality of education primarily in rural schools. As a part of community development, we have built townships and schools besides providing sanitation and water supply facilities that can fulfil the basic needs of rural communities. In doing so, we have created a smart Corporate Social Responsibility (CSR) model that is viable and scalable.

HEALTHCARE

I am proud to say that our public health initiatives have been successful in providing sustainable solutions in the area of basic health as well as addressing the burden of chronic diseases like cancer, diabetes and hypertension.

We are keenly aware of the power of technology in enabling the transformation of the public healthcare scenario in India, particularly in rural and remote areas.

This year, we implemented the unique eLAJ project to deliver evidence-based healthcare for the benefit of communities with poor access to quality healthcare in Karnataka and Rajasthan. eLAJ clinics are staffed with doctors, technicians and pharmacists who are trained to handle state-of-the-art diagnostic equipment and clinic management software. Patient specific health data are captured on the eLAJ electronic medical record system and linked to an individual's Aadhar, or



*We are keenly aware of the power of technology in enabling the transformation of the public healthcare scenario in India, particularly in rural and remote areas.*

unique identification number. This innovative model allows birth-to-death health tracking and facilitates effective preventive and primary healthcare interventions.

Besides the eLAJ platform, we are harnessing a number of other technological innovations to address challenges associated with the early detection, prevention and treatment of diseases in rural areas.

We started using the Intelligent Breast Exam (iBE) handheld device for our breast cancer screening and early detection program this year. This technology, which allows effective clinical breast examinations by frontline health workers in low-resource settings, is now being used at all our clinics.

Our mobile phone based health (mHealth) platform for oral cancer screening and surveillance leverages telemedicine to link oral cancer specialists with patients in rural areas, ensuring that healthcare reaches remote pockets in a cost-effective manner. Over 8,500 individuals were screened for oral cancer in FY16, of which over 1,000 were diagnosed with pre-cancerous lesions and provided immediate medical attention. This year, we initiated oral cancer screening in the north eastern states of Nagaland and Assam as well.

More women die of cervical cancer in India than anywhere else in the world. We have developed a comprehensive screening and treatment program to address this problem. Over 800 women were screened during the year and nearly 40 women who exhibited abnormal results received treatment and follow-ups at a tertiary care centre.

The looming diabetes crisis led us to intensify our diabetes and hypertension awareness programs this year, which led to over 6,000 footfalls at these camps. Additionally an equal number benefited from the home visits that were conducted under this program.

Child malnutrition, which is responsible for 50% of all childhood deaths in India, is an area that is being actively addressed by the Foundation. Through the Balaspandana program, we organized over 125 pediatric camps that witnessed more than 3,000 footfalls during the year. Almost 500 home visits were conducted to provide professional assistance, motivation and guidance to caregivers. These initiatives helped improve the nutritional level of over 1,200 malnourished children, 115 of whom progressed from Severe Acute Malnutrition (SAM) to a normal nutritional status.

## REACHING THE UNREACHED

*The success of our primary healthcare programs in Karnataka has given us the confidence to extend into other states. In 2015, we entered into a public private partnership (PPP) with the Rajasthan government for the first time to run three Primary Health Centres (PHCs) and attached sub-centres.*

Overall, we have treated nearly 55,000 patients at our primary health clinics across Karnataka during the year.

The success of our primary healthcare programs in Karnataka has given us the confidence to extend into other states. In 2015, we entered into a public private partnership (PPP) with the Rajasthan Government for the first time to run three Primary Health Centres (PHCs) and attached sub-centres.

Through this PPP model we will bring healthcare to the doorsteps of those living in far-flung and remote areas of Rajasthan. The objective is to convert these PHCs into smart eLAJ Clinics to provide economical, effective and efficient healthcare services to over 70,000 people. By addressing the multiple health-related challenges that these communities deal with regularly, we hope to reduce out-of-pocket medical expenses, provide on-time treatment and reduce the burden on tertiary hospitals. In time the Foundation will gradually scale up operations in the state by adopting more PHCs. In doing so, we will provide healthcare where there is none and improve healthcare where there is some.



## EDUCATION

Over the last decade, the Foundation has been empowering rural children by helping them improve their basic mathematical skills. During FY16, over 100,000 Chinnara Ganitha maths workbooks were distributed across 1,200 government schools in rural and semi-urban Karnataka. We also initiated an Employee Volunteer program wherein Biocon employees dedicate an hour each week to teach mathematics in nearby government schools.

## COMMUNITY DEVELOPMENT

In keeping with our commitment to the Indian government's Swachh Bharat Abhiyan, we have built 1,500 household sanitation units in rural and suburban Karnataka. As part of our contribution to the government's Swachh Vidyalaya campaign, we have provided sanitation facilities in five schools in Karnataka thus benefiting nearly 2,000 children.

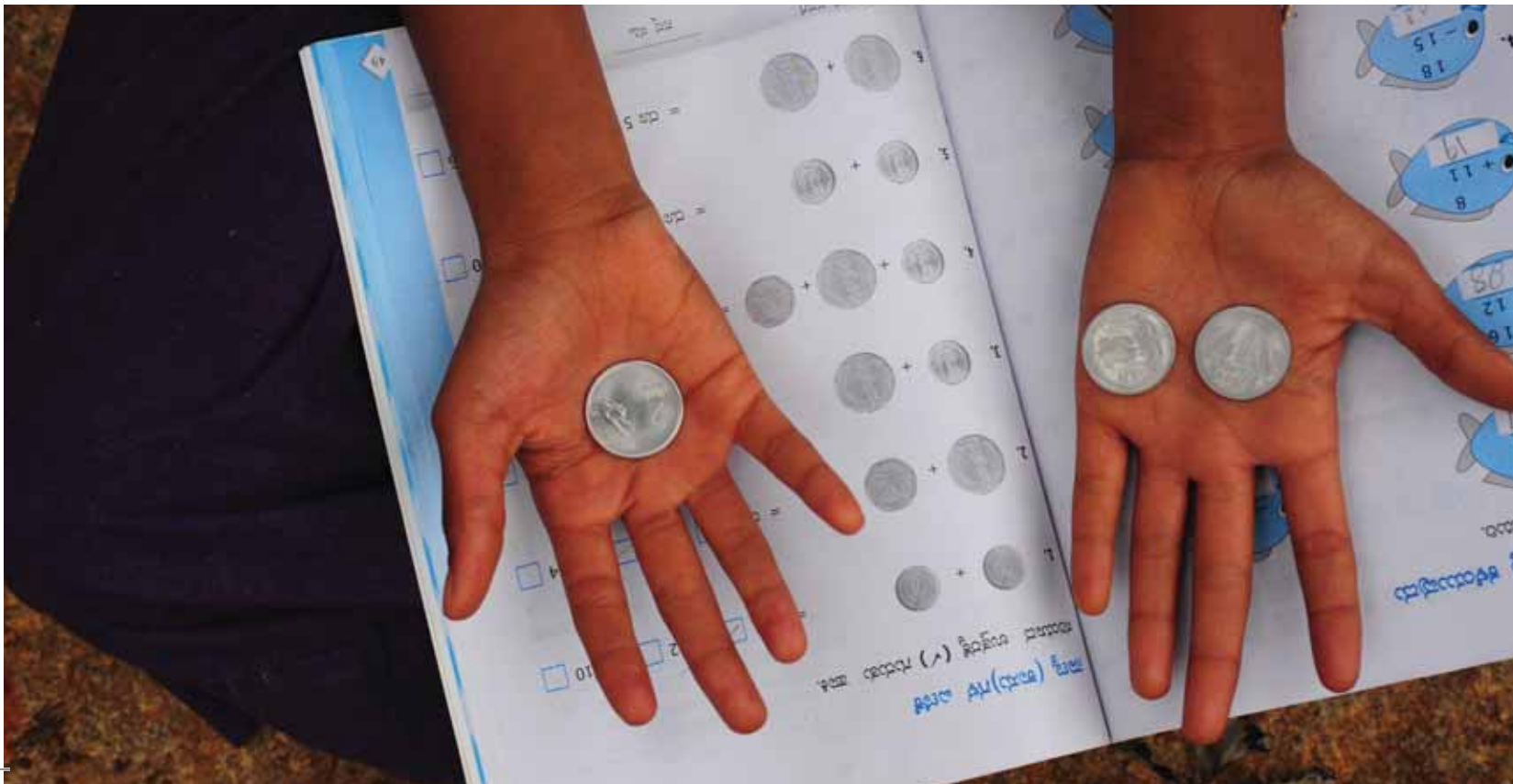
## CONCLUSION

Our initiatives are aimed at addressing the 'Right to Health,' the 'Right to Education' and the 'Right to Sanitation' through our numerous outreach programs for the benefit of the economically weaker sections of the Indian society. The Foundation will continue with its relentless efforts to drive social change and empower rural communities, thus improving the quality of life of thousands of people in India.

Best Wishes,

Handwritten signature of Kiran Mazumdar Shaw.

Kiran Mazumdar Shaw  
FOUNDER, BIOCON FOUNDATION



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## PROGRAM OVERVIEW

Biocon Foundation, the Corporate Social Responsibility arm of Biocon is relentlessly working to empower marginalised communities since 2005. We believe, our corporate social responsibility lies in creating a comprehensive ecosystem that can deliver effective and affordable healthcare solutions. We also support education initiatives that can impart better learning to the underprivileged students in rural schools and empower communities by providing proper infrastructure for self - sustained villages with health centre, community center, schools, sanitation, water and source of light.

We understand that our CSR efforts must be collaborative, concentrated and comprehensive. It must integrate private and public sector participation, permeate social strata, and expand its radius to reach the grassroots level – the poorest and the underserved citizens.

With a vision of reaching the unreached, Biocon Foundation in 2016, scaled up its programs to newer geographies, in Rajasthan, Assam and Nagaland.

The success of providing affordable healthcare solutions in Karnataka, led Biocon Foundation to collaborate with Ministry of Health and Family Welfare, Rajasthan, to run three of its Primary Healthcare Centres, with an aim of improving the primary healthcare facilities for the under privileged communities. We plan to make the PHC a smart health centre by introducing eLAJ, an electronic health record system introduced this year by Biocon Foundation.

We scaled up the early detection of Oral Cancer program in remote locations in Assam, Nagaland and Rajasthan, where healthcare delivery is inadequate. The focus was on the youth and young adults to motivate and de-addict at an early stage.

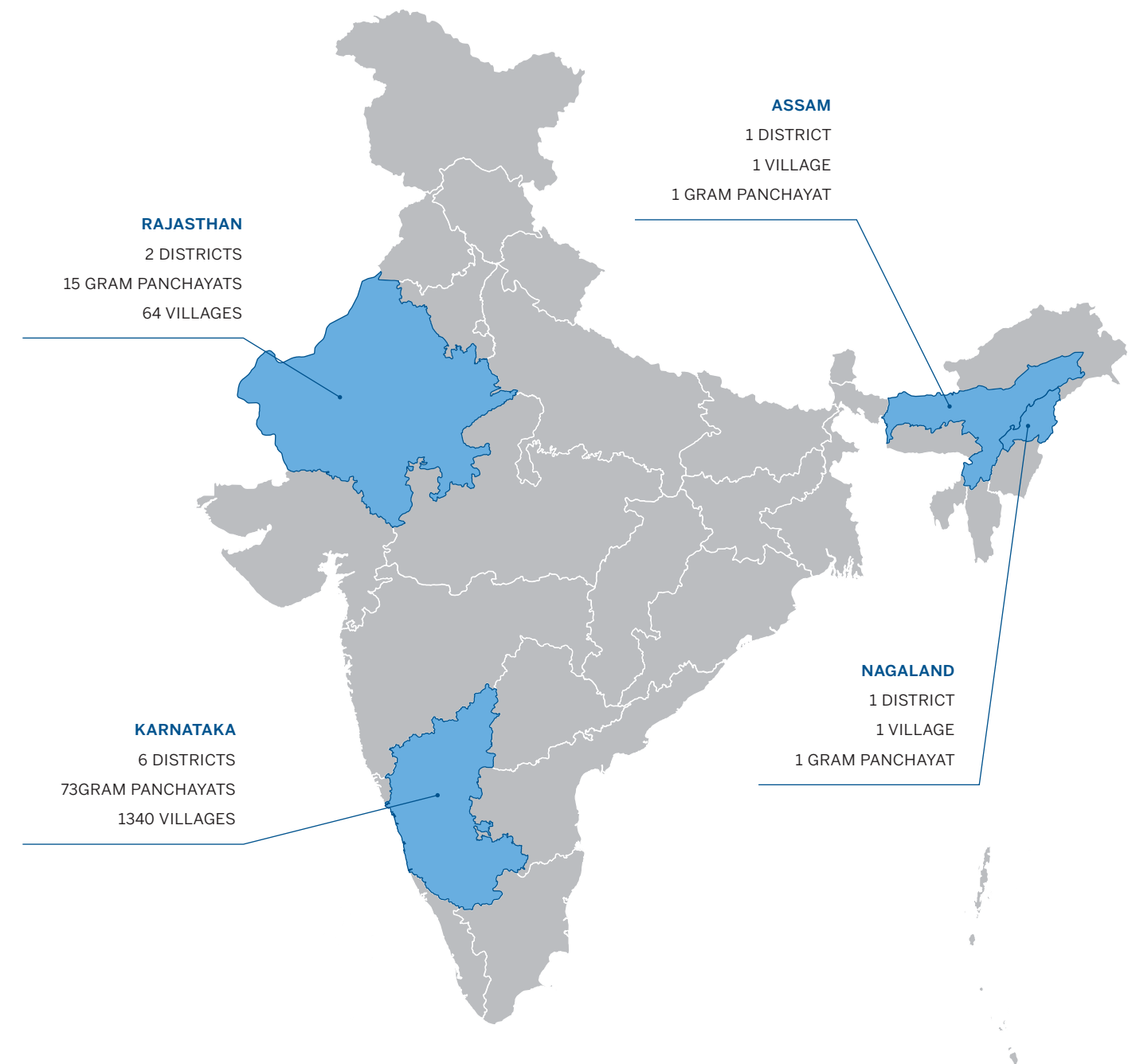
After demonstrating the viability of Balaspandana – Management of Malnutrition program in Badami taluk, Biocon Foundation increased the program coverage to 3 taluks, 903 Anganwadi centres, and 16 PHCs and 6 CHCs.

Biocon Foundation is a registered trust under the Indian Trusts Act of 1882. Registration number IV410/06-07 dated August 9th, 2006.

The trust is recognised under Section 80G of the Income Tax Act 1961.

Registration under Foreign Contribution (Regulation) Act, 1976 on application dated 18th January, 2011.

## OUR REACH



REACHING THE UNREACHED

PROGRAM PROGRESS AND ACHIEVEMENTS

	PROGRAM	SECONDARY DATA	PROGRAM INTERVENTION	PROGRAM OUTCOME
HEALTH CARE	Primary Healthcare	The ideal population per PHC is 20,000 to 30,000. Currently the average population served per PHC is 32,944 - Rural Health Statistics 2014	7 Primary Healthcare clinics in Karnataka and 3 government PHCs in Rajasthan	18,392 new patients registered. The average frequency of visits to the clinic was thrice per patient per year.
	Early Detection and Prevention of Cervical Cancer	92,731 cases of cervical cancer were reported in India in 2013. National Cancer Registry - 2013	10,000 women educated on reproductive health 863 underwent CCS screening	Out of 863 screened, 5% showed abnormal Pap cell
	Mobile Early Detection and Prevention of Oral Cancer	80,000 cases of oral cancer reported in India per year, 23% cancer related death in India due to Oral Cancer -IARC.	8540 people screened in community and work place settings across Karnataka, Assam and Nagaland	1097 positive pre-cancerous lesions detected. 370 biopsies conducted.
	Management of Diabetes and Hypertension	NCDs kill 38 million people each year – WHO Nearly 80% of people with diabetes live in LMICs	5695 people educated on NCD and associated risk factors	The footfall of diabetic patients in the NCD camps reached 6064. Control rates improved among patients.
	Balaspandana - Management of Malnutrition	Malnutrition in India declined from 53.5% in 1990 to 40% in 2015 but still well short of reaching the MDG target – UNDP	1256 malnutrition cases managed, 126 paediatric camps conducted, 3060 children treated at camps, 425 children received Spirulina and 490 home visits done.	Impacted Public Policy: On 1st March 2016, Government of Karnataka under <b>Bala Poshaka Scheme</b> proposed to provide 2 grams of Spirulina per day for a period of 180 days to 25,000 SAM children.
EDUCATION	Chinnara Ganitha	Growing numbers of Std. II children do not recognize numbers 1 to 9. Std. III children do not recognize numbers till 100 – ASER report 2014	1,01,247 children received Chinnara Ganitha books in 1157 schools, 6 districts	Children use books as part of the regular curriculum. Teachers reported that the mathematical concepts have improved after using the books.
	Swachh Bharat – Household and school sanitation program	66% of schools have access to sanitation facilities – UNICEF	Built 1500 household toilets in rural Karnataka. Toilets in 5 schools	Reduced open defecation. 6000 people using the sanitary units. 2000 children benefitting from School Sanitation program
COMMUNITY DEVELOPMENT	Biocon Nagar	India is vulnerable to natural disasters. over 40 million hectares is prone to floods – Gol Report	411 houses built with toilets, solar lights, and access to clean drinking water	Flood affected population rehabilitated. 600 villagers currently residing. Almost 300 people are agricultural farmers.
	Project One	748 million people – mostly the poor and marginalized – still lack access to clean drinking water - JMP	Water purification unit established	5000 people received clean drinking water in Huskur village





# Healthcare



## HEALTH SYSTEMS FRAMEWORK

Strengthening health systems delivery is fundamental to achieving health related Millennium Development Goals. In order to address this Biocon Foundation has developed an integrated health systems framework based on WHO guidelines.

The aim is to improve health seeking behaviour of communities, provide affordable access to medical facilities, and protect communities from health shocks, thus creating healthy communities.

### SYSTEM BUILDING BLOCKS

#### SERVICE DELIVERY

Biocon Foundation's network of primary health clinics, provides a comprehensive range of health services, including preventive, primary and curative services. The foundation provides competent clinical care, generic medicines, and basic diag-

nostic tests at all clinics. These facilities are directly accessible as the clinics are established within communities. Follow up and further referrals at the tertiary care centre are tracked by the community health workers. This enables us to maintain a continuum of care for every patient.

#### HEALTH WORKFORCE

Biocon Foundation's preventive health program functions through a network of community health workers associated with the primary health clinics that span rural and urban Karnataka. The health workers are our interface with the community and their focus is on preventive health education, early detection and management of chronic diseases, child and maternal health. They also encourage patients on follow up time to time.



#### HEALTH INFORMATION SYSTEM

Biocon Foundation is delivering a robust and effective primary care system with Elaj-Electronic Medical Record. This provides a digital record of patient's case files on the EMR creating a birth to death health tracker to ensure continuum of care. This record is used to generate disease profile of a community and plan health interventions.

#### ACCESS TO ESSENTIAL MEDICINES

A well-functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost effectiveness – WHO. Biocon Foundation provides essential generic drugs to its beneficiaries at subsidized rate in all the primary health clinics and during health camps organised by the Foundation across Karnataka.

#### HEALTH FINANCING

As per WHO, health system financing is a function of the health system concerned with mobilization and accumulation of

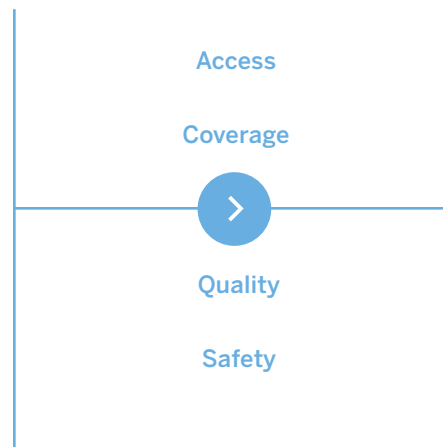
money to cover health needs of the people, individually and collectively. More than 80% of health expenditure in India is out of pocket and health shocks are often the primary cause of impoverishment. In order to address this, in 2005, Biocon Foundation launched a self-paid program, Arogya Raksha Yojana, Health Micro Insurance. Till date a significant number of people have benefitted from the program.

#### GOVERNANCE

Biocon Foundation has a strong management team to design, strategize, implement and monitor the program on a day to day basis. The team is also involved in delegation of services, allocation of finance for specific programs, evaluation of programs and collation of information to monitor program performance.

### SERVICE DELIVERY

- Health Workforce
- Health Information Systems
- Access to Essential Medicines
- Health Financing
- Governance



### GOALS / OUTCOMES

- Improved Health Seeking Behaviour
- Affordable Access
- Risk Protection
- Healthy Community

PRIMARY HEALTHCARE – eLAJ CLINICS



OVERVIEW

Biocon Foundation recognizes that the biggest gap in healthcare services is in delivering preventive and primary healthcare, where there is a critical need for services. A robust and effective primary care program supported by strong preventive health education, and early screening and diagnosis, can mitigate the burden on hospitals and the healthcare system, and more importantly, can improve health indicators of communities. The Health System Strengthening discourse also advocates primary healthcare as the best way to ensure access to healthcare for all and equity in health outcomes. Primary care is the first level of care provided by health institutions to the community for basic health problems.

A Primary healthcare approach strengthens health systems in the following ways:

1. Robust and systematic primary health care reduces the burden of care on the higher health institutions.
2. Primary health care focuses on public health interventions such as health promotion, prevention, curative care and rehabilitative care.

3. It is the most cost effective way to reduce the disease burden in a community.
4. It ensures better utilization of community based resources like community health workers who work very closely with the community.

ABOUT THE PROGRAM

Based on the core principles of integrated healthcare services, Biocon Foundation has introduced eLAJ - ehealth centres across Karnataka and Rajasthan. Each clinic has state of the art diagnostic equipment, clinic and patient management software along with doctors and technicians, all connected to a secure server.

Features of health care services in eLAJ clinics:

- Digital record of patient's case file on the eLAJ Electronic Medical Record System
- Baseline socio demographic and health indicators coupled with disease profile of the community help plan need based healthcare programs.
- Access to good primary and preventive healthcare, supported with robust screening and early detection programs

The e-clinics provide access to preventive and primary healthcare, supported with digital record of patient's case file on the eLAJ electronic medical record system, and robust screening and early detection programs. The multi parameter monitor (MPM) in the clinic collects the following vitals like blood pressure, temperature, blood sugar level, SpO<sub>2</sub>, pulse rate, and weight.

In eLAJ clinics, the health facility comprises of four interconnected computers.

STAGE I - REGISTRATION

The MPM records vital parameters (pulse, blood pressure, temperature and oxygen saturation), and anthropometric measurements (height and weight) and blood sugars. These values along with patients' personal details are recorded in the system as patient profile.

STAGE II - DIAGNOSIS

Patient information and the vitals are transferred to the doctor. The vitals are reflected on the doctor's laptop. On the basis of the vitals and clinical exams, the doctor can diagnose the patient and recommend lab tests if required.

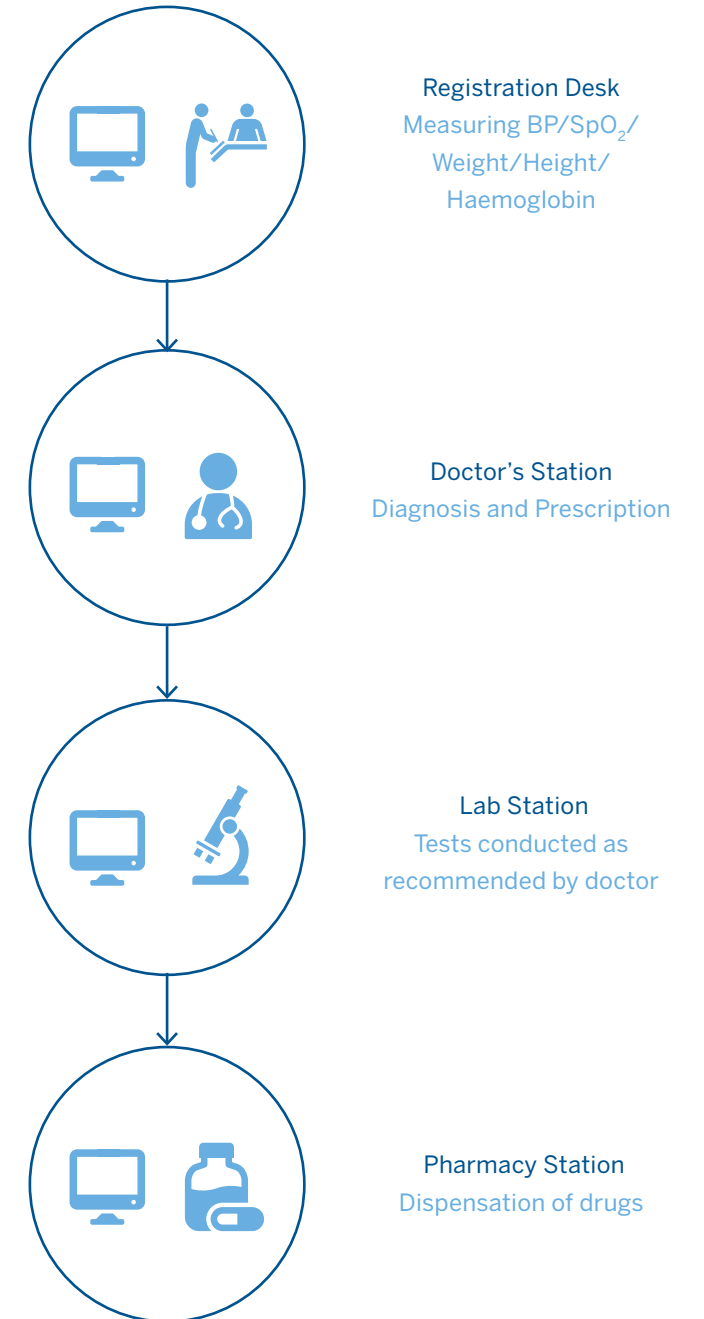
STAGE III - INVESTIGATION

The lab tests, recommended by the doctor, are reflected on lab technician's computer. This enables the lab technician to perform required tests.

STAGE IV - DISBURSING MEDICINE

The computer in the pharmacy keeps a track on the medicines dispensed and the stock of the pharmacy.

eLAJ WORKFLOW



## REACHING THE UNREACHED

### CLINIC STATISTICS - NUMBER OF PATIENTS

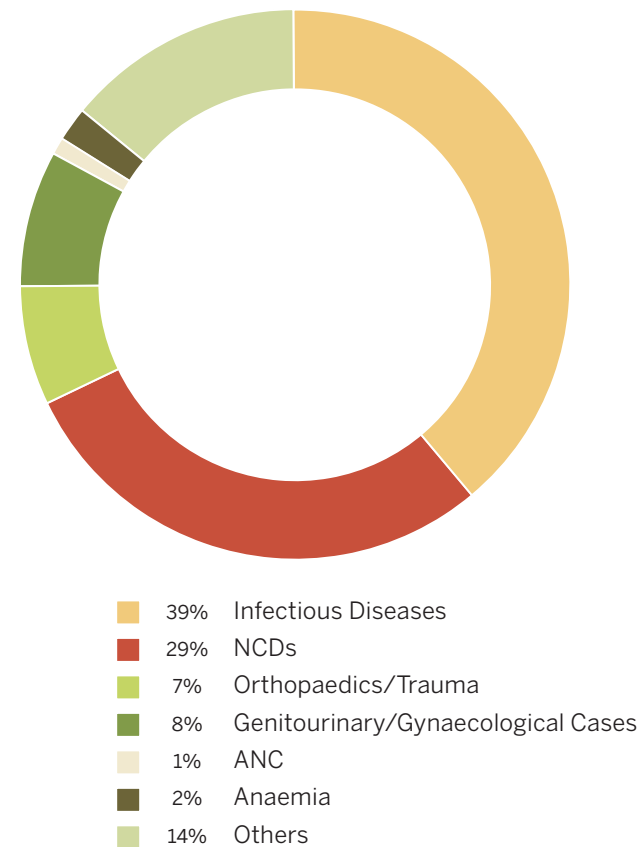
CLINICS	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Huskur	7345	9367	10385	11274	12845	13287	14230	13034	11431	8526	7216	110414
Chikkballapur		960	2015	2846	3576	6834	8712	12473	12018	9882	8712	58146
Kaladgi			759	946	1956	9364	11364	10370	10135	11589	9670	54564
Austin Town			635	945	2874	4384	5613	3673	2894	3780	4286	25304
Hennagara						793	4858	6454	8052	12193	10986	31,183
Kalkunte							1654	2678	4993	9086	6641	15,966
Haliyal										1091	6698	7789
Old Clinics	3746	4821	1045	645	2266	7426	16300	15844	10527	4172	0	80196
<b>TOTAL</b>	<b>11091</b>	<b>15148</b>	<b>14839</b>	<b>16656</b>	<b>23517</b>	<b>42088</b>	<b>62731</b>	<b>64526</b>	<b>60050</b>	<b>60319</b>	<b>54209</b>	<b>383562</b>

### PROGRAM INTERVENTION:

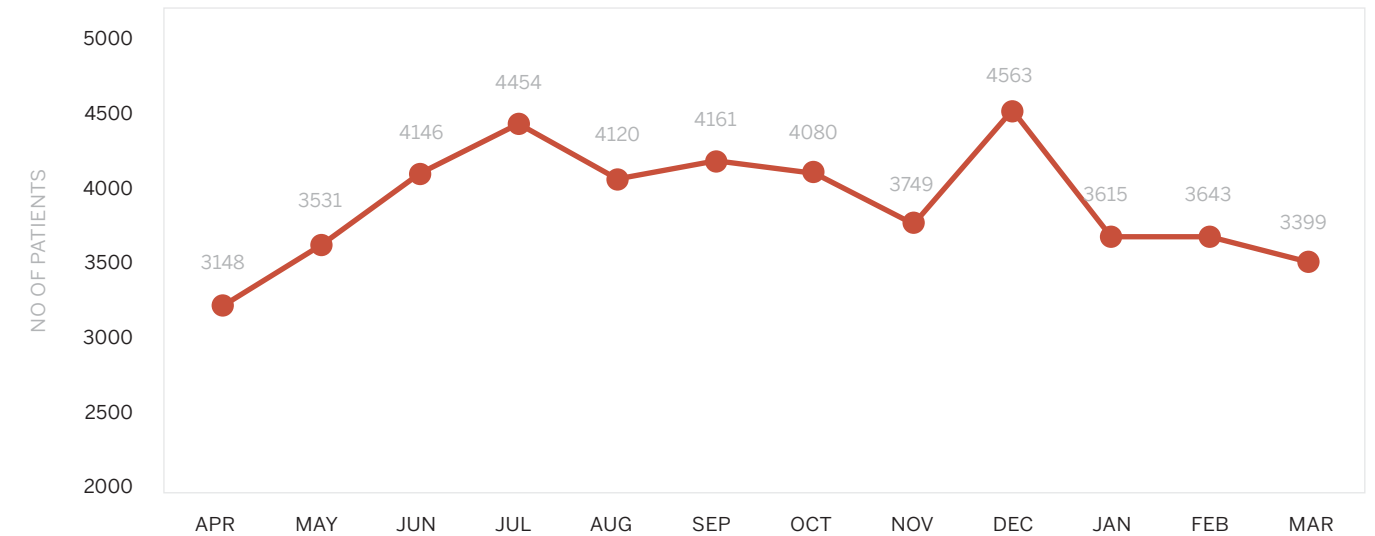
The eLAJ software is installed in 4 Biocon Foundation clinics in Karnataka and in 3 Primary Health Centres in Rajasthan, as part of the PPP initiative to build Smart Health Centres to optimize delivery of healthcare to underserved communities.

In FY16, 11,639 patients were registered on this platform, out of which 54% are male and 46% female. The Blood Pressure analysis shows that 24% of our patients have high BP readings, which indicates a need for counselling and stringent monitoring of these patients. The BMI analysis shows that 57% of our patients in Karnataka are overweight. These statistics help in identification of patients who are at risk, and for such patients, a proper care pathway is designed. eLAJ is a tool that helps in developing evidence based health interventions for individuals and communities.

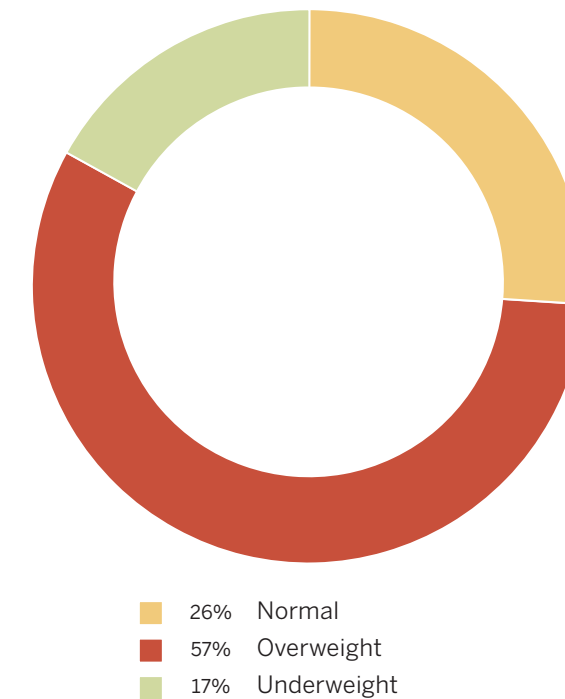
### DISEASE PROFILE



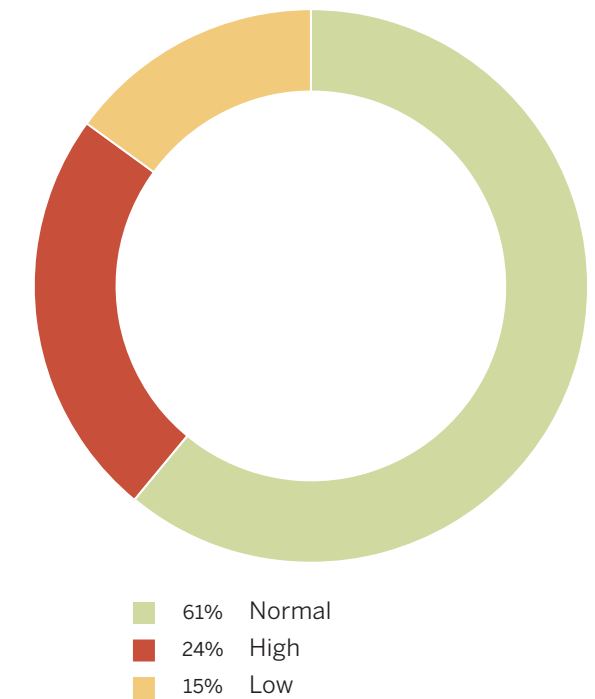
### MONTHLY PATIENT FOOTFALL IN eLAJ CLINICS



### CLASSIFICATION OF PATIENTS ACCORDING TO THEIR BMI

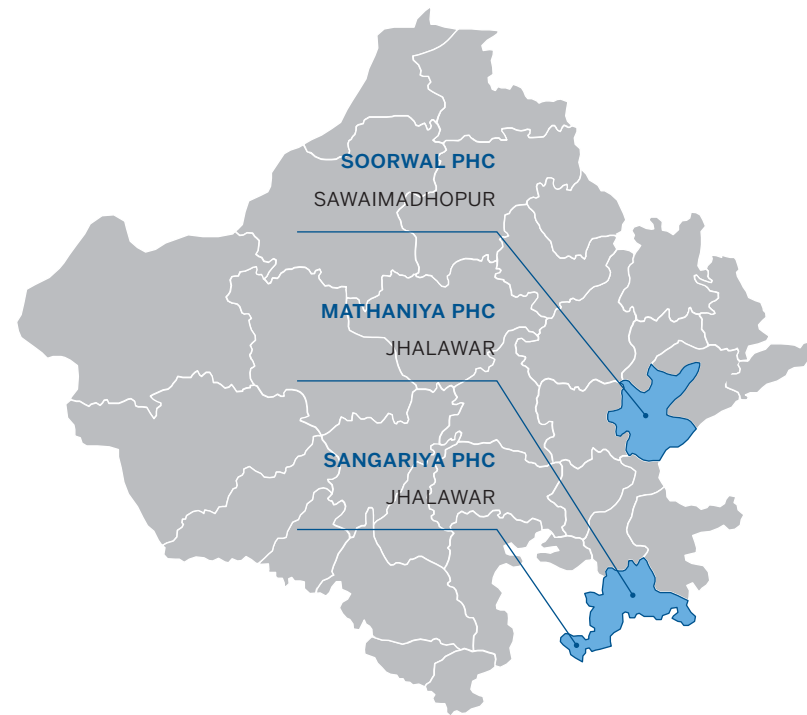


### CLASSIFICATION OF PATIENTS ACCORDING TO THEIR BLOOD PRESSURE



## REACHING THE UNREACHED

### PHC'S ADOPTED BY THE FOUNDATION IN RAJASTHAN



#### eLAJ-RAJASTHAN

Rajasthan has been in the forefront of India's economic reforms and is now among the country's six fastest-growing states. However, the improvements have not been adequate and there are several challenges that continue to affect children and neonatal health – UNICEF. The health indicators of Rajasthan are poorer when compared with states like Karnataka, Andhra Pradesh and Kerala, which have comparable GDPs. The Annual Rural Health

Statistics 2015 Report released by the Ministry of Health and Family Welfare, GoI indicates the reasons behind poor health indicators. Although the health infrastructure in the rural areas have significantly improved, yet staff shortage is a key issue faced by the Primary Health Centres. This is a major challenge for health service delivery.

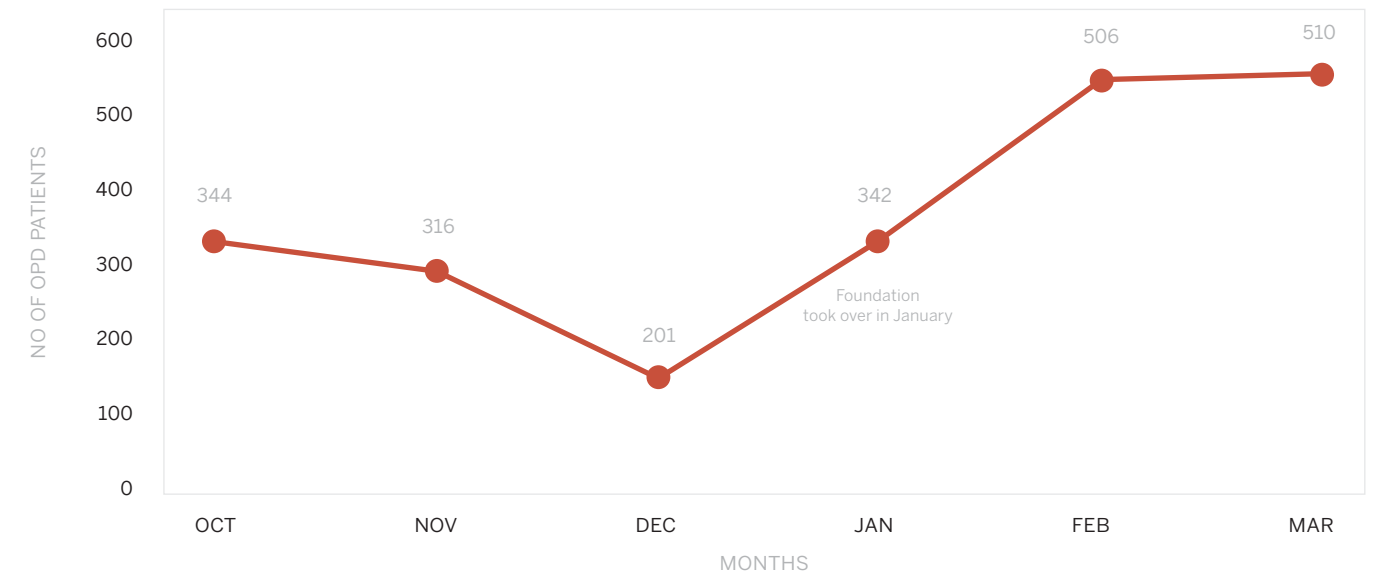
Understanding the criticality of healthcare service delivery, Biocon Foundation has expanded its footprint in the state of Rajasthan and collaborated with Department of Medical, Health and Family Welfare, Government of Rajasthan in order to improve the primary health facilities in the underserved geographies. The Foundation believes the public private partnership will mitigate multiple health challenges that the communities deal with regularly. Biocon Foundation has started providing clinical consultation and essential diagnostic services, while the government of Rajasthan provides medicines to all the patients visiting the primary health centre. As part of this collaboration, Biocon Foundation is also involved in improving infrastructure, recruiting human resources, and digitising patient records. Services provided will eventually reduce the out of

NAME OF THE PHC	VILLAGE	BLOCK	DISTRICT
Sangariya PHC	Sangariya	Pirawa	Jhalawar
Mathaniya PHC	Mathaniya	Pirawa	Jhalawar
Soorwal PHC	Soorwal	Sawaimadhampur	Sawaimadhampur

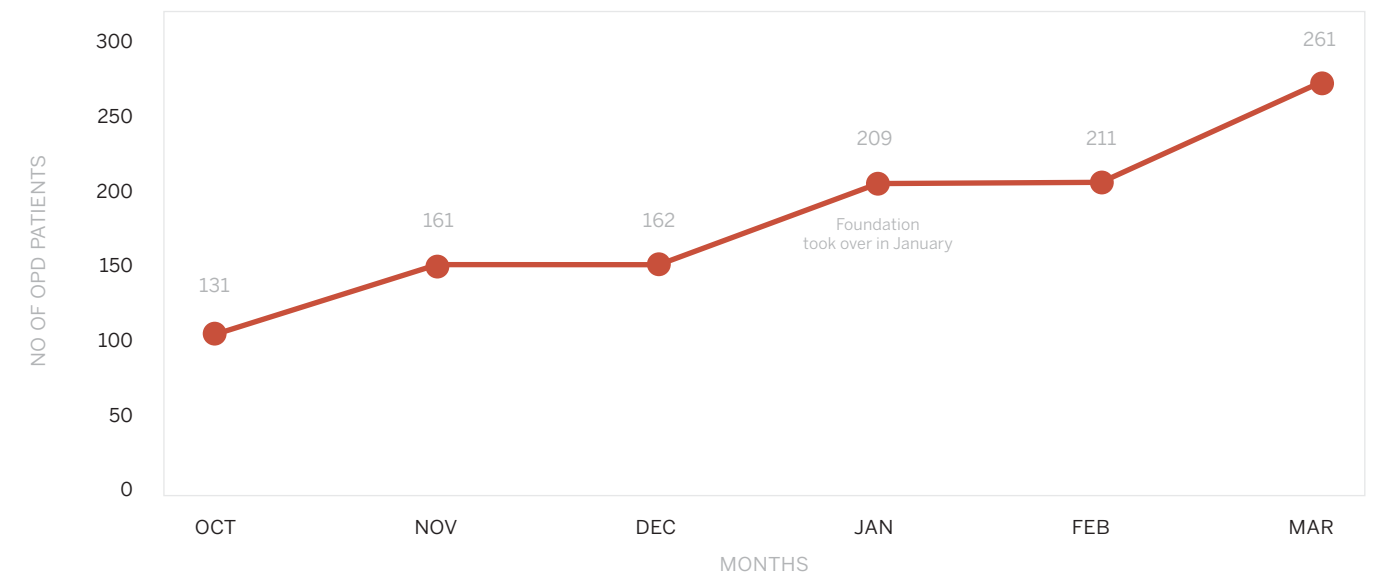
pocket expenditure, and on time treatment can reduce the burden on the tertiary hospitals and on the exchequer. Biocon Foundation has adopted 3 PHCs and will gradually scale up the program.

Foundation has installed eLAJ EMR in Sangariya and Mathaniya PHCs. The idea behind setting up the eLAJ in PHCs is to strengthen their health information management systems.

#### OPD NUMBERS IN SANGARIYA



#### OPD NUMBERS IN MATHANIYA



## NON COMMUNICABLE DISEASES – INTEGRATED APPROACH



### OVERVIEW

Non communicable diseases are becoming an emerging global health concern and a development priority. This not only has serious health implications, but also economic and development consequences.

NCDs kill 38 million people each year. Almost three quarters of NCD deaths - 28 million occur in low and middle income countries.<sup>1</sup> Cardiovascular diseases account for most NCD deaths, ie 17.5 million people annually, followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes (1.5 million).<sup>1</sup> These 4 groups of diseases account for 82% of all NCD deaths.<sup>1</sup> India has more than 61.3 million diabetic people (8% of the population).<sup>2</sup> It is predicted that by 2030, Diabetes Mellitus may afflict up to 79.4 million individuals in India, and will account for almost 75% of all deaths in India.<sup>3,4</sup>

### ABOUT THE PROGRAM

Different approaches are used to control non-communicable diseases over the years. The risk factors of the major non-communicable diseases show a lot of convergence. Cardiovascular diseases and stroke are the end result of these risk factors. The management of these conditions are costly and prolonged.

We therefore believe that an integrated community based risk factor management program will be more cost effective and beneficial.

The core components of the program are:

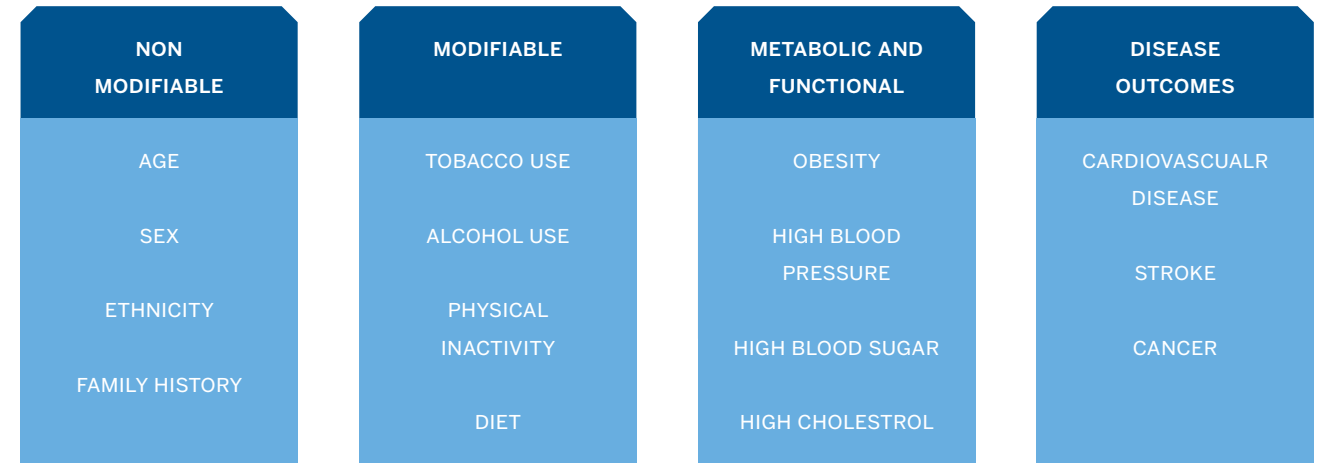
1. [Integrated approach to address Non Communicable Diseases](#)
2. [Complete primary care pathway at the community level for management of diseases](#)
3. [Awareness spearheaded by Community Health Workers](#)
4. [Counselling by Health educators for optimal management of NCDs.](#)

1. WHO. (2015). Non communicable diseases Fact Sheet. WHO. Retrieved March 4, 2016, from <http://www.who.int/mediacentre/factsheets/fs355/en/>

2. International Diabetes Federation (IDF) [Internet]. Country estimates table 2011. IDF diabetes atlas. 6th ed. 2012. Available from: [http://www.idf.org/sites/default/files/EN\\_6E\\_Atlas\\_Full\\_0.pdf](http://www.idf.org/sites/default/files/EN_6E_Atlas_Full_0.pdf)[Accessed 3 March 2016].

3. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes-estimates for the year 2000 and projections for 2030. Diabetes Care. 2004;27(3):1047-53.

4. Whiting Dr, Guariguata L, Weil C, Shawj. IDF Diabetes atlas: Global estimates of the prevalence of diabetes for 2011 and 2030. Diabetes Res Clin Pract. 2011;94:311-21.



### PROGRAM INTERVENTION:

#### COMMUNITY RISK PROFILING

The preliminary step to implement a community based risk factor management program is to understand the socio demographic and behavioural information of the community as well as the prevalence of major risk factors.

#### NCD CLINICS

Biocon Foundation has established 6 NCD clinics within the eLAJ primary health facilities in different field practice areas. The idea is to build a robust care pathway for NCDs before starting the awareness and community risk profiling, so that cases can be managed and referred immediately. The clinics consist of physician, staff nurses, lab technician, pharmacist, counsellor are trained in NCDs. Opportunistic screening for diabetes and hypertension is done in our routine clinical practice. Specialists from tertiary health facilities visit our clinics once a month for consultation. NCD files with unique case-id is provided and vital parameters are monitored every month. Psycho-social counselling by our NCD-counsellor is an integral part of the NCD camps. A full-fledged laboratory and pharmacy is established in all the clinics. Lab investigations are conducted and medicines are dispensed on subsidised rates.

### SPECIAL SERVICES

Biocon Foundation organises Geriatric camps in Austin Town clinic every month, keeping in mind the socio-economic vulnerability and breakdown of family support systems of this section of society. Biocon Foundation has also initiated Retinopathy, Nephropathy and Neuropathy camps with specialists in some of our clinics. We have conducted Retina screening camps in Huskur and Austin Town clinics in which 138 diabetic patients were screened. The foundation is streamlining these camps for all the clinics on a fixed-calendrers basis.

### COMMUNITY AWARENESS & FOLLOW-UP

To have a large impact for NCD control and adherence to the camps, we have continuous community awareness programs to avoid and reduce common risk factors of NCDs. Our health workers from NCD clinics, visit the community on a regular basis for follow-ups and home-based care. They also monitor all the vital parameters and motivate communities to adopt a healthy lifestyle. This diabetes awareness has reached 5596 people and the patient footfall significantly increased to 6064.

CVD SURVEY - ANALYSIS



Biocon Foundation started risk profiling of cardiovascular diseases in the area around Austin town clinic. This was done along with Community Medicine Department, St John's Hospital, Bangalore. We started this process in July 2014. Community interviews and quantitative screening began in January 2015, and was completed in December 2015.

1. BMI ANALYSIS

Out of the 2220 individual cases above 30 years without a previous history of cardiovascular or cerebrovascular event, the anthropometric measurements revealed the statistics in Diagram 1.

2. NCD AGE PROFILE

Analysis of age profile of 695 people who were diagnosed with high blood pressure showed loss of productivity due to NCD. This mostly affected 30-60 years of age group. Refer Diagram 2.

3. BLOOD PRESSURE (BP) STATUS

- Out of the total 2219 cases in which we have been able to test for Blood Pressure (BP), 695 (31.3%) individuals have been diagnosed with high BP.
- Out of these 695 individuals diagnosed for high BP, 461 (66.3%) were previously undiagnosed for hypertension. Refer Diagram 3.

4. RANDOM BLOOD SUGAR (RBS) STATUS

- Out of the total 2202 cases in which we have tested for Random Blood Sugar (RBS), 342 (15.5%) individuals were diagnosed with high RBS.
- Out of these 342 individuals who were diagnosed with high RBS, 136 (39.8%) individuals were previously not diagnosed for Diabetes Mellitus (DM). Refer Diagram 4.

DIAGRAM 1 - BMI ANALYSIS

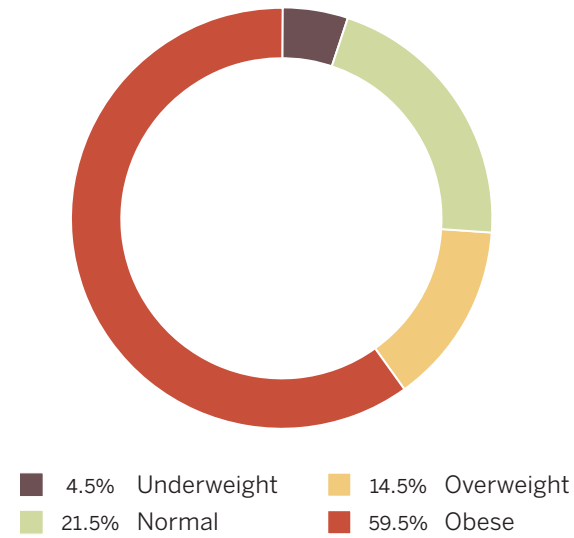


DIAGRAM 2 - AGE PROFILE OF PEOPLE WITH HIGH BP

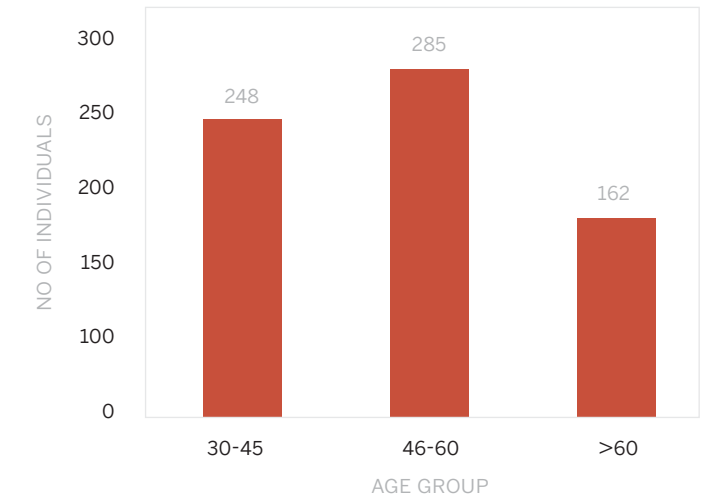


DIAGRAM 3 - BP STATUS



DIAGRAM 4 - RBS STATUS



REACHING THE UNREACHED



PROGRAM OUTCOME

IMPROVED CONTROL RATE

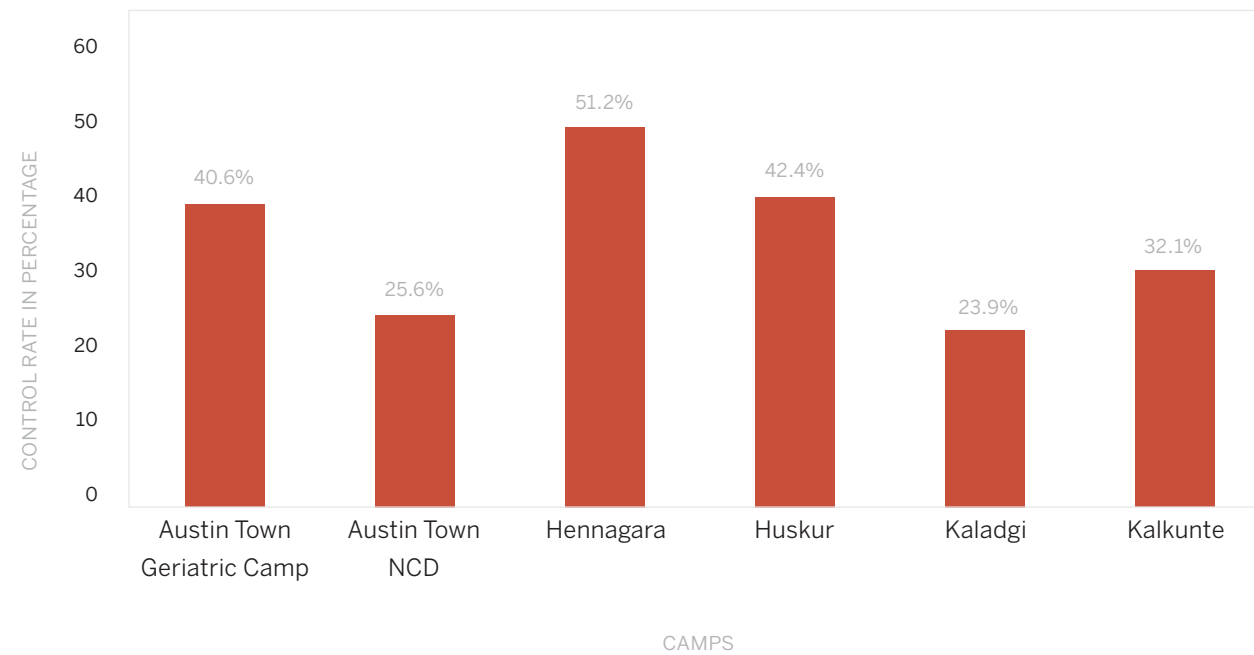
The NCD camp data indicates improved blood sugar levels among patients and their adherence to the camps. Hennagara NCD clinic is the oldest clinic with patients having a significant control rate of 51.18%. Kalkunte NCD camp has an improved control rate as Biocon Foundation distributes free medicines to encourage patients to attend the camp regularly. This initiative has shown an improved control rate of 32.12%.

SCALE UP:

Initially the Foundation worked with self-reported Diabetic patients in the primary care clinics. The community risk profiling identified patients with associated risk factors and referred them to our clinics. This has helped in developing a community based integrated approach to diagnose Non Communicable Diseases.



CLINIC WISE BLOOD SUGAR CONTROL RATE



## MOBILE EARLY DETECTION AND PREVENTION OF ORAL CANCER

### OVERVIEW

India bears over a tenth of the global burden of cancers. Globally the annual incidence is approximately 275,000. Retrospective analysis has shown increase in the rate of occurrence every year with the government recording a staggering 80,000 cases every year across the country. It accounts for 23% of all cancer-related deaths in the Indian subcontinent. In India, by the year 2020, the cases of head & neck cancers are estimated to be around 218,421 (19.0% of All sites cancers)

### ABOUT THE PROGRAM

Biocon Foundation has implemented a mobile phone (mHealth) based early detection, prevention and treatment of Oral Cancer in Karnataka. This innovative program started in 2011 has steadily scaled up to reach upto 60,000 populations primarily focusing healthcare in rural India.

This program has a pragmatic approach and over years it has evolved into one of the most comprehensive, evidence based Oral Cancer detection program. The program is reviewed, analysed on interim basis thus improving the process.

The core components of the program are:

1. The mhealth program is a population based screening which facilitates early detection at the doorstep
2. It connects specialists with rural population for diagnosis and creates an opportunity for follow up and referral
3. The program empowers the frontline health worker to screen in low resource settings

### PROGRAM INTERVENTION

#### CAPACITY BUILDING OF FRONTLINE WORKERS

To improve healthcare efficiency Biocon Foundation has introduced "Clinical Training" for the healthcare workers. A dentist is appointed who escorts the health workers in the field to improve their knowledge.

### RESEARCH

Biocon Foundation conducted a follow up study to compare the accuracy and clinical detection of healthcare workers with onsite specialist and remote specialist. The results of the study showed that between health workers & onsite specialists, the sensitivity was 84.8% and specificity was 97.7% and accuracy of health workers in diagnosing positive lesions was 96.2%. And on comparing the health workers & remote specialists, sensitivity was found to be 83.3% and the specificity was 99.0% with an Accuracy of 97.0%. The study inferred that health worker should be the primary contact for both early detection and for referral in oral cancer control program. The present research is focusing on low cost oral cancer tools and point of care diagnosis.

### FOLLOW UP AND REFERRAL

This program incorporated a rigid follow up component where all high-risk groups are individually anchored with a dedicated local coordinator who facilitates two-way communication between the specialists and patients through voice text and images at regular intervals. This follow up module aids in risk assessment, monitoring of oral lesions and timely referrals.

### SCALE UP:

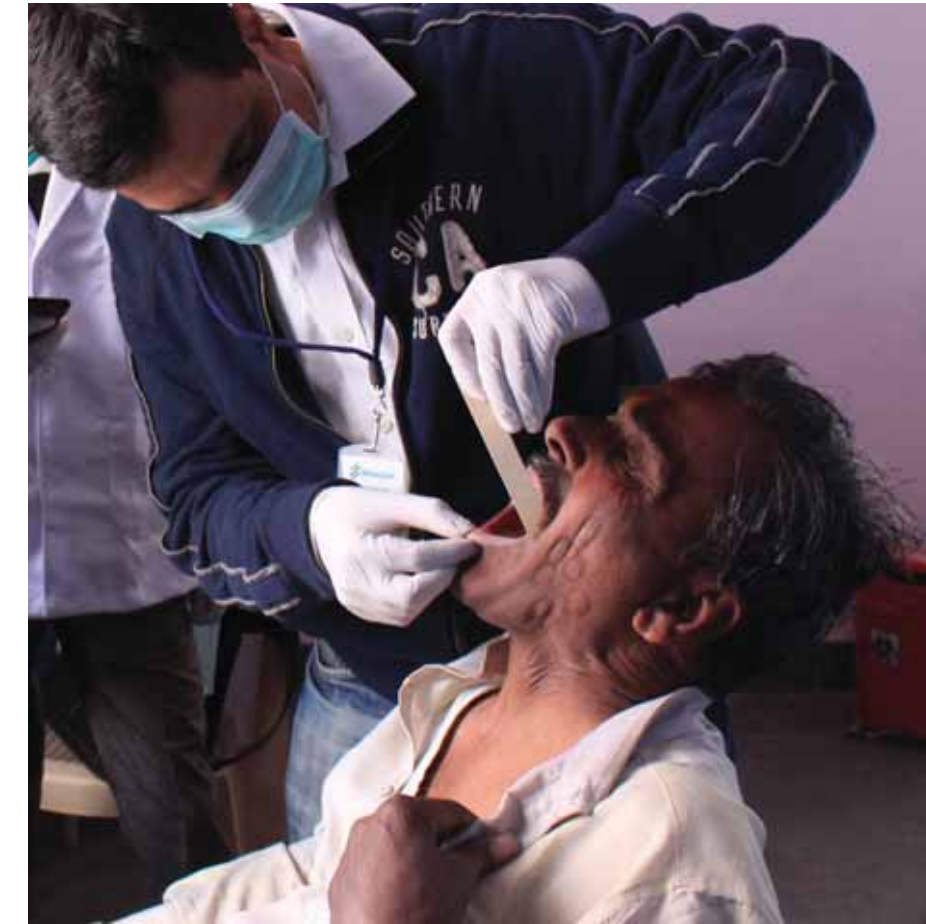
Early Detection of Oral Cancer Program has penetrated into most remote locations in Assam, Nagaland and Rajasthan where the health care delivery and health literacy is poor and has high consumption of tobacco and areca nut. Biocon Foundation has collaborated with Development Association of Nagaland in Dimapur, as a local partner for implementing the program. These geographic areas were a deliberate selection to cater most rural and lower economic backward areas. In Dimapur, Nagaland the program specifically focused in school and college students to educate, motivate and de-addict young children. This program has been designed to empower the local resources so that it is self-sustainable and facilitates rigid follow up.

### PROGRAM OUTCOME

#### COMMUNITY SETTINGS

In Karnataka, the individuals screened for oral cancer were mostly in the age group of 30-40 years. Most of the patients with positive lesions were males with common habit of chewing tobacco.

In Assam and Nagaland, the focus was on school health program where school students of class VII-X in the age group 11-16 years were screened. The risk was higher among those who started using tobacco early and continued for a long period. Intervention at an early stage protects these vulnerable groups from falling prey to this addiction.



### WORKPLACE SETTINGS

In the workplace settings, the most common oral pre-cancerous lesion was Tobacco pouch keratosis with most cases in the age group of 30 to 40 years. The Foundation also identified higher compliance for biopsies in workplace settings.

### ORAL HEALTH AWARENESS AND TREATMENT CAMPS

Apart from conducting oral cancer screening in community and work place settings, Biocon Foundation also organized Oral Health Awareness and Treatment Camps in the across Karnataka. 13,627 individuals were underwent oral screening and 1212 treated.



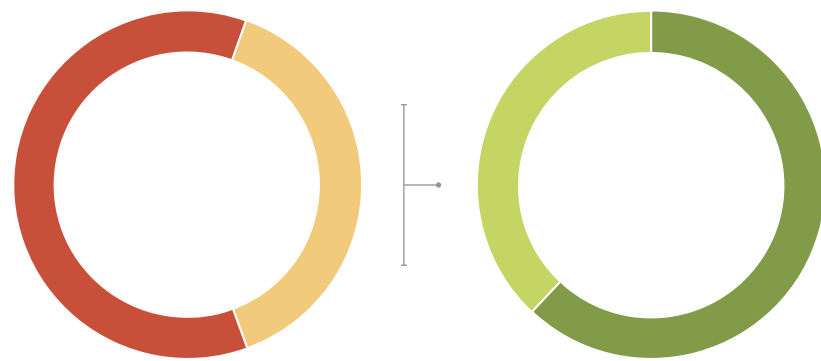
REACHING THE UNREACHED

COMMUNITY SETTING



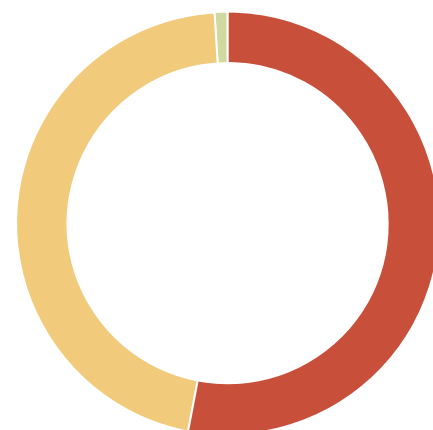
- 80% Normal
- 20% Positive Habit History
- 10% Lesion
- 10% Habit With No Lesion

WORKPLACE SETTING



- 61% Normal
- 39% Positive Habit History
- 15% Lesion
- 24% Habit With No Lesion

ORAL PRECANCEROUS LESION



- 53% Tobacco pouch keratosis
- 46% Homogenous Leukoplakia
- 1% Others (Speckled Leukoplakia, OSMF)

COMMUNITY BASED SCREENING

LOCATION	TOTAL NO SCREENED	PATIENTS DISCHARGED AS NORMAL	POSITIVE PRECANCEROUS LESIONS	POSITIVE FOR ORAL CANCER	BIOPSIES DONE
CHIKBALLAPUR (KARNATAKA)	572	567	05	0	0
BADAMI (KARNATAKA)	774	149	625	0	0
NUMALIGARH (ASSAM)	403	216	187	0	In Progress
DIMAPUR (NAGALAND)	2208	1974	234	0	In Progress
<b>TOTAL</b>	<b>3957</b>	<b>2906</b>	<b>1051</b>	<b>0</b>	

WORKPLACE SCREENING

LOCATION	TOTAL NO SCREENED	PATIENTS DISCHARGED AS NORMAL	POSITIVE PRECANCEROUS LESIONS	POSITIVE FOR ORAL CANCER	BIOPSIES DONE
WORKPLACE SETTINGS 1	4332	3834	498	0	315
WORKPLACE SETTINGS 2	606	334	272	0	55
<b>TOTAL</b>	<b>4938</b>	<b>4168</b>	<b>770</b>	<b>0</b>	<b>370</b>

ORAL HEALTH AWARENESS AND TREATMENT CAMPS

LOCATION	TOTAL NO. SCREENED	TOTAL NO. TREATED
CHIKKABALLAPUR CLINIC	74	46
KALKUNTE CLINIC	228	193
CAMPS CONDUCTED BY KLE DENTAL COLLEGE	13325	973
<b>TOTAL</b>	<b>13627</b>	<b>1212</b>

## EARLY DETECTION AND PREVENTION OF CERVICAL CANCER

### OVERVIEW

In India, Cervical Cancer ranks as the 2nd most frequent cancer among women. With the highest global burden of Cervical Cancer in India, the need is to expand the quality screening coverage across the country to save women who develop or die from the disease. As per NFHS 4(2015-16), only 13.7% of the urban women and 17% of the rural women have undergone cervical examination in Karnataka. According to the National Cancer Registry Data, 92,731 cases of cervical cancer were reported in India in 2013, a figure that is projected to go up to 1,00,479 in 2020.

### ABOUT THE PROGRAM

Biocon Foundation started the Early Detection and Prevention of Cervical Cancer program in the year 2013, and it is now replicated in different parts of Karnataka and aims to expand across India.

The cervical screening program aims at reducing illness and deaths from cervical cancer by conducting population based screening camps through Pap smear tests for all women, within the age group of 21-70 years, married for at least three years.

The primary components of the program:

- Early detection of cervical cancer through community information and education by our clinic health workers.
- Monthly free combined screening services of pelvic, breast and bimanual examination by Gynaecologists.
- Effective follow-up and referral for further diagnosis and/or treatment services in our selected tertiary care centres at subsidized rates, if provided.

### PROGRAM INTERVENTION

#### ADDRESSING GENDER BASED VIOLENCE

Biocon Foundation has observed that a significant number of health cases registered in the clinic are attributed to domestic violence. This issue was addressed by conducting capacity building workshops on gender sensitization impacting health, for the healthcare providers. This was conducted in association with Research Triangular Institute (RTI). The purpose of the program was to improve knowledge, attitude, and practice of the healthcare providers towards domestic violence and learn to address such issues in the clinic. This was a thought provoking workshop which helped the Biocon Foundation healthcare providers to understand societal norms through a different lens. The activity based learning enhanced healthcare provider's self-confidence and improved ways of assertive communication.

#### USE OF TECHNOLOGY IN DIAGNOSIS

It is often a challenge to follow up cases of cervical cancer in remote locations, especially for diagnosis and treatment for positive cytology cases. The next step for diagnosis is colposcopy which examines cervix, through special magnifying device. This year, Biocon Foundation partnered with St. John's Hospital, Bangalore to initiate, a new intervention, a portable handheld colposcopy device called 'Gynocular' on a pilot mode. This will facilitate scaling up the program in remote geographies.



2012

Consultation on cervical cancer




2013

Cervical cancer screening at Hennagara and Huskur, Austin Town and Kalkunte



2014

Cervical cancer screening at Mahila Dakshita Samiti, Vidyanarayapura



2015

Cervical cancer screening at Kaladgi, Bagalkot

### SCALE UP

Cervical cancer screening program has reached three rural health care centres (Huskur, Hennagara and Kalkunte), 1 urban health centre (Austin Town) and a workplace setting (Mahila Dakshita Samiti) in Bangalore, Karnataka. In FY16, the program expanded its services in North Karnataka. Biocon Foundation's health care centre at Kaladgi, in Bagalkot district started conducting Cervical cancer screening camps in collaboration with S Nijalingappa Medical College.

### PROGRAM OUTCOME

The program has benefitted a large section of women from underserved communities, women with significant lesions, women who ignored common reproductive tract infections, due to lack of knowledge, privacy and inaccessibility of tertiary care centres. With its combined screening strategy to include pelvic, breast and bimanual examination, it has helped to detect cases of ovarian cancer and breast lumps.

### COVERAGE

As per WHO Guidelines, recommended age to start screening is 30 years, and priority should be given to screening women in the age group 30-49 years. In India, marriageable age being 18 years, our program caters to married women in the age group of 21-60 years. The screening figures indicate the maximum number of women screened are in the age group of 31-40 years, followed by 21-30 years, and then above 41 years.

### CYTOLOGY PERFORMANCE

Screening test results indicate, out of 863 screenings conducted in 2015-2016, 40.02% women were Pap negative while 4.80% were Pap positive. The Pap positive cases were highest among the age group 30-40 years, followed by women of 40-50 years. Specific evidence of presence of sexually transmitted organisms and vaginal infections were also detected with a Pap smear test. Out of 10% of women with infections, evidence of Bacterial Vaginosis was highest (7.01%), followed by Candidiasis (2.09%) and Trichomoniasis (0.9%). Screening test results indicated, 45.18% of

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women had inflammatory smears. Clearing inflammation through medicine and a repeat smear was advised to them.

### FOLLOW UP AND TREATMENT

Women with reproductive tract infections were provided free medicines. Repeat smears at regular interval were advised. 65.63% of women with positive cytology were followed up. About 6.24% women refused treatment. The Foundation conducted diagnosis like colposcopy, regular biopsy and HPV DNA test, for Pap positive cytology cases as well as other cases where

a specific risk could be observed. The treatment services provided were Cone Biopsy, Loop Electrosurgical Excision Procedure (LEEP), and Cryotherapy at subsidized price. As part of our combined screening program, this year 4 cases of breast lump and 1 ovarian cancer was diagnosed. Breast lump cases has been referred to our tertiary care centres while treatment has been done for ovarian cancer case. In addition to this, cases of Uterine prolapse, Infertility, amenorrhea, fibroid Uterus and small cervical polyps were also diagnosed and referred to the tertiary care centres.



### EARLY DETECTION SAVES LIVES

30 year old Yellama lives in Thathanur in Kalkunte. She is married and a mother of 2 children. Her husband, Venkatesh works as a coolie and earns a monthly salary of Rs 5000. After attending Biocon Foundation community health worker's awareness session on importance of reproductive health, she attended the monthly PAP screening on 18th June 2015. Like many others, she had constant white discharge, yet did not mention any complaints prior to her screening. While her case history was documented as a first step for the Cervical Cancer Screening Program, she mentioned about her regular menstrual cycle and passing clots.

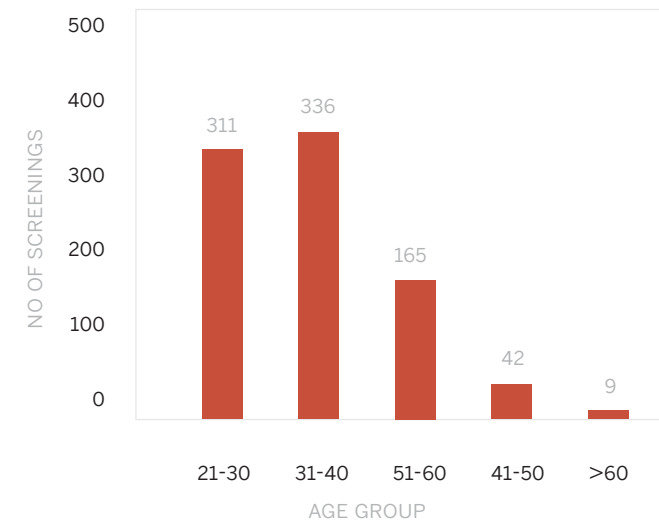
Yellamma's Pap smear was positive and she was referred to Biocon Foundation's Tertiary Care Partner Hospital for a colposcopy examination, followed by a Biopsy. Due to financial constraints, Yallamma and her family were hesitant to undergo treatment.

With regular home visits and constant motivation by the community health workers, she realised the importance of further diagnosis and treatment.

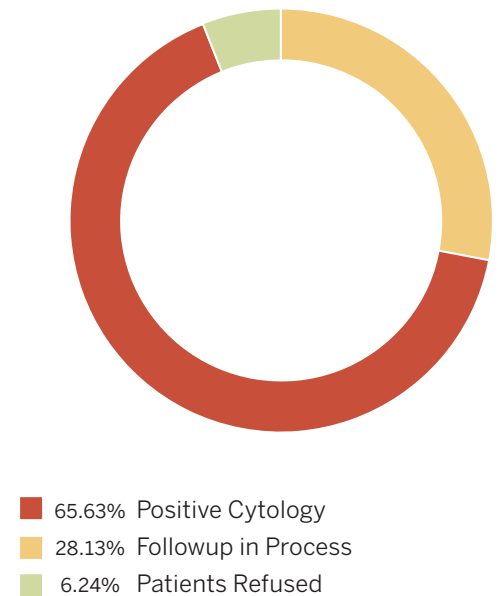
Yellamma underwent treatment at a subsidized rate using her BPL card and a part of the cost was borne by Biocon Foundation. She was accompanied by a community health worker and diagnosed with - CIN3 (pre-cancerous cells of cervix at high grade level) and underwent cone biopsy. She gained courage as the Biocon Foundation staff was by her side throughout the treatment process.

Yellamma has recovered and feels glad that her condition was diagnosed at an initial stage. She believes, every woman should undergo regular reproductive health check-up and never ignore health problems.

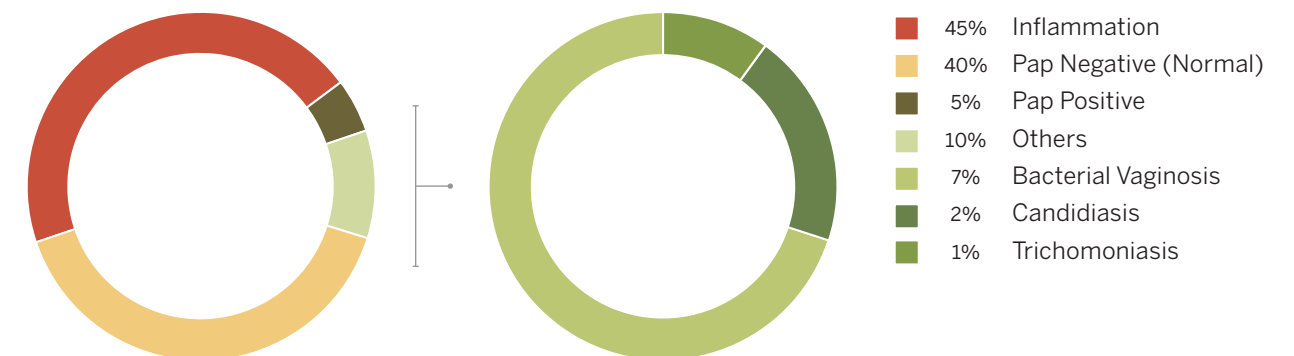
NO OF CERVICAL CANCER SCREENING



POSITIVE CYTOLOGY FOLLOW UP



CERVICAL CANCER SCREENING RESULTS



## INTELLIGENT BREAST EXAMINATION - iBE



Breast Exam (iBE), a novel US FDA cleared medical instrument for pre-screening of breast lesions. It is a non-invasive and painless breast health exam for health workers to conduct standardized breast examination accurately and easily, using a mobile device to identify breast lesions early, at the point-of-care. It helps in

- Bilateral breast exam and results within 5 minutes at the point-of-care
- Accuracy to detect clinically relevant breast lesions higher than 85%
- Usable by any health-worker or doctor
- No pain, No radiation.

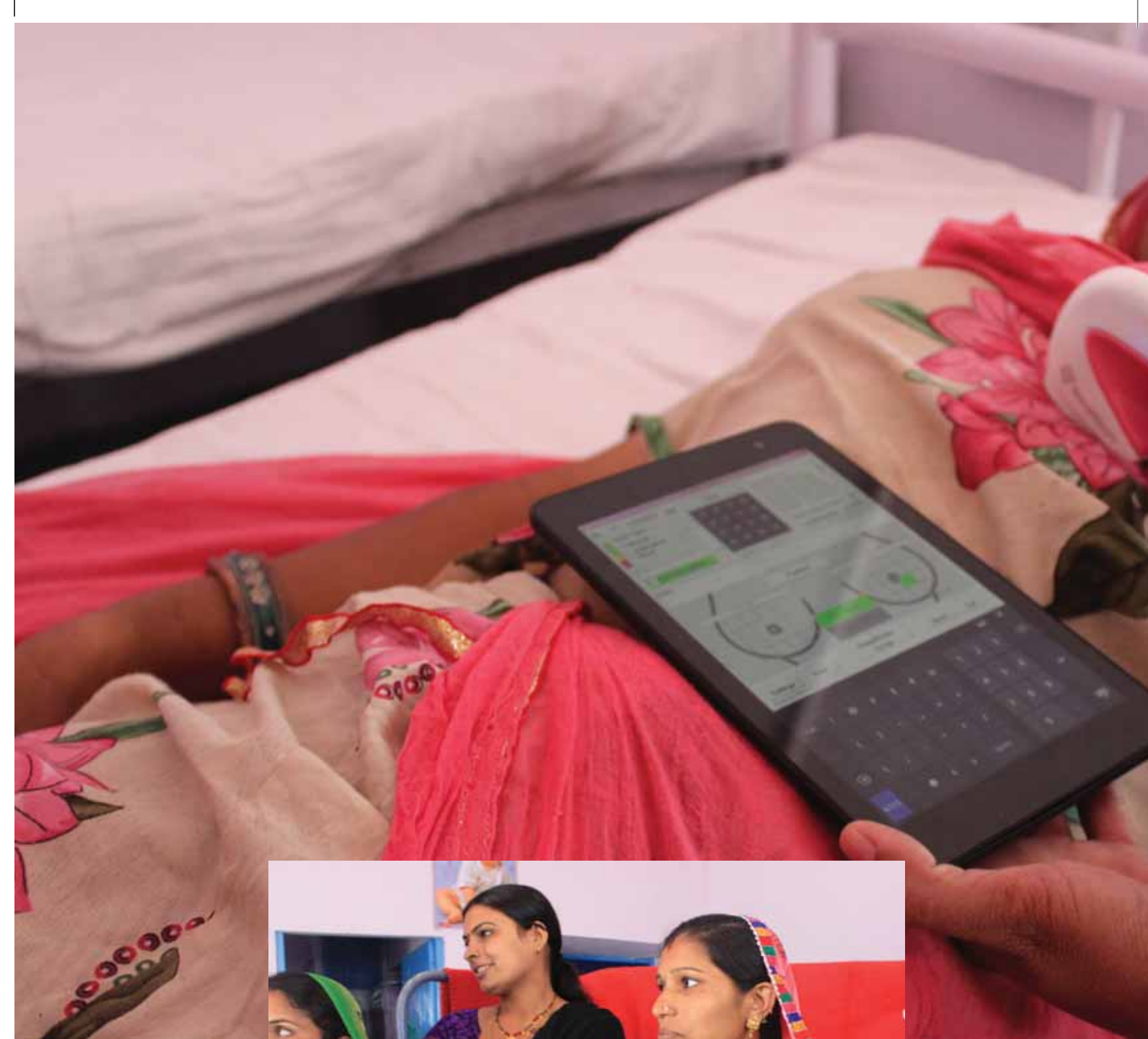
The clinical study evaluating the iBE technology published in the Journal of the American College of Surgeons, demonstrated that, iBE technology can confidently detect invasive lesions that the physician could not feel with his hands.

### TRAINING AND CAPACITY BUILDING

ANM and ASHA workers in Sangariya Primary Health Centre, Rajasthan underwent a hands on training on iBE. A total number of 52 women underwent breast examination on camp day at Sangariya. Biocon Foundation plans to initiate hands on training for Biocon Foundation clinic healthcare providers across our field practice areas soon.

India is experiencing an unprecedented rise in the number of breast cancer cases across all sections of the society. It is the most common cancer among women in India. In 2015, an estimated 1, 55,000 new cases of breast cancer were detected and about 76,000 women are expected to die of the disease - WHO. However, early detection can achieve adequate treatment and longer survival.

UE Life Science, one of the partner organizations of Biocon Foundation, has developed a hand held device called Intelligent



## BALASPANDANA – MANAGING MALNUTRITION

### OVERVIEW

Malnutrition is a global health problem. It contributes to more than one third of all child deaths. In 1990, when the MDGs were formulated, 53.5% of all Indian children were malnourished. In 2015, malnourishment in India declined to 40% but was still well short of the target of reducing malnourishment to 26%.<sup>5</sup> According to NFHS-4, 10 of the 15 States/Union Territories including Karnataka.<sup>6</sup> Sustainable Development Goals (SDGs) spell a new challenge for India. Goal 2.2 of SDGs has set the target to end all forms of malnutrition by 2030, in children under five years of age.<sup>7</sup> According to World Bank, micronutrient deficiencies alone may cost India \$2.5 billion annually, about 0.4 percent of India's annual GDP.<sup>8</sup> Productivity losses associated with forgone wage employment resulting from child malnutrition, estimates the loss at \$2.3 billion in India (0.4 percent of annual GDP).<sup>8</sup>

### ABOUT THE PROGRAM

Looking at the epidemic, it is important for the intervention to have high impact in reducing death and disease, and evade irreversible harm. Benefits of childhood nutrition interventions go far beyond mortality reduction and include cognitive and physical development and better health. Intake of protein, vitamin and minerals through nutrition supplement is an evidence based direct intervention which has an unusually high benefit-cost ratio. The Lancet series on Maternal and Child Nutrition 2013.

Under Biocon Foundation's Balaspandana program, free nutritional supplements are provided for young children under 5 years of age.

The core components of Balaspandana program include:

- Facilitate health check-up through government PHCs and CHCs and increase attendance
- Monitor growth of malnourished children using WHO growth chart.
- Distribute essential nutrition supplements
- Home visit to follow up with caregivers of SAM children
- Referral to secondary or tertiary centres for chronic or congenital problems.
- Behaviour change communication to increase knowledge, attitude and skills of caregivers

### PROGRAM INTERVENTION

#### NUTRITION SPECIFIC APPROACH

Biocon Foundation has ensured continual health check-ups and provision for nutritional supplement delivery through a nutrition specific approach. To deal with protein and micronutrient deficiency in malnourished children, Biocon Foundation has developed a comprehensive delivery strategy with Spirulina. It is a distinctive and excellent source of essential amino acids, carbohydrates, vitamins and other vital minerals in highly digestible form. "For WHO, Spirulina represents an interesting food for multiple reasons, rich in iron and protein, and is able to be administered to children without any risk. We at WHO consider it a very suitable food".<sup>9</sup> Spirulina is also declared by the United Nations World Food Conference of 1974 as the "best food for the future".<sup>10</sup>

### NUTRITION SENSITIVE APPROACH

Biocon Foundation has complemented the improved access of health check-ups and nutrition supplements with a well-defined nutrition-sensitive strategy. The focus is on providing professional assistance, motivation and guidance to the caregivers through awareness and education. Follow up and home visit by community health workers, special emphasis on reducing absenteeism for children who are in the Severe Acute Malnutrition grade for more than 2 years, are major components of the program to reduce the chronic burden of under nutrition.

#### SCALE UP

After successfully demonstrating the viability of the project in Badami Taluk, Biocon Foundation implemented the program in Bilagi and Bagalkot taluks. The program coverage has now increased to 3 taluks, 903 Anganwadi Centres, 16 PHCs and 6 CHCs.

5. UNDP. (2015). Sustainable Development Goals. Retrieved from United Nations Development Programme in India: <http://www.in.undp.org/content/india/en/home/post-2015/mdgoverview.html>

6. Health Ministry releases results from 1st phase of NFHS-4 survey. Press Information Bureau. Retrieved March 10, 2016, from <http://pib.nic.in/newsite/PrintRelease.aspx?relid=134608>

7. Nations, U. (2014, December 1 December). Sustainable Development Knowledge Platform. Retrieved from <https://sustainabledevelopment.un.org/?page=view&nr=164&-type=230&menu=2059>

8. Mundial, B. (2006). Repositioning Nutrition as Central to Development. A Strategy for Large-Scale Action. Washington DC.

9. Nations, U. (2005). The use of spirulina to combat hunger and malnutrition and help achieve sustainable development. United Nations. Retrieved March 9, 2016, from <https://documents-dds-ny.un.org/doc/UNDOC/LTD/N05/593/73/PDF/N0559373.pdf?OpenElement>

10. (2010). What the United Nations says about Spirulina. IIMSAM. Retrieved March 9, 2016, from <http://www.iimsam.org/images/SPIRULINAANDTHEMDGsRevisedDEC2010.pdf>

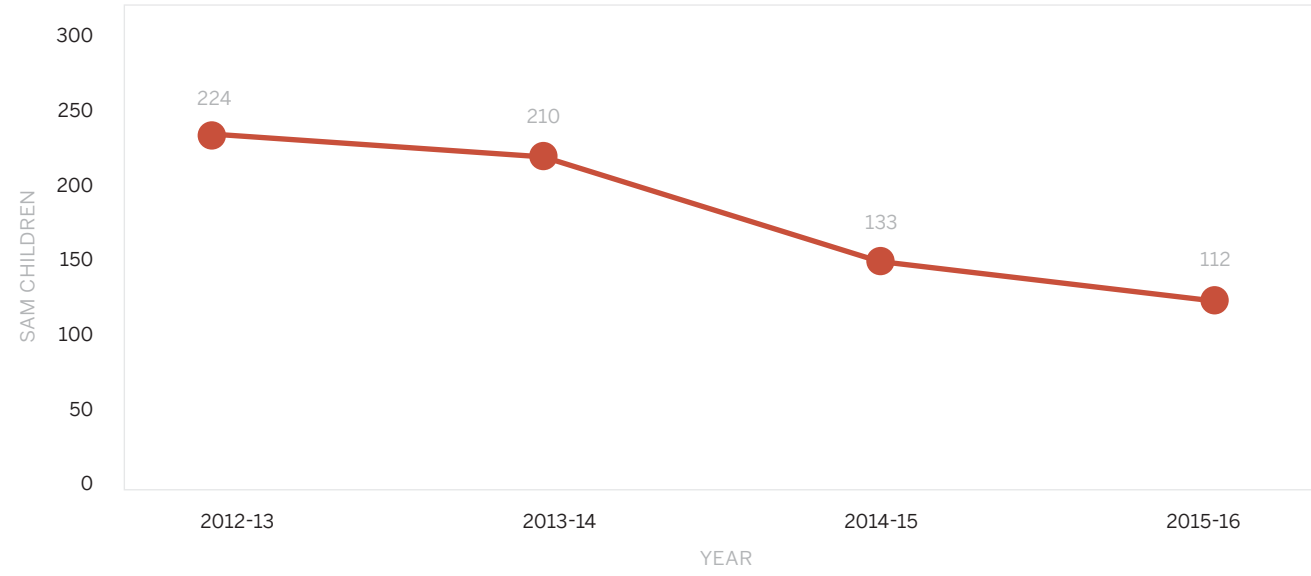


*"Biocon Foundation has supported this unique project by supplying nutritional supplements like Provita, Calcium, Iron and Multivitamin syrups in Badami and Bilagi Taluka. This has been hugely helpful and has been given to more than 750 children and we would like to thank you in this regard."*

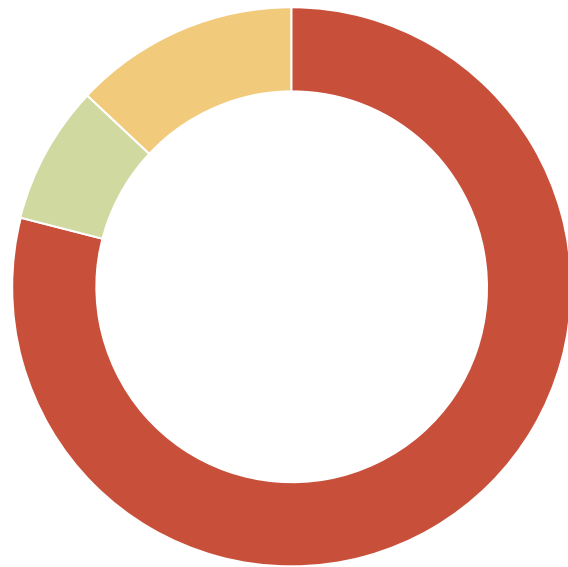
- SS NAKUL, FORMER CEO  
BAGALKOT, GOK (10/08/2015)

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**YEAR WISE SAM NUMBER IN BADAMI**

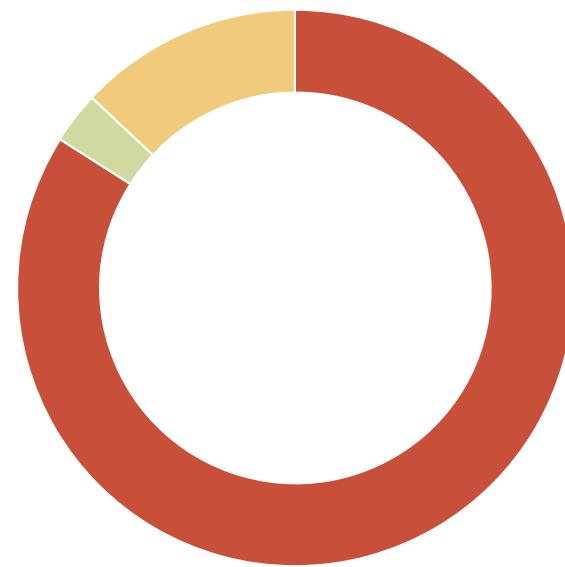


**GROWTH TREND IN SAM CHILDREN  
BADAMI TALUK**



79.17% Upward  
7.64% Plateau  
13.19% Downward

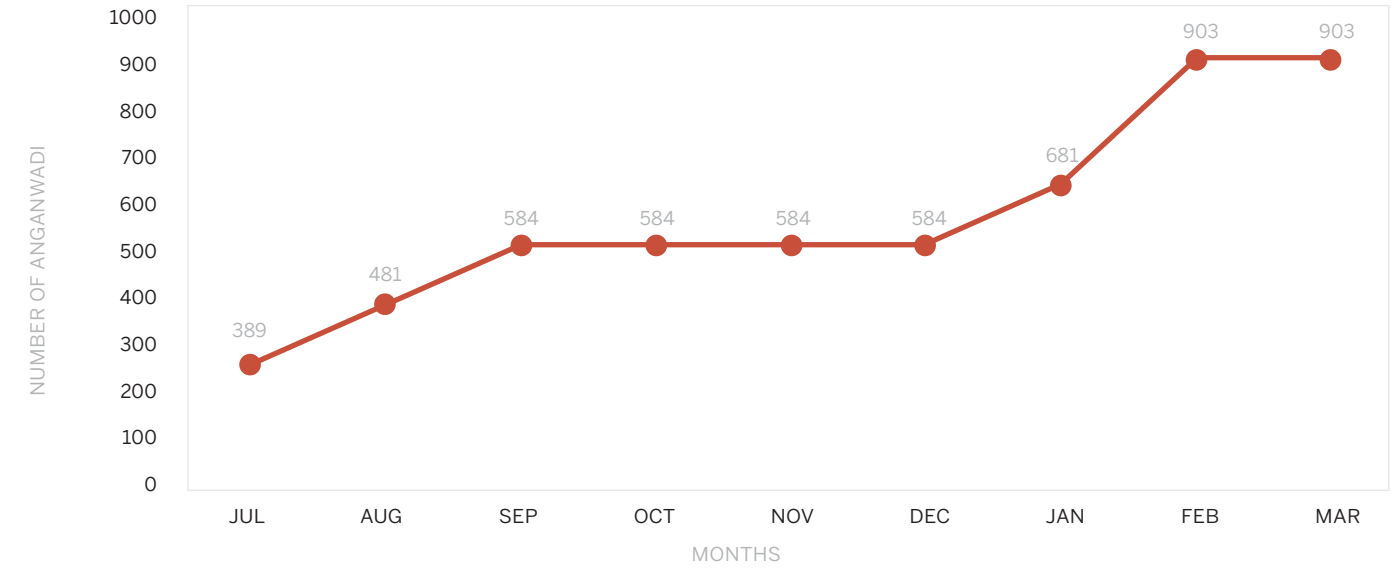
**GROWTH TREND IN SAM CHILDREN  
BILAGI TALUK**



83.91% Upward  
3.45% Plateau  
12.64% Downward



**PROGRAM COVERAGE**



**NUTRITIONAL SUPPLEMENTS DISPENSED**

PROTEIN	IRON	CALCIUM	MULTI-VITAMIN	MCT OIL	ZINC	SPIRULINA
1326	1250	1260	1492	240	170	425

## REACHING THE UNREACHED

### PROGRAM OUTCOME

INDICATORS	FIGURES
Total Health Camps Organised	126
Total Camp Footfall	3060
Average Footfall per camp	24
No of malnutrition cases managed	Total - 1256 SAM - 529 MAM - 727
SAM Incidence registered	Badami - 125 Bilagi - 52
SAM Improved (weight for age)	115
Stunting (height-for-age)	Badami - Decreased from 96.46% to 93.33% in 6 months Bilagi - Decreased from 97.10% to 93.84% in 6 months
Wasting (weight-for-height)	Badami - Decreased from 58.40% to 46.66% in 6 months Bilagi - Decreased from 65.22% to 56.92% in 6 months
Upward growth trend in SAM (a/c WHO growth chart- weight for age)	Badami -79.17% Bilagi - 83.91%
Average period taken in SAM Improvement (Age-group wise)	06 - 24 months age group - 5 months 25 - 36 months age group - 13 months 37 - 60 months age group - 16 months
Quality (SAM Cure Rate)	Badami - 36% Bilagi - 21.93% (since September 2015)
Geographical Coverage (% of clusters covered every month)	Badami - 36% Bilagi - 100%
Continuity (Children below 5 in SAM grade who did not default from SAM treatment)	Badami - 48.67% Bilagi - 60.80%
Utilization (% of children <5 with SAM who were treated through camps)	Badami - 93.23% Bilagi -100 %
Home visits done	490
Conversion Rate (adherence for subsequent health camps of the total home visits done for absentees)	64%

Please note, the stunting and wasting rate is calculated only for children who has been identified in the SAM category by the Govt., according to their weight-for-age.



### TOWARDS A BRIGHTER FUTURE

*Siddappa: 3.5 years*

3 years 5 months Siddappa is living a healthy life in Haligeri village in Badami Taluk, Bagalkot.

In 2014, Siddappa was first diagnosed with primary symptoms of Congenital Heart Disease in a health camp. The congenital disorder resulted in metabolic loss which further caused secondary malnutrition. Siddappa suffered from fever and breathing problem. His parents who lived on subsistence farming were completely unaware of the primary cause of Siddappa's ill health. His condition deteriorated each passing day. Post intervention, the child was immediately referred to a tertiary care hospital where

he was diagnosed with cyanotic congenital heart disease. This was a life threatening condition which could cause irreversible loss to physical and cognitive development. Siddappa underwent free treatment under Bal Sanjeevani and Vajpayee Arogyashree scheme. The nutritional supplements provided by Biocon Foundation improved the weight of the child and now he attends the Biocon Foundation health check-up camp every month. His parents underwent rigorous counselling by the Foundation health worker. The hand holding provided by the Biocon Foundation has helped improve his quality of life.

### IMPACT EVALUATION

The Centre for Health Market Innovations (CHMI) and Impact Report & Investment Standards (IRIS), have jointly developed a set of health metrics that can help organizations assess the reach and impact of their work. Healthcare metrics are a group of

performance measurement tools with standardized definitions recommended by CHMI and IRIS. Specific performance indicators for our program have been taken from the catalogue of health metrics developed by CHMI & IRIS.

#### KEY PERFORMANCE INDICATORS PREVENTIVE HEALTH METRICS

HEALTH METRIC NAME	NUMBER
Personal Hygiene	15965
Environment Hygiene	12296
Safe and clean drinking water	16050
Diabetes Mellitus and Hypertension	5695
Cervical Cancer	11233
Dengue and Chikungunya	7609
Domestic Violence	617
Gynaecology	140
Key motivators counselled (motivators are people who have received health information from the clinic staff and are periodically visited by CHW to propagate health message in the community)	69605

#### CERVICAL CANCER EDUCATION AND SCREENING

HEALTH METRIC NAME	NUMBER
Number of camps conducted	68
Number of women screened (age > 21 years)	863
Number of women screened (age group 30-49)	501
Number of women counselled	11233
Negative Cytology rate	39.65%
Positive Cytology rate	4.80%
Rate of reproductive infections	10%
Follow up (Complete) rate for positive cytology	65.63%
Follow up (in process) rate for positive cytology	28.13%
Lost follow up rate for positive cytology	6.24%

#### ORAL CANCER SCREENING

HEALTH METRIC NAME	NUMBER
Number of patients screened (Community setting + workplace setting)	8540
Number of patients treated	370
Individuals reached through Oral Health Awareness and Treatment Camps	13627
Number of patients treated in Detal Camp	1212

#### DIABETES MELLITUS HYPERTENSION

HEALTH METRIC NAME	NUMBER
Total patient footfall at specialist camps	6046
Patients counselled/educated in the camps on diet and changing lifestyle	5695





#### MALNUTRITION

HEALTH METRIC NAME	NUMBER
Total health camps organized	126
Total camp footfall	3060
Total number of malnutrition cases managed	1256
Percentage of SAM children who showed upward growth trend in Badami	79.17%
Percentage of SAM children who showed upward growth trend in Bilagi	83.91%
Utilization (% of SAM children under 5 who were treated through camps) in Badami	93.23%
Utilization (% of SAM children under 5 who were treated through camps) in Bilagi	100%
Home visits done	490
Conversion rate (adherence for subsequent health camps of total home visits done for absentees)	64%

#### ELAJ CLINIC METRICS

HEALTH METRIC NAME	NUMBER
Number of patients footfall registered in eLAJ EMR*	11639

#### PRIMARY HEALTH METRICS

HEALTH METRIC NAME	NUMBER
Individual case files registered at the clinics	18392
Percentage of new case files	34%
Percentage of infectious diseases reported in the clinics	39%
Percentage of NCD cases reported in the clinics	29%
Percentage of Orthopaedics/ Trauma cases in the clinics	7%
Percentage of Gynaecological/ANC cases in the clinics	9%
Percentage of patients according to BMI	
Overweight	57%
Normal	26%
Underweight	17%



# Education

### CHINNARA GANITHA

Education holds the key to progress. India has made remarkable stride towards ensuring education for all. While access is now close to universal, the quality of education remains a major challenge.

The ASER report indicates, a growing proportion of standard II children do not know numbers 1-9 as they do not learn in standard I, and increasing number of children in standard III do not recognise numbers till 100. Strong focus is needed in Standard I & II to ensure that basic skills are built in these early years. The report further shows 25.3% of class III, 40.2% of class IV and 50.5% of class V children in rural India are unable to do subtraction and close to half of all children finish eight years of schooling but still lag behind the basic skills of arithmetic. Without basic skills in place, it is difficult for children to cope with grade level content. Therefore teaching from grade level text books leave many children behind.

Biocon Foundation has addressed this problem by developing a mathematics work book called Chinnara Ganitha. This book is developed in collaboration with Mac Millan Publication and distributed in 1200 govern-

ment schools across 8 districts in Karnataka. The books are designed for student from standard I to VII, to improve the fundamental concepts in Mathematics.

The book is widely utilized in the schools and largely appreciated across geographies. Biocon Foundation has introduced a special section in the book which has teaching learning material. Teacher trainings are introduced time to time.

#### EMPLOYEE ENGAGEMENT AND SOCIAL RESPONSIBILITY

Social responsibility has been an integral part of Biocon since inception and employees in Biocon have been encouraged to actively participate in the CSR activities. In FY16, Biocon Foundation in collaboration with BioWIN initiated an employee engagement program where employees would dedicate 1 hour every week to teach Mathematics to students in nearby government schools. This brought a momentum among employees to contribute in a meaningful way and encouraged students to improve their mathematical skills.

	TALUK	DISTRICT	NO OF SCHOOLS	BOOKS DISTRIBUTED CLASS WISE							TOTAL
				1	2	3	4	5	6	7	
1	B.Rural	Anekal	257	2853	2806	2977	2803	2942	2537	2347	19265
2		Hoskote - Kalkunte	16	111	144	129	146	147	170	182	1029
3	CBPura	CBPura	248	1666	1684	1787	1796	1911	1508	1560	11912
4	Uttar Kannada	Haliyal / Dandeli (127+32)	159	3350	3600	3425	3175	3425	3400	3350	23725
5		Joida	153	697	715	634	749	683	629	579	4686
6		Coorg	124	1221	1342	1284	1392	1322	1294	1357	9212
7	Kodagu	Badami	162	3960	4256	3917	4164	4024	3035	3685	27041
8	Bagalkote	Billagi	20	268	303	330	318	359	296	258	2132
9		Kaladgi	18	332	327	315	339	327	290	315	2245
<b>TOTAL</b>			<b>1157</b>	<b>14458</b>	<b>1517</b>	<b>14798</b>	<b>14882</b>	<b>15140</b>	<b>13159</b>	<b>13633</b>	<b>4256</b>





**ATA PAATA WADI**

The early years of life are determined by adequate nutrition, healthcare and learning opportunities. This impacts the holistic development of any child. Biocon Foundation has made concentrated efforts to empower children from the economically weaker sections. Aata Pata Wadi is an after school resource centre for children from local government schools in Thitimathi, focussing on computer aided learning, extra-curricular activity, life skills education and English language training for rural children. In 2015, the centre started with 34 students, and eventually had 6 drop outs. The number of girls in these centres are relatively higher than boys. Special focus is given on life skills education, personal hygiene, cleanliness, personal safety, road safety, citizen's rights and duties. Sessions on first aid, fire outburst, gas leakage, and electric shock are included in these sessions. Learning through art and craft is encouraged. Biocon Foundation appoints resource person every year to conduct workshops for the children. Children attending Aata Pata Wadi are taken to local government hospitals for periodic health check-up.

*“Sunil who started Aata Pata Wadi sessions in June 2015 was very quiet and had no confidence at all.*

*After a year with us in Aata Pata Wadi and with our care, inputs and efforts he bounces around and it's hard to keep him quiet. He has learnt to talk about his feelings and believe in his inner strength. He is an active participant in the life skills discussions and in English reading.”*

**- CENTRE EDUCATOR**  
ATA PAATA WADI

The students of Aata Pata Wadi organised Swachh School Campaign and motivated and engaged more students in keeping the classrooms, playground and toilets clean. A medicinal plant awareness walk was organised for the children to identify beneficial plans in the surrounding areas and the children were amazed to know about the medicinal value of the plants around them.



# Community Development





### SWACHH VIDYALAYA - SCHOOL SANITATION PROGRAM

Every child has the right to safe and healthy learning environment. This includes adequate water and sanitation facilities in schools. Sanitation is at the core of human dignity and progress, and access to toilets ensures positive impact on health, wellbeing and productivity. It reduces the dropout rate and encourages regular attendance in schools. UNICEF reports, globally 66% of schools have access to sanitation facility. Estimated sanitation coverage in schools for girls is often lower than the boys. The 2014 ASER report indicates, in India, percentage of schools with usable toilets for boys has increased from 47.2% in 2010 to 65.2% in 2014. Similarly, the percentage of schools with usable girl's toilets have increased from 32.9% in 2010 to 55.7% in 2014.

Swachh Bharat: Swachh Vidyalaya is a national campaign driving "Clean India: Clean Schools". This ensures every school in

India to have water, sanitation and hygiene facilities. The technical component of the program includes availability of functional and well maintained drinking water facility, separate sanitation facility for boys and girls, hand washing units along with soaps. The human development component ensures capacity enhancement of students to improve their health and hygiene.

Keeping in lines with the Swachh Bharat Mission and Swachh Vidyalaya Program, Biocon Foundation constructed 3 sanitation units in government schools in Anekal Taluk near Bangalore and 2 in Badami Taluk in Bagalkot District. The sanitary unit consists of separate block for boys and girls. These are child friendly toilets with urinals placed, as per the height of the child. The sanitary blocks has messages on hand washing and oral health displayed on the walls. Students being the agents of change are educated on proper toilet usage and maintenance.

### GIRLS' HOSTEL

Biocon Foundation in collaboration with Shri V.R.Deshpande Memorial Trust has established a ladies hostel for the economically weaker sections of the society in Haliyal, North Karnataka. The hostel has dormitories with provision for 65 women. The beneficiaries are from remote rural villages of Karnataka. They are the trainees of the skill development program run by Deshpande Memorial Trust. This will also cater to the girl children studying in the school run by the Trust.

### MADURAMMA KALYANI

Lakes and water bodies are the ecological barometer for health and vastly regulate the microclimate of a region. It largely influences the lives of the people living adjacent to it. The rapid growth of human population, increased pollution and irregular waste disposal activities has taken a toll on the wetlands and water bodies in the city and outskirts.

Biocon Foundation restored Maduramma Temple tank in Huskur village in Anekal taluk into a clean water body. This will also be able to harvest rainwater and encourage the residents of Huskur and neighbouring villages to conserve water. This initiative was implemented by Biocon Foundation in collaboration with Government of Karnataka, Maduramma Temple Trust , Huskur Gram Panchayat and ARC Consulting Services.



## BIOCON NAGAR

Biocon Foundation has developed an integrated community development initiative in Mangalgudda in Bagalkot district, Karnataka. The model township consisting of 411 houses with house hold sanitation facilities and solar lights, is home to several families who were displaced by the 2009 floods. A cohesive environment is created in Biocon Nagar which has an Anganwadi for the pre-school children. Under nourished children are monitored by the community health workers and ensures regular growth monitoring. This year, Biocon Foundation constructed a water purification plant at Biocon Nagar. This will improve access to potable water and benefit the villagers to a great extent.

Biocon Foundation has also established a primary health centre in the township to cater to the health needs of villagers residing in Biocon Nagar. This aims to improve access to quality healthcare services to the under-served communities.





# Grant in Aid







This year, Biocon Foundation introduced grant in aid program and collaborated with organizations with similar vision to deliver sustainable and impactful programs across various verticals other than the core intervention areas. The grant in aid program aims to increase Biocon Foundation's footprints in wider geographies across India and co create meaningful engagement to work in the domain of healthcare, education, rural development, water sanitation, safety and women empowerment, art and culture.

**PRAJWALA  
SHELTER HOME FOR WOMEN AT RISK**

Prajwala is an anti-trafficking organization which rescues women and children who are trafficked for prostitution. A disturbing trend is that the age of young children being inducted into the trade is reducing as there is a high demand for young children. Children sold to agents are brought to cities in groups. Prajwala rescues these children and provides shelter for them till they can get other jobs or till they can be sent home to their parents. In the absence of an emergency shelter, the victims languish in the police stations until their court procedures and medical examinations are complete. This usually takes 2-5 days. This transit period makes them completely hostile and resistant to any rehabilitative measures. Biocon Foundation collaborated with Prajwala to build a 50 bedded emergency shelter home that would provide immediate access to emergency and medical care such as de-addiction treatment, treatment for HIV/AIDS, will also provide trauma counselling and

psychosocial support, which will prepare the victim for long term support and other medical services. This emergency shelter home will reduce the dependence of external stakeholders like landlords and support at least 350 victims of sex trafficking and sex crime every year.

**INSTITUTE OF BIOINFORMATICS  
AND BIOTECHNOLOGY  
FACULTY CHAIR**

Advancement in biomarker discovery has led to early detection and diagnosis of tumour in cervical and colorectal cancers and have led to better treatment and survival. For several other cancers like ovarian and prostate cancer, the detection and diagnosis are not reliable. There is still an unmet need to develop strategies to detect the cancer at early stages. Biocon Foundation has supported Institute of Bioinformatics and Biotechnology (IBAB)- an educational and research institute pioneering in the field of bioinformatics and biotechnology for research and innovation.

**BANGALORE SCHOOL OF MUSIC  
MUSIC EDUCATION PROJECT TO  
DISADVANTAGED CHILDREN**

The Bangalore School of Music endeavors to address the cultural relevance and social disparities through the project "Music education Project to Disadvantaged Children". It has developed an integrated model for promoting music among the lesser privileged. Biocon Foundation has approved a grant to The Bangalore School of Music to execute a program on music education for migrant and disadvantaged children, the ones studying in government schools with no music sessions. This is a 3 year project, and Biocon Foundation has approved a grant for the first year. This program will reach out to 300 children in a year.

# Appendix

<b>AIDS</b>	Acquired Immuno Deficiency Syndrome	<b>ICDS</b>	Integrated Child Development Services
<b>ANC</b>	Antenatal Care	<b>IEC</b>	Information Education Communication
<b>ANM</b>	Auxiliary Nurse Midwife	<b>IRIS</b>	Impact Reporting & Investment Standards
<b>ASER</b>	Annual Status of Education Report	<b>JMP</b>	Joint Monitoring Program
<b>ASHA</b>	Accredited Social Health Activist	<b>LEEP</b>	Loop Electrosurgical Excision Procedure
<b>BMI</b>	Body Mass Index	<b>LMIC</b>	Low and Middle-Income Countries
<b>BP</b>	Blood Pressure	<b>MAM</b>	Moderate Acute Malnutrition
<b>BPL</b>	Below Poverty Line	<b>MDG</b>	Millennium Development Goals
<b>CCS</b>	Cervical Cancer Screening	<b>MHEALTH</b>	Mobile Health
<b>CEO</b>	Chief Executive Officer	<b>MPM</b>	Multi Parameter Machine
<b>CHC</b>	Community Health Centre	<b>NCD</b>	Non Communicable Diseases
<b>CHMI</b>	Centre for Health Market Innovations	<b>NFHS</b>	National Family Health Survey
<b>CIN</b>	Cervical Intraepithelial Neoplasia	<b>OCS</b>	Oral Cancer Screening
<b>CSR</b>	Corporate Social Responsibility	<b>PHC</b>	Primary Health Centre
<b>CVD</b>	Cardiovascular Disease	<b>PNC</b>	Prenatal Care
<b>DM</b>	Diabetes Mellitus	<b>PPBS</b>	Postprandial Blood Sugar
<b>DNA</b>	Deoxyribo Nucleic Acid	<b>PPP</b>	Public Private Partnership
<b>EMR</b>	Electronic Medical Record	<b>RBS</b>	Random Blood Sugar
<b>GDP</b>	Gross Domestic Product	<b>RTI</b>	Research Triangle Institute
<b>GOI</b>	Government of India	<b>SAM</b>	Severe Acute Malnutrition
<b>HIV</b>	Human Immunodeficiency Virus	<b>SDG</b>	Sustainable Development Goals
<b>HPV</b>	Human Papillomavirus	<b>SPO2</b>	Saturation of Peripheral Oxygen
<b>HT</b>	Hypertension	<b>UNDP</b>	United Nations Development Program
<b>IARC</b>	International Agency for Research on Cancer	<b>UNICEF</b>	United Nations Children's Emergency Fund
<b>IBE</b>	Intelligent Breast Examination	<b>USFDA</b>	United States Food and Drug Administration
		<b>WHO</b>	World Health Organization



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