Hindustan Unilever: Lifebuoy Soap

"Every time a diarrheal episode takes place, and for a poor family this could be two to six times a year, there are treatment costs, there are medicine costs, there are doctor costs. And so there is a spectrum of savings that is amassed."
—Yuri Jain

Diarrhea is the third-highest cause of death in the world in the category of infectious diseases, behind only acute respiratory infections and AIDS. It accounts for 2.2 million deaths annually.[1] The paradox of diarrheal disease is that the solution is known and inexpensive, but it is difficult to reach and educate the poor about the need to wash their hands with soap. Diarrheal disease is particularly prevalent in the developing world and takes a tremendous toll on the public health, especially among the poor and children.

The paradox of diarrheal disease is that the solution is known and inexpensive, but it is difficult to reach and educate the poor about the need to wash their hands with soap.

India alone accounts for 30 percent of all diarrheal deaths in the world.[2] In fact, in India, 19.2 percent of all children suffer from diarrhea. Access to safe water and sanitation facilities and instruction on better hygiene practices represent relatively simple preventive measures, yet getting the message to the poor was a hurdle that in India took an innovative approach combining the efforts of Hindustan Level Limited (HLL), the largest soap seller in India and a

subsidiary of Unilever, in a public-private partnership for a solution—marketing a common consumer good: soap.

Hands are the main vector of diarrheal pathogens, transferring them from surface to surface and person to person.

Human excreta is the main source of diarrheal pathogens.[3] A lack of adequate sanitation facilities for disposal of excreta and poor hygiene practices results in the diarrheal disease pathogens being carried throughout the human environment. Hands are the main vector of diarrheal pathogens, transferring them from surface to surface and person to person.[4] Hands are used to feed children and prepare food, and in an Indian context, people do not typically use knives and forks.

A lack of sanitation facilities is also widespread throughout India. The majority of India's population is poor, with approximately 83 percent of the population (885 million people) earning a median household income of less than 2,000 rupees ($43) per month.[5] Almost 35 percent of the country is living below the poverty line.[6,7] Hand-washing habits also differ between urban and rural areas. Twenty-six percent of urban Indians (173 million) and 74 percent of rural Indians (492 million) do not wash their hands with soap every day.[8] Although the penetration of soap in Indian households is actually high, with 95 percent of Indian households owning soap, 665 million Indians do not use soap every day. Others use substitute products such as clay, ash, or mud. After visiting the toilet and before and after every meal, 62 percent of the population used water plus ash/mud, 24 percent used water alone, and only 14 percent used soap and water.[9]

Hand-washing habits also differ between urban and rural areas.

If a solution to diarrheal disease is simply washing hands with soap, why is this problem still stunningly pervasive? Historically, this issue has been approached as a public-health issue that could be solved through large infrastructure projects, a timely and costly proposition for governments in developing countries. In addition, three other reasons are ascribed for the persistent incidence of diarrhea.[10] First, the disease fell into the multiple domains of Ministries of Public Health, Water, or Environment. However, no group ever assumed full responsibility for the disease. Second, attention has been focused on "hot" issues such as HIV

that command more public attention, leaving diarrheal disease to be "championed by no one." Third, behavior programs to address diarrheal disease are difficult to design and implement, and are "more complex and problematic than expected."

Changes in consumer beliefs and behavior are especially difficult to engineer in India. First, a deep understanding of the current practices, motivations, and hindrances preventing the use of soap and hand washing is required. This understanding is difficult to obtain in a country dominated by local cultures. India's billion citizens are spread across 25 states and 7 union territories. They speak more than 15 official languages and 325 different dialects, many of which are so different they are only understandable to those in a small geographic area.[11] Second, messages on health and hygiene to create behavior change are difficult to communicate to dispersed populations. Many rural parts of India are "media dark" areas, where citizens have little to no access to mass-media channels.[12] Only 22 percent of the population has a TV, and only 43 percent has a radio.[13] This lack of a mass-communication venue adds complexities and costs to education campaigns, requiring targeted messages distributed through unconventional means.

Changes in consumer beliefs and behavior are especially difficult to engineer in India.

HLL is the largest soap and detergent manufacturer in India, with $2.4 billion in sales, 40 percent of which is from soaps and detergents.[14] In recent years, the CEO's increasing focus on differentiating HLL's products based on a health platform has pushed employees to delve deeper into consumers' needs and behaviors in an effort to find opportunities to make their products become imperative to a family's health and safety. Currently, HLL accounts for 60 percent of all soap sales in India. Other large competitors include Nirma, with 11 percent of the market, Godrej Soaps with 6.2 percent, and Johnson & Johnson with 1.6 percent.[15]

In recent years, the CEO's increasing focus on differentiating HLL's products based on a health platform has pushed employees to delve deeper into consumers' needs and behaviors in an effort to find opportunities to make their products become imperative to a family's health and safety.

Only 5 percent of all soaps come from the small-scale sector. The market is subdivided into several segments, including discount, popular, premium, and super premium, with the discount segment currently the largest segment in India.

HLL sought out initiatives that connect the use of soap to health and hygiene behaviors, including hand washing. In the fall of 2000, as part of its research centered around hand washing, HLL learned of a public-private partnership (PPP) being developed between the World Bank, the Water and Sanitation Program, the London School of Hygiene and Tropical Medicine, UNICEF, USAID, and the Environmental Health Project. The PPP envisioned a large-scale hand-washing intervention that used lessons learned from pilot projects to promote the approach on a global scale. They entitled the initiative the Global Public-Private Partnership for Handwashing with Soap (later to become Health in Your Hands—A Public Private Partnership).

The structure for the program was based on the successful Central American Handwashing Initiative, a public-private partnership that united four private corporations (La Popular, Colgate-Palmolive, Unisola [Unilever], and Punto Rojo), the USAID, and UNICEF.[16] Before the program was initiated, diarrheal disease caused "19 percent of under-five mortalities in Honduras, 23 percent in Nicaragua, 20 percent in El Salvador, and 45 percent in Guatemala." The initiative developed hand-washing education messages that each private partner incorporated into its own marketing campaigns. The hand-washing program resulted in a "30 percent increase in hygienic hand-washing behavior in mothers and an estimated 1,287,000 fewer days of diarrhea per year for children less than five years of age in the two lowest socioeconomic groups."

The initiative developed hand-washing education messages that each private partner incorporated into its own marketing campaigns.

At the same time HLL was trying to expand the soap market through the PPP, one of its oldest and most successful soap products, Lifebuoy, was losing top-line growth at the rate of 15 percent to 20 percent per year, starting in 1999.[17] The Lifebuoy brand team was trying to determine appropriate next steps to revive the ailing brand and began to look toward hand washing. As a means of countering sales declines, the Lifebuoy brand looked to HLL's work on the PPP for new ways to attract and win customers.

The team decided to leverage the historical brand platform of health by tying soap usage to the eradication of family health problems. HLL also linked the data demonstrating how soap can help eliminate common health problems, such as diarrhea, to Lifebuoy, finding that members of families often experience stomach infections (diarrhea), eye infections, and infected sores. As described by Yuri Jain, this results in a significant loss of time and disposable income for an Indian family: "Every time a diarrheal episode takes place, and for a poor family this could be two to six times a year, there are treatment costs, there are medicine costs, there are doctor costs. And so there is a spectrum of savings that is amassed."[18] The team also changed the target audience from men to entire families, to expand its audience for the health message and to cater to the increased influence of women on household purchases. HLL hoped this revitalized health platform would create relevance for the new Lifebuoy target consumers and reassure existing customers that it was still health soap.

To address the health needs of one billion Indians, the team created a reformulation that was relevant, accessible, and affordable to the mass market. HLL replaced the carbolic smell with a more fragrant smell to better appeal to families and women. The team also changed the manufacturing process from "hard" soap production to milled soap production, a change that made Lifebuoy longer-lasting and produced more lather.[19] Its new positioning was now targeted at the entire family's health.

In addition to these changes, HLL wanted to ensure it could differentiate its product on a health platform. The team decided to add Triclosan, a common antibacterial agent, to strengthen the antibacterial power of the soap. In Europe and the United States, Triclosan has been the center of the antibacterial controversy. Dr. Laura McMurray at Tufts University School of Medicine found evidence that bacteria could develop resistance to Triclosan and propel the creation of more dangerous forms of bacteria.[20] Despite these criticisms, HLL believed the use of an antibacterial agent was critical in producing the health impact of eradicating and preventing germ regrowth. They named the ingredient Active-B as a cue to the consumer that Lifebuoy provided additional health benefits over other soaps.

The team also had to ensure Lifebuoy was still affordable for its consumers. HLL Chairman Manvinder Singh Banga explained: "Lifebuoy is priced to be affordable to the masses.... Very often in business you find that people do cost-plus pricing. They figure out what their cost is, and

then they add a margin and figure that's their selling price. What we have learned is that when you deal with mass markets, you can't work like that. You have to start by saying I'm going to offer this benefit; let's say it's germ kill. Let's say it's Lifebuoy. You have to work out what people are going to pay. That's my price. Now what's my target margin? And that gives you your target cost—or a challenge cost. Then you have to create a business model that delivers that challenge cost."[21]

As a starting place, the Indian state of Kerala was chosen for the pilot program. Despite higher levels of education and sanitation access, research studies in Kerala found that only 42 percent of mothers used soap after using the toilet, 25 percent used soap after cleaning up a child, 11 percent used soap before eating, and 10 percent used soap before preparing food. The Kerala results also showed those who did not wash with soap were five times more likely to have diarrhea than those who washed with soap.

Based on this data, the PPP designed a program that tried to link the hand-washing initiative to life-changing events or times when new behaviors are most likely to be adopted (such as the arrival of a new baby or vaccination).[22] The complete program was to include four main pieces: a direct-contact campaign, a mass-media campaign, evaluation, and communications development. The first piece was a direct-contact program for women when they visited health or social service institutions. The PPP also designed a direct-contact program in schools, consisting of four health hygiene education days per year and the creation of a mandatory lunchtime hand-washing program for children ages 6 to 11. Finally, the plan included a mass-media campaign.

Calculations for Kerala suggested that through this program, "Seventy percent of households would be reached 43 times a year via mass media, and 35 percent of households would be reached 9 times a year through the direct-contact program."[23] The initial cost estimate for Kerala was a little more than $10 million spread over three years to cover the whole state. Per-person costs were estimated to be $.10 per year.[24] Program administrators estimated that savings in health-care costs would cover total program costs after two years.

The Indian government agreed to fund the mass-media campaign, while the Kerala government and UNICEF agreed to pay for the direct contact program.[25] The World Health Organization took charge of the evaluation function, and the private sector agreed to fund the communications research and message development. This allocation of

costs among partners allowed each party to achieve a larger objective while only bearing a portion of the costs each year. The private sector committed to take on one-third of total program costs. These costs were further divided among all participating companies (primarily HLL, P&G, and Colgate-Palmolive). HLL agreed to bear the majority of the private-sector costs because it is the largest player in the market. However, this funding model might change. In total, HLL planned to contribute almost $776,000 per year (15 percent of total program costs) or $.027 per head per year.[26]

For HLL, it was an opportunity to stimulate demand for soap through education campaigns. The health sector and development agencies sought to leverage additional resources and expertise in designing and implementing education campaigns. The government sought to reduce costs and gain professional communication skills and resources in tackling the general health issues associated with diarrheal disease.

For HLL, it was an opportunity to stimulate demand for soap through education campaigns. The health sector and development agencies sought to leverage additional resources and expertise in designing and implementing education campaigns. The government sought to reduce costs and gain professional communication skills and resources in tackling the general health issues associated with diarrheal disease.

Program design and implementation plans progressed until the spring of 2002, when nonprofit groups and political opponents started speaking out against the initiative in Kerala. Environmental and antiglobalization activist Dr. Vedana Shiva, director of the Research Foundation for Science, Technology, and Natural Resource Policy, wrote, "Kerala has the highest access to safe water, highest knowledge of prevention of diarrhea because of high female literacy and local health practices such as the use of jeera water and high use of fluids during diarrhea. The World Bank project is an insult to Kerala's knowledge regarding health and hygiene. It is in fact Kerala from where cleanliness and hygiene should be exported to the rest of the world. People of Kerala do not need a World Bank loan for being taught cleanliness."[27]

Others accused the Kerala government of side-stepping the real problem: proper toilets and sanitation facilities.[28] This opposition soon spread to politicians such as Mr. V.S. Achuthanandan, leader of the opposition in the state assembly, who began speaking out against the initiative.[29] The criticism generated by adverse press began to hinder the PPP's efforts. The World Bank asked the government of Kerala to respond to the criticism, but the state refused. Meanwhile, the state cabinet had not yet approved the proposal, bringing the initiative to a standstill. Final negotiations for the effort are under way, but as an alternative, the PPP has downsized the initiative from $10 million over three years to $2 million for one year[30] and begun to discuss options of moving the initiative to other states in India.[31]

Moving forward with the downsized pilot, the PPP hired the Indian Market Research Bureau to conduct studies on hand-washing habits in Kerala. To reach its rural consumers, HLL had to first understand rural behaviors and preferences. HLL researched hygiene and hand-washing practices and the trigger points for using soap. HLL found that while attention to cleanliness has been increasing over time, most customers still associate cleanliness with the absence of dirt as opposed to the eradication of bacteria. For example, focus group and observational interview participants in rural areas often described their hands as being dirty if they were sticky, oily, discolored, or smelled badly. However, if their hands looked and felt clean, consumers considered their hands to be clean. Through this research, HLL determined the trigger for a consumer to wash his or her hands was to remove unpleasant contaminants, not to kill germs that cause infections. They also found this perception of "visual clean is safe clean" leads to infrequent hand washing and limited use of soap.

Focus group research showed similar results in that only 5 of 13 people washed their hands before eating, and only 10 of 18 washed their hands before preparing food.[32] Moreover, if consumers did wash their hands, they most often used water or a proxy product for soap such as mud or ash. The same study found that after handling cow dung, 5 of 7 interviewees rinsed their hands with water, one washed with mud, and one used soap. Consumers were not using soap because they did not believe they were dirty or did not perceive that soap had added benefits over water or other materials. Therefore, HLL decided it would have to educate customers on germs and the consequences of germs on health to increase soap usage as a means of deterring bacterial infection.

HLL teamed up with the rural India outreach arm of Ogilvy & Mather to design a behavior change education campaign focused on uniting the health attributes of Lifebuoy soap with health messages of germ eradication.

HLL teamed up with the rural India outreach arm of Ogilvy & Mather to design a behavior change education campaign focused on uniting the health attributes of Lifebuoy soap with health messages of germ eradication. First, HLL and Ogilvy & Mather brainstormed a way to communicate the negative effects of "invisible" germs in an easily understandable and relevant message to the rural consumer. They also decided to highlight the unique attribute of Lifebuoy soap, Active-B. HLL and Ogilvy & Mather outlined the following key messages:

- Invisible germs are everywhere.
- Germs cause diseases common to rural families, including painful stomach, eye infections, and skin infections.
- Lifebuoy soap with Active-B can protect you from germs.
- Wash your hands with Lifebuoy soap to prevent infection.

HLL titled the program Lifebuoy Swasthya Chetna (Lifebuoy Glowing Health). HLL hoped to change the trigger for washing hands from "visual clean is safe clean" to a social convention of frequent hand washing.

Through strategic selection of villages, Swasthya Chetna has maximized use of limited funds to reach targeted demographics to increase Lifebuoy sales. This not only results in cost-savings and efficiencies, but also might be more effective than an unbranded campaign in creating behavior change. Research shows that use of a brand can help strengthen the health messages being delivered by conveying quality, increasing consumer confidence, and ensuring that messages are delivered in a nonpatronizing or nondemeaning tone.[33] By reaching out to poor populations with strong brands and building habits involving their brands, HLL can create an unshakable hold on consumers' wallets. Conversely, the PPP seeks overall market sales, which might or might not directly benefit HLL.

At the same time, promotion of a branded product can leave the company open to criticism. Therefore, it is important that the campaigns have a solid science-based foundation and are transparent. The Lifebuoy Swasthya Chetna campaign meets this criteria. As explained by Harpreet-Singh Tibbs, "We're not shying away from the fact that Lifebuoy is going to benefit or we're trying to get soap consumption up. We're being upfront about it. But we're also telling them that we're doing something for the good of the community, and it's there for you to see yourself. And that's the reason we're actually going into schools and schools are giving us permission to go in. Because they believe that what we're saying is actually making sense.... I'm trying to develop the category because I believe soaps can reduce diarrheal incidents by 40 percent. And if you believe it's true, there's no reason why you should dispute this program."[34]

A central challenge in "selling" health is the development of successful partnerships between private business and public-health offices and organizations. Both groups need to invest together to create the market for a product. Private organizations contribute competencies around behavior change and delivery of low-cost products, while public organizations provide access to consumers, in effect the channels to deliver messages and extend product reach. Both groups are investing in and addressing a common problem but are evaluated on producing two different results: NGOs and governments are interested in an increased quality of life, while private businesses seek increased earnings.

A central challenge in "selling" health is the development of successful partnerships between private business and public-health offices and organizations.

These different motivations produce an inherent tension in the public-private partnership model. This tension is apparent in the status of the highly publicized Global Handwashing Initiative PPP, where political roadblocks have slowed down the program and thus impacted HLL's plans to deliver health education and expand the soap market. Yet, these lessons have helped HLL to transfer knowledge from the Global Handwashing Initiative PPP to improve its own branded health education program, Swasthya Chetna. Working with more localized partners, in this case village schools, HLL is rapidly scaling its program throughout rural India. By learning how to build partnerships and work in PPPs, even if toward seemingly different ends, HLL has gained a competitive advantage. HLL can leverage its experience accessing public-health channels to sell products as health solutions, while increasing its market share both in India and abroad.

Endnotes

1. Curtis Valerie, "Health in Your Hands: Lessons from Building Public-Private Partnerships for Washing Hands with Soap," October 2002, globalhandwashing.org/Publications/Lessons_learntPart1.htm.
2. Water and Sanitation Program. "Hand Wash India presentation," www.wsp.org/english/activities/handwashing/vbehal.pdf, April 28, 2003.
3. Curtis, Valerie. Op. Cit.
4. Curtis, Valerie. Op. Cit.
5. Water and Sanitation Program. Op. Cit.
6. The World Bank. *India: Achievements and Challenges in Reducing Poverty*. Washington, D.C., June 1997.
7. This World Bank study defines someone living below the poverty line as anyone with a per capita monthly expenditure lower than 49 rupees (rural) and 57 rupees (urban) at 1973–1974 all-India prices. This corresponds to a per-capita expenditure sufficient to provide basic nonfood items and a caloric intake of 2,400 calories per day for urban Indians and 2,100 calories per day for Indians.
8. Water and Sanitation Program. Op. Cit.
9. Ibid.
10. Curtis, Valerie. Op. Cit.
11. Kolanad, Gitanjali. *Culture Shock! India, Graphic Arts Center Publishing Agency*. 2001.
12. Water and Sanitation Program. Op. Cit.
13. Gwatkin, Davidson R. et al. "Socioeconomic Difference in Health, Nutrition, and Population in India." HNP/Poverty Thematic Group of the World Bank, May 2000.
14. HLL, Annual Report, 2001. All figures have been converted from rupees to U.S. dollars based upon an exchange rate where $1 is equal to 46 rupees.
15. India InfoLine, www.indiainfoline.com/comp/vade/mr02.html, March 20, 2003.
16. "Public-Private Partnerships: Mobilizing Resources to Achieve Public Health Goals the Central American Handwashing Initiative Points the Way." globalhandwashing.org/Publications/BASICS.htm#private, April 28, 2003.
17. Interview with Aasif Maalbari, March 26, 2003.
18. Interview with Yuri Jain, HLL, March 26, 2003.
19. Interview with Gurpreet Kohil, HLL, March 27, 2003.
20. Fox, Maggie. "Common disinfectant could breed superbugs." August 19, 1998, www.nutriteam.com/triclo.htm, April 24, 2003.
21. Interview with HLL Chairman Manvinder Singh Banga, HLL, March 29, 2003.

22. "Clean Hands, Clean State. Kerala 'handwash with soap' program." January 2002. www.wsp.org/english/activities/handwashing/kerala.pdf, April 28, 2003.

23. Curtis, Valerie. Op. Cit.

24. Ibid.

25. Water and Sanitation Program. Op. Cit.

26. This figure is calculated by dividing total project costs of $10.48 million by three years to get an annual cost per year of $3.49 million. This figure is then divided by three to ascertain private-sector costs. The resulting $1.16 million is then multiplied by two-thirds to get an estimated annual cost per year for HLL of $776,000. The original $10.48 million figure is from the Handwash India presentation, www.wsp.org/english/activities/handwashing/vbehal.pdf, April 28, 2003.

27. Shiva, Vandana. "Saving lives or destroying lives? World Bank sells synthetic soap & cleanliness to Kerala: the land of health and hygiene." *AgBioIndia*, September 23, 2002.

28. Devinder, Sharma. "So(a)ps for Unilever." Indeconomist. October 30, 2002, www.indeconomist.com/301002_health.html, April 24, 2003.

29. Kurian, Vinson. "'Hand wash' campaign in Kerala raises a stink." Business Line. November 6, 2002.

30. London School of Tropical Medicine and Hygiene. "Health in Your Hands PPP-HW. LSHTM Progress Report. August 26, 2002–June 30, 2003." www.globalhandwashing.org/Globalpercent20activities/Attachments/lshtmreportyear2.pdf, December 10, 2003.

31. "Meeting on Public-Private Partnership Initiative to Promote Handwashing with Soap, November 25-26, 2002," Washington DC, global handwashing.org/Globalpercent20activities/Attachments/PPPHWpercent20Meetingpercent20Reportpercent2011-25,26-02.doc, April 28, 2003.

32. Probe Quality Research. "Project Glove: A Triggers and Barriers Study on Handwash Habits." Prepared for HLL. Not dated.

33. Harvey, P. *Let Every Child Be Wanted: How Social Marketing Is Revolutionizing Contraceptive Use Around the World.* Westport: Greenwood Publishing Group, 1999.

34. Interview with Harpreet-Singh Tibbs, HLL, March 26, 2003.

This case study was written by Mindy Murch and Kate Reeder under the supervision of Professor C.K. Prahalad. The case study is intended to be a catalyst for discussion and is not intended to illustrate effective or ineffective strategies.

For the update on HLL, see the "Hindustan Unilever Case Updates" section at the conclusion of "Hindustan Unilever: Iodized Salt (Annapurna Salt)."

Hindustan Unilever: Iodized Salt (Annapurna Salt)

Iodine deficiency disorder (IDD) is the world's leading cause of mental disorders, including retardation and lowered IQ. Research indicates that 30 percent of the world's population is at risk of IDD. Well-balanced diets provide the required amount of iodine, making the poor particularly susceptible to this condition. A beggar on the street with a prominent goiter on his neck is one visible sign of IDD. Children living in iodine-deficient areas have an average IQ 13 points less than that of children in iodine-sufficient areas. The most severe form of this disease is hypothyroidism and is prevalent among young children in remote areas where the daily iodine intake is less than 25 micrograms (mcg).[1] Hypothyroidism causes cretinism, gross mental retardation, and short stature. In India, almost 90 percent of the population earns less than $3,000 per year;[2] over 70 million are already afflicted with IDD, and another 200 million are at risk.[3]

Because even the poorest people eat salt, it is globally recognized as the best vehicle for supplementing diets with iodine. However, many still do not receive the required amount of iodine from salt because

- Only about 25 percent of edible salt in India is iodized.
- Many consumers are not educated as to the human body's requirements for iodine, despite the availability of iodized salt in the marketplace.
- Even those who understand the importance of iodine might be reluctant to pay the premium for iodized salt over the cost of noniodized salt.

medical practitioners, school teachers, and so on. A number of tools such as a pictorial story in a flip chart format, a "Glo-germ demonstration," and a quiz with attractive prizes to reinforce the message are used. The "Glo-Germ demonstration" is a unique tool to make unseen germs visible and emphasize the need to use soap to wash hands and kill germs. Each phase of the activity is customized to the needs of the respective group, interactive games for kids and mothers, and such. The various stages reinforce the message, which is crucial to affect awareness and behavior change in favor of hand wash hygiene.

The program involves meeting the local Panchayat bodies—especially Anganwaadi workers—and seeks their help in implementation at the village level. The program was working closely with government bodies such as NRHM and also UNICEF (2008) for Initiatives on Hand Washing programs.

The Indian postal department released a special postal cover on Lifebuoy Swatshya Chetna on the occasion of World Health Day (April 7) in 2006.

The Department of Posts has a long history of honoring great personalities, institutions, and monuments through commemorative postage stamps. A few events are commemorated by the Department of Posts through the issue of a Special Postal Cover. Special Postal Covers are of great importance and philatelic relevance that have emerged as a vehicle to accord symbolic recognition to past and present events and to honor individuals, institutions, and organizations. Lifebuoy is the first and the only brand to receive this honor and recognition in India.

The impact of LBSC is as follows:

- Increase in awareness of germs among the population covered in this campaign from 52 percent to 83 percent.
- Increase in association of germs with disease in the population covered from 35 percent to 57 percent.
- Since 2002, the project has touched 50,676 villages and 120,000 million people. In 2008, LBSC had contacted 15,000 villages in Uttar Pradesh, Madhya Pradesh, Maharashtra, Bihar, and Karnataka.

Jaipur Foot: Prosthetics for the Poor

At age fourteen, Sudha Chandran, an aspiring dancer, lost her right foot and part of her leg in a car accident. Devastated and convinced she would never walk again, let alone dance, she spent several months on crutches. Then one day in 1984, she read about Jaipur Foot.

A prosthetic foot in the United States costs on average $8,000. This cost is far beyond the means of the poor in developing countries,[1] and even many of the poor in the United States.[2] As many as four billion people, in India and the rest of the world, live in poverty on less than two dollars per day. When someone loses a limb, the inability to work is catastrophic, often for a whole family. The Jaipur Foot is tailored specifically to the lifestyles of the poor and costs only about $30—affordable to all, and it is often given away free to many of the handicapped poor who have lost a limb. Here is a working model of a nongovernmental, nonreligious, and nonprofit organization able to financially sustain itself while helping the world's disabled poor.[3]

The Jaipur Foot is tailored specifically to the lifestyles of the poor and costs only about $30—affordable to all, and it is often given away free to many of the handicapped poor who have lost a limb.

There are 10 to 25 million amputees in the world, a figure that grows by approximately 250,000 each year. People in developing countries are particularly susceptible to the loss of lower limbs[4] from disease (70 percent), trauma (22 percent), congenital or birth defects (four percent), and tumors

(four percent). In developing countries with recent war-torn histories, such as Afghanistan, land mines account for a significant number—approximately 300,000 children are severely disabled because of land mines, with an additional 15,000 to 20,000 new victims each year.[5] In Afghanistan alone, there are nearly 10 million land mines.[6] Diseases such as diabetes and even polio are the cause of even more of the amputees.

The Jaipur Foot was first developed in 1968 by Ram Chandra, one of Jaipur city's finest sculptors. Concerned by the inadequacy of performance and the cost of imported artificial limbs, he began work on a rubber foot,[7] which he refined with the help of Dr. P.K. Sethi, an orthopedic surgeon, Dr. S.C. Kasliwal, and Dr. Mahesh Udawat into what became known as the Jaipur Foot. To facilitate the spread of the foot, its creators decided not to patent it. Their society, Bhagwan Mahaveer Viklang Sahayata Samiti (BMVSS), was organized in 1975 to treat amputees and to distribute the product at as low a cost as possible, or for free when necessary.

The Jaipur Foot was designed to simulate normal foot movements and provide a quality solution for the masses that also allowed the poor to continue to earn a livelihood. Aspects specific to the cultural and working needs of the poor included being suitable to activities such as squatting, sitting cross-legged, walking on uneven ground, and barefoot walking. Other constraints the designers had to consider included the following:

- **Poverty**—The cost of fabrication, with the possibility of adjustments and alignments, had to be low (while creating an effective product).
- **Closed economy**—Limited import of foreign materials in India meant the foot had to be fabricated from readily available local materials.
- **Work lifestyle**—Most amputees work hard and long hours in an agricultural economy. Days spent without limbs threaten livelihood and sustenance, which is reason to seek an acceptable prosthesis that could be fitted quickly.
- **Cultural issues**—The everyday lifestyle involved sitting cross-legged, walking barefoot on uneven ground, and squatting.
- **Limited training manpower**—Lack of skilled labor relative to the huge demand for prostheses necessitated a simplified manufacturing process that could be performed with limited training.

The distribution of the Jaipur Foot occurs at BMVSS sites (of which there are seven in India, two in Jaipur alone) and at camps, including camps in 19 countries, including Afghanistan, Bangladesh, Dominican Republic, Honduras, Indonesia, Malawi, Nigeria, Nairobi, Nepal, Panama, Philippines, Papua New Guinea, Rwanda, Somalia, Trinidad, Vietnam, Zimbabwe, and Sudan. At a main site, such as one in Jaipur, a full-time doctor is on staff; other doctors contribute time to ensure the proper prosthetic fit and follow-up. Each foot is fitted by a technician, an artisan who makes the equivalent of $1,200 annually, about twice the per-capita income in India. The actual cost of materials used for an above-the-knee prosthetic foot is about $7.68, which includes the Jaipur Foot itself and the simulated joints for a below-knee limb. The most expensive piece of equipment used in a prosthetic fitting is the vacuum-forming machine used to get an exact replica of the mold of the patient's remaining limb (stump). These run about $4,000 and last from five to seven years.

About 60 patients each day obtain prostheses from Jaipur Foot's main facility in Jaipur, India. Remarkably, unless other medical conditions intervene, each patient is custom fitted with a prosthesis in one day—usually within three hours. The goal is to return the patient to his or her profession and an independent life after the patient's first visit to the clinic. The society's services do not just include a speedy fitting of a prosthesis. The operating process also attends to psychological needs, and there are on-site meals and overnight accommodations for patients at no cost. Free meals and accommodations are also provided for the patient's family members who can therefore provide on-site support and comfort.

BMVSS has laid down extremely simple procedures for reception, admission, measurement taking, manufacturing, fitting, and discharge of patients. Unlike in all other medical centers all over the word, patients are admitted as they arrive without regard to the time of day. In addition, patients are provided boarding and lodging facilities at the centers of BMVSS until they are provided with limbs, calipers, or other aids. In most orthopedic centers around the world, patients must come back several times for a custom fit. This process can take several weeks. Such a system is unsuitable to poor patients who find it extremely difficult, both in physical and financial terms, to come back a second time from long distances. Jaipur Foot is custom fitted on the same day (in fact, in less than four hours). Most significant, the prosthetics,

orthotics, and other aids and appliances are provided totally free of charge to the handicapped. But for this policy, more than 90 percent of the patients would have remained deprived of artificial limbs, calipers, and other aids and appliances. The setting up of patient-oriented value and management systems was an equally important innovation.

BMVSS has ten branches in India. In addition, approximately 60 workshops fabricate or fit the Jaipur Foot in India. The society also has aided the establishment of several centers abroad. Funded by the Indian government and philanthropic groups, BMVSS and similar organizations offer medical care, room, board, and a prosthetic at no cost to the patient. It also has helped launch free clinics in more than a dozen countries.

The determination was made at the outset that the Jaipur Foot prosthesis would be provided at a low cost, or free when necessary, which necessitated a nonprofit framework. The prospect of no (or little) incoming funds for prostheses fitted forced administrators to focus on containing costs. In particular, emphasis was placed on the cost of the materials used to construct the Jaipur Foot, the capital equipment required to fabricate the foot, and the method by which the foot was fitted to a patient to make the prosthesis widely available.

Cost-efficiency is reflected in Jaipur Foot's annual expenses. Jaipur Foot's expense breakout for the 2002 fiscal year underscores the efficiency of expense and underpins the society's effort to serve as many patients as possible given its financial resources. About 90 percent of the company's expenses in the 2002 fiscal year were directly related to the cost of producing and fitting prostheses for the poor. Another 7 percent of the company's expenses went toward other forms of charitable assistance. Only 4 percent of its expenditures went toward administrative and overhead expenses.

The number of limbs fitted every year by Jaipur Foot is about 16,000. Between March 1975, when BMVSS was established, and March 2003, the society fitted 236,717 limbs in India (and 14,070 others around the world). BMVSS is still finding innovative ways to help the poor. With all of its innovations in technology and management, and understanding the needs of its patients, BMVSS has developed a unique business model. This model spreads the Jaipur Foot technology that allows *rickshaw-wallah* (pedicab operators) amputees to perform their job, farmer amputees to be farmers, and in the case of fourteen-year-old Sudha Chandran, classical Indian dancer, amputees to be classical Indian dancers.

Endnotes

1. http://www.jaipurfoot.org.
2. According to Mark Taylor, from the University of Michigan Prosthetics Department, because of insurance company policies and high costs, only 50 percent of patients in the United States receive the prosthetic medical care they require.
3. Bhagwan Mahaveer Viklang Sahayata Samiti (BMVSS) fabricates and fits approximately 16,000 patients annually with the Jaipur Foot.
4. www.mossresourcenet.org/amputa.htm.
5. U.S. Centers for Disease Control, cited at www.openroads.org.
6. United Nations data.
7. A variation of the Solid Ankle Cushion Heel (SACH) foot developed in 1956 at the Biomechanics Laboratory at the University of California, Berkeley, which had become the most popular prosthetic foot.

This case study was written by Scott Macke, Ruchi Misra, and Ajay Sharma under the supervision of Professor C.K. Prahalad. The case study is intended to be a catalyst for discussion and is not intended to illustrate effective or ineffective strategies.

Jaipur Foot Update

By D.R. Mehta, founder and patron, Bhagwan Mahaveer Viklang Sahayata Samiti (BMVSS), Jaipur

Bhagwan Mahaveer Viklang Sahayata Samiti, the nongovernmental, voluntary society in India for helping the handicapped started in 1975, has expanded its reach. By the end of March 2008, the number of beneficiaries getting artificial limbs, calipers, wheelchairs, hand-paddled tricycles, crutches, and other aids and appliances has been in the millions. Of these, the number of persons getting artificial limbs was more than 3,300,000. Approximately 2,800,000 people got calipers. The other aids and appliances numbered 4,200,000. By the end of March 2009 (the end of the financial year), the total number of beneficiaries was approximately 10,900,000.

Since the first edition of *The Fortune at the Bottom of the Pyramid* BMVSS's position as the world's largest prosthetic provider continues with a further increase in the number of beneficiaries. In the financial year April 2007 to March 2008, the total number of beneficiaries of BMVSS was 66,181, of which the number of beneficiaries provided with artificial limbs was 20,181.

A comparison with the International Committee of Red Cross (ICRC) that runs a program called Special Fund for Disabled validates BMVSS as being the largest providers of aids and appliances to the Bottom of the Pyramid amputees. According to the Report of the International Committee of Red Cross Special Funds for Disabled for the years 2007 and 2008 drawn from the Internet provides the following points:

- In 2007, Special Funds for Disabled provided support for the handicapped in 28 countries through 58 projects in association with nongovernmental organizations.
- In 2007, Special Funds for Disabled contributed to the rehabilitation of approximately 15,000 persons worldwide, including the fitting of 8,970 artificial limbs and 9,752 calipers.
- In 2008 Special Funds for Disabled, the figures of the disabled rehabilitated has not been given, but it is mentioned that SFD was operated in 29 countries through 61 projects in association with nongovernmental organizations.

The first edition of *The Bottom of the Pyramid* mentions that the Jaipur Foot fabricated and fitted by the BMVSS costs less than $30 compared to $8,000 for a comparable prosthesis in the United States. Now, the cost of a Jaipur Foot is $40, while the comparable figures of the U.S. limbs are not known. But, considering the price increase of various raw materials and labor, the price might not be less than $12,000.

Despite the mass customization on such an increased scale, Jaipur Foot continues to be given free of cost to the amputees.

Whereas, at the time of the first edition, Jaipur Foot was in 16 countries, now 22 countries (including India) are covered by BMVSS in Asia, Africa, and Latin America.

BMVSS held camps in 19 countries. This figure has increased to 22 countries.

The number of branches of BMVSS in India was only 10. This number has gone up to 19 now (including two branches in Jaipur, one each in Delhi, Mumbai Chennai, Ahmedabad, Hyderabad, Bangalore, Indore, Patna, Srinagar, and Ambala, and seven more in the State of Rajasthan at Kota, Bikaner, Udaipur, Jodhpur, Pali, Bharatpur, and Ajmer). Further apart from helping other nongovernmental organizations to set up Jaipur centers in various countries, in 2007, BMVSS set up one artificial limb fitting center in Colombia-Madeline as a joint venture. BMVSS also

became a technical partner in two artificial limb fitting centers in Pakistan (Karachi and Islamabad).

BMVSS not only supports the setting up of new artificial limb fitting centers by other organizations to help benefit more handicapped, it also has increased its own centers from 10 in 2002 to 19 by 2008 and was planning to cover all the major states of India within three years of that.

Jaipur Foot seeks constant technical improvement. BMVSS's effort as a social organization is to combine sentiment with science. The philosophy of BMVSS is that poor patients will be helped properly only if the artificial limbs, even though given free of charge, should be constantly made into better and more lasting products. Toward this end, it has established links with world-renowned technology institutions like Stanford University and MIT in the United States and with the Space Research Organization (ISRO)—India's topmost and one of the world's leading scientific institutions. It is also establishing contact with IIT—Madras and Malviya Regional Engineering Deemed University—all for the improvement of existing devices and development of new devices.

Stanford University and BMVSS signed a letter of understanding in the beginning of 2008 for the development of a new knee joint for above knee prosthesis. In highly costly "above knee" prostheses, getting an efficient and cost-effective knee joint is a problem. After detailed computerized studies at Stanford, several visits of experts of Stanford to the center of BMVSS at Jaipur, and feedback from the patients provided by BMVSS, a new four-bar linkage knee joint has been developed. It is simple in design; however, it is very efficient. Field trials of this joint are under way at Jaipur Foot. The feedback up until now is very positive. Yet, the cost of this joint is only $25.

MIT has developed and given BMVSS a different prototype toward a different type of final product.

Further product development includes cooperative work with DOW Chemicals, a world-renowned chemical and polymer company, which is helping by providing better material and technical advice. Approximately 1,000 polyurethane foot pieces based on modified design of ISRO with material support and advice of DOW Chemicals have been put on field trials. The results so far are very positive.

In addition, BMVSS has signed a nonexclusive manufacturing agreement for the manufacture of special wheelchairs of the Whirlwind Wheelchair organization. These are light, sturdy, and safe. They will be exported all over the world.

BMVSS is also getting the hand-paddled tricycles and crutches of the Indian Standard Institute (ISI) certification. ISI joints for calipers are also underway.

In the workshop, special alignment systems have been imported from the United States, UK, and Germany for ensuring proper fit and gait.

Special emphasis has also been placed on training and repeated training of the technical staff, also available to the technicians of the other organizations making the Jaipur Foot, both in India and abroad. Bhagwan Mahaveer Viklang Sahayata Samiti is continuing its effort for its mass customization in India and abroad. Constant ongoing efforts are connecting with some of the best technology institutions in the world to improve the quality and reduce the cost so that the major problem of affordability of the standard products, in the disability segment of the health sector, is addressed even more effectively. The objective is "Jaipur Foot—that all may walk." On the other hand, the patient-centric value system and humane management continues unabated. All these efforts and arrangements are ultimately for the goal: mobility and dignity.

Aravind Eye Care: The Most Precious Gift

For an estimated 45 million people worldwide, and nine million in India, the precious gift of sight has been snatched away, most often quite needlessly. One man, seized with a passion to eradicate needless blindness, decided to do something about it.

In 1976, Padmashree Dr. G. Venkataswamy, popularly referred to as Dr. V, retired from the Government Medical College, Madurai, as the head of the Department of Ophthalmology. Rather than settling for a quiet retired life, Dr. V was determined to continue the work he was doing at the Government Medical College, especially organizing rural eye camps to check sight, prescribe needed corrective glasses, do cataract and other surgeries as needed, and advise corrective and preventive measures: in short, provide quality eye care. This was to be provided to the poor and the rich alike. His vision was simple yet grand: Eradicate needless blindness at least in Tamil Nadu, his home state, if not in the entire nation of India.

His vision was simple yet grand: Eradicate needless blindness at least in Tamil Nadu, his home state, if not in the entire nation of India.

Dr. V. started a modest hospital with his personal savings and with partial government support[1] for cataract surgeries done on poor patients from eye camps. From the beginning, a policy was put in place—there would be paying as well as free patients. The paying patients would be charged only moderately and not more than comparable hospitals in the city charged. There were to be no "five-star" customers to cross-subsidize

the poor patients. Dr. V was certain that high productivity and volumes were necessary if the hospital were to be viable and generate a surplus to provide expansion funds.

Indeed, the hospital generated a surplus from the beginning, and using such surplus it was possible to open a 30-bed hospital within a year, in 1977. A 70-bed hospital meant exclusively for free patients was built in 1978. The existing paying hospital building was opened in 1981, with 250 beds and 80,000 square feet of space over five floors. The initial focus was on cataract surgery, but other specialties such as retina, cornea, glaucoma, pediatric ophthalmology, neuro-ophthalmology, uvea, low vision, and orbit were gradually added. No compromises were ever made on the equipment; they were of the best quality, and many were imported. However, the rooms (including those of doctors), waiting halls, and examination rooms were utilitarian. In 1984, a new 350-bed free hospital was opened to cater exclusively to free patients in Madurai. In stages, the number of beds increased to the present 1,468 beds (1,200 free and 268 paying) in the hospitals in Madurai.

The initial focus was on cataract surgery, but other specialties such as retina, cornea, glaucoma, pediatric ophthalmology, neuro-ophthalmology, uvea, low vision, and orbit were gradually added.

In addition, other hospitals in other towns in Tamil Nadu were being opened. In 1985, a 100-bed hospital at Theni, a small town 80 kilometers west of Madurai, was opened, mainly to cater to additional eye camp patients. A hospital with 400 beds was opened at Tirunelveli, a town 160 kilometers south of Madurai, in 1988. In 1997, an 874-bed hospital was opened in Coimbatore, the second-largest city of Tamil Nadu, to cater to the needs of the population in that area. In 2003, a 750-bed hospital was opened in Pondicherry (a Union Territory but within the geographical area of Tamil Nadu) to cater to the people living in northern Tamil Nadu. In total, the five Aravind Eye Hospitals (AEH) had 3,649 beds, consisting of 2,850 free and 799 paying beds.

Though the initial focus was on building hospitals and reaching out to the poor to do cataract surgeries, it was soon clear to Dr. V that to reach their goal of eradicating needless blindness, several other activities had to be put in place. Thus, over the years, these activities were added, and Aravind Eye Hospitals evolved into the Aravind Eye Care System,

with its many divisions: Aurolab, the manufacturing facility set up primarily for manufacturing intraocular lenses; a training center named Lions Aravind Institute of Community Ophthalmology (LAICO); a center for ophthalmic research named Aravind Medical Research Foundation; a research center for women and children named Aravind Centre for Women, Children and Community Health; and an international eye bank named the Rotary Aravind International Eye Bank. All the activities of these divisions relate to the core mission of eradicating needless blindness.

Eye camps represented a popular way to reach out to rural communities. These camps were formed in different villages, with prior publicity in the form of posters, loudspeaker announcements from vehicles, and pamphlets. Charitable trusts or individuals sponsored the eye camps and contributed to the publicity necessary to get people to the camps. The government and institutions such as the World Bank covered the costs of surgery and treatment. The eye camp checkups and subsequent treatment were free for the patients. On the day of an eye camp, patients were examined, and those requiring surgery were advised of such. In some camps, surgeries were done *in situ* in makeshift tents. AEH believed this was neither hygienic nor productive, so it performed the surgeries only in its base hospitals. Follow-up checks and prescriptions for glasses were made in subsequent camps or during patients' visits to hospitals.

Eye camps represented a popular way to reach out to rural communities.

The cost (for a sponsor) of an eye camp varies with the nature of the camp. A "small" camp with 300 outpatients (leading to about 60 patients for surgery) costs about 6,700 rupees, whereas a large camp, with 1,000 outpatients and 200 surgeries, can cost up to 42,500 rupees. Finding sponsors is not a problem. Generally, local NGOs, Lions and Rotary clubs, local industrialists, and businessmen and philanthropists sponsor the camps. Sponsors also cover publicity expenses (posters, pamphlets, banners, megaphone announcements from vehicles, and so on) and expenses related to the organization of the camps (usually in a school or public place).

Other community outreach programs at eye camps include a diabetic retinopathy management project that screens nearly 12,000 people per year, a community-based rehabilitation project supported by Sight

Savers International that is aimed at rehabilitating incurably blind persons through community-based support, and an eye screening of school children that helps train teachers to detect eye defects so corrective measures can be taken early. (In 2002, for instance, 68,528 children in 80 schools were screened, and 3,075 children were given glasses to correct refractive errors.) The Aravind Medical Research Foundation coordinates ongoing research, such as clinical, population-based studies and social and health systems research conducted using the data readily available in the hospitals and the community outreach programs.

Despite having a majority of patients as free patients, the Aravind Eye Care System has always been financially self-supporting. Even from the beginning, it did not depend on government grants or donations (except for the support given by the government toward eye camp patients), and until recently it had not applied for any other government grants for service delivery. Dr. V, now in his 80s, stresses the point that not only is the Aravind Eye Care System self-sufficient in terms of operational income and expenditure, but it also takes care of capital expenditure for all expansion and new units. Said Dr. V: "You management people will tell me, why don't you go to the banks, take loans, and grow faster? Cost of debt is low. But we, as a policy, will not go to the banks for loans, since it will compromise our freedom." Each new hospital is not built until enough surplus has accumulated.

Despite having a majority of patients as free patients, the Aravind Eye Care System has always been financially self-supporting.

Aravind Eye Care System's purchase of the best equipment available includes an IT system that tracks all patients, regulates workloads, and closely monitors postoperative complication rates. The contrasting utilitarian rooms for doctors and staff confirm that the emphasis is placed on quality care for patients. Doctors and staff work longer and harder than in other health-care programs, in large part driven by the spirit of Dr. V's original commitment. The dedication of the earliest doctors and staff of the system extends itself with training and recruitment programs, among which is the Aravind Eye Hospital (AEH) & Post Graduate Institute of Ophthalmology, initiated in 1982, which had admitted around 30 resident doctors as of 2003. All admissions are based strictly on merit, and no admission or capitation fee are collected; the going rate in 2003 at other private teaching hospitals was about 1.5 to 2 million rupees.

Doctors are crucial at AEH, and most were recruited as residents. A doctor explained, "We do commit ourselves totally to the cause of eradication of avoidable blindness. That means we have to do a certain number of surgeries every day. (Each doctor does about 2,600 surgeries per year; the all-India average is about 400.) We have a unique culture based on service. All the doctors speak softly to patients and nurses. No shouting here. If a doctor behaves in an unacceptable manner, word goes around the hospital in no time, and the doctor will be in trouble. We believe in mutual respect as a core value." The system also recruits and trains its own ophthalmic assistants (900 on staff each year, and 99 percent of those trained stay in the system). Nurses, like the doctors, are there because they want to be. As one nurse said, "I work more than the government hospital nurses do; I get paid a little less or at par with them, but I get much more respect in the society. When I go in the bus, someone will recognize that I work in AEH and offer me a seat or be nice to me. I really feel happy about it."

Each doctor does about 2,600 surgeries per year; the all-India average is about 400.

The staff strength of the Aravind Eye Hospital, Madurai, as of February 2003, was 762. For about 113 doctors, there were 307 nurses, 38 counselors, and 304 other staff. The pattern of staffing in other units is broadly similar.

"When I go in the bus, someone will recognize that I work in AEH and offer me a seat or be nice to me. I really feel happy about it."

The driving culture of the Aravind Eye Care System is that of giving as much time and effort as they can toward the organizational mission of reducing needless blindness. Dr. V's leadership style is that of "leading by doing." Dr. V and other top staff pick up pieces of paper lying on the hospital floor and hand them over to the next sweeper they see. They do not shout or get upset with the sweeper but by their action demonstrate the value of cleanliness and humility. Dr. V has reason to be pleased with his achievements, but he looks to the future beyond the Aravind Eye Hospitals with the urge to develop other

Dr. V has reason to be pleased with his achievements, but he looks to the future beyond the Aravind Eye Hospitals with the urge to develop other sustainable systems that better utilize doctors and heighten their productivity.

sustainable systems that better utilize doctors and heighten their productivity. Despite all their efforts, only about seven percent of the target population comes to the camps, and he hopes to increase that percentage. Also, he hopes to improve the skills of all doctors who perform eye surgeries, which will reduce recuperation time and increase the subsequent ability of patients to earn a living. Even better postoperative care and counseling are part of his ongoing efforts to ever improve the vision of everyone, while in his small way he spends every day making a difference.

Endnotes

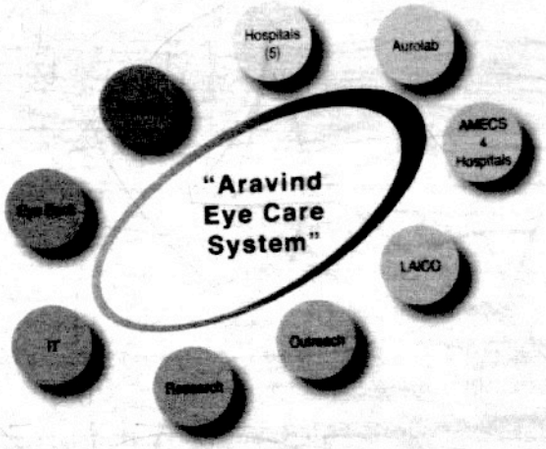
1. "Partial" in the sense that although the government paid an amount for each surgery performed on poor patients from eye camps, this fell quite short of the total cost of the operation.

Compiled by C.K. Prahalad from a more detailed case study prepared by S. Manikutty and Neharika Vohra of the Indian Institute of Management, Ahmedabad, 2003.

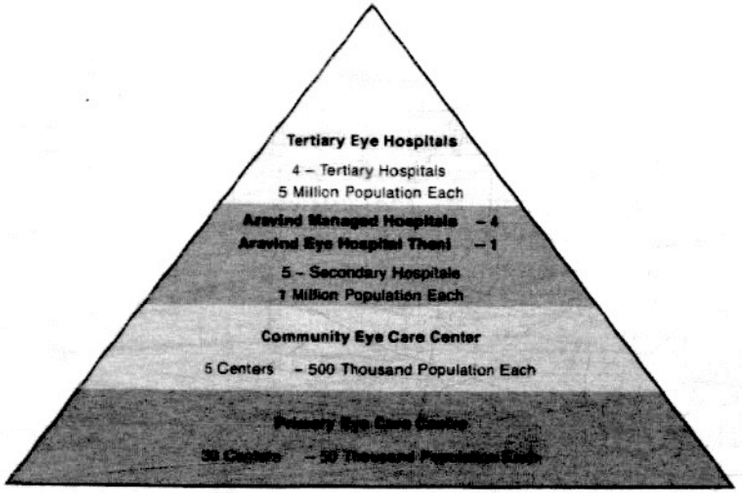
Update: Aravind Eye Care

By R.D. Thulasiraj, Executive Director, Aravind Eye Care System

The Aravind Eye Care System at present is comprised of five hospitals; a manufacturing wing that produces intraocular lens, suture needles, cataract kits, pharmaceuticals, and instruments related to eye care; an institute for training; an institute for research; an international eye bank; four managed care hospitals; community outreach; and well-structured IT systems.



In the financial year 2007 to 2008, the Aravind Eye Care System screened 2,396,100 outpatients and performed 285,745 surgeries, making it the largest eye care provider in the world (in terms of volume). The consortium of nine hospitals, including Aravind Managed Care Hospitals, performed one million eye surgeries each year. The nine hospitals worked with at least 100 hospitals each in their regions to deliver quality and affordable eye care. The Aravind Eye Hospital is now working with 249 hospitals in the country and abroad.



An average day at Aravind Eye Hospital network includes

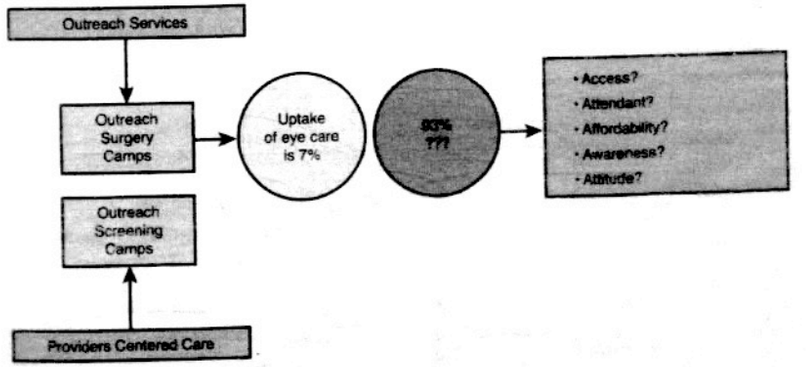
- 6,000 outpatients in hospitals
  - 4 to 5 outreach screening eye camps
  - Examining 1,500 people
  - Transporting 300 patients to the hospital for surgery
  - 850 to 1,000 surgeries
- Classes for 100 Residents/Fellows and 300 technicians and administrators

This makes Aravind the largest provider of eye care services and trainer of ophthalmic personnel in the world.

Aravind is known the world over for its innovative approaches, which have become a replicable model ensuring efficient service delivery.

Community outreach, a cornerstone of Aravind's high-volume work, is one such approach that encourages active involvement of the community in providing eye care services. This approach, complemented with appropriate systems and processes at all levels of the organization, enables it to perform high-volume, high-quality, and affordable eye care services.

But the current reality is as shown in the following figure.



With nearly 70 percent of the Indian population residing in the rural areas, it is natural that a significant proportion of blindness and ocular morbidity is concentrated in these areas. Unfortunately, these are the areas that remain outside the mainstream of eye care services.

Vision Centre with a focus on primary eye care was designed to remove the barrier of access. Each Vision Centre is designed with the capabilities to do comprehensive eye examination and carry out basic intervention, including provision of glasses for refractive errors and rehabilitation for the blind. Each Vision Centre covers a population of 50,000.

- The Vision Centre is linked to the base hospital through low cost tele-connectivity with adequate bandwidth facilitating face-to-face interactions between the patient and the ophthalmologist.
- Persons identified with cataract, squint, diabetic retinopathy, glaucoma, and other ocular problems are referred to the base hospital for further surgical and procedural management. Aravind always focuses in developing sustainable and replicable models/approaches, thus benefiting the general public at large globally. Sustainability of the vision centers will be attained by collecting a nominal fee of Rupees 20 (50 cents) per OP consultation; the sale of spectacles at an affordable cost ranging from Rs 200–300 (U.S. $4–6). In addition to this, other services like blood tests to identify or monitor diabetes will also be provided for a small fee. The vision centers serve as a replicable model to be put up in any part of the country. This initiative has ensured sustained access to basic eye care to the community unlike the approach of screening eye camps that is proven to be cost-intensive and provider-dependent.

Economic Impact for Each Patient to the Hospital (in Rs)	No.	Transport	Other Expenses	Lost Wages	Total
Patient	1	25	50	100	175
Patient attendant	1	25	50	100	175
Total to the Vision Centre		**50**	**100**	**200**	**350**
Patient	1	20	20	50	80
Patient attendant	0.5	5	10	25	40
Total		**25**	**30**	**75**	**130**
Rupees saved	**Rs 220 (roughly Rs 50 lakhs for the 25,000 patients)**				

Impact in Service Delivery in the First 12 Months of Existence	No.	Per 50,000	%	Acceptance Rate
Number of Vision Centres	6	1		
Population covered	399,924	50,000		
20% may have eye care needs	79,985	10,000		
New patients seen	23,213	2,902	29%	
Patients referred for surgery	1,686	211	7%	59%
Other patients referred to hospital	2,080	260	9%	84%
Refractive error prescriptions	4,931	616	21%	92%

Diabetic Retinopathy Screening Through Mobile Van

- Diabetes is a major health problem in industrialized countries and a rapidly emerging problem in urban areas in developing countries. In developed countries, the prevalence of diabetes is approximately 5 percent. The implications for the provision of eye care are evident because everyone with diabetes will eventually develop diabetic retinopathy if they live long.
- Aravind developed a "Mobile Clinic for Advanced Eye Screening" powered by VSAT connectivity with the support of World Diabetes Foundation (WDF) and Indian Space Research Organization (ISRO).
- The main objective of the mobile van screening is to screen diabetic patients through digital imaging with tele-transmission for further diagnosis by the retina consultant.
- This screening unit is definitely helping the diabetic patients as an expert opinion is made available immediately without the need for the patients to travel to the tertiary center or the specialist.
- Experiences from this initiative have shown that only 20 percent of the patients needed further examination by the ophthalmologist, thus avoiding unnecessary travel for the rest of the diabetic patients. At the same time, awareness levels on the impact of diabetes-related eye problems improved.

Mobile Van DR Screening Camp Performance (Mar 07–Apr 08)	
Camps	51
Patients screened	13,062
Diabetics identified	2,449
DR patients identified	532

School Screening Camps

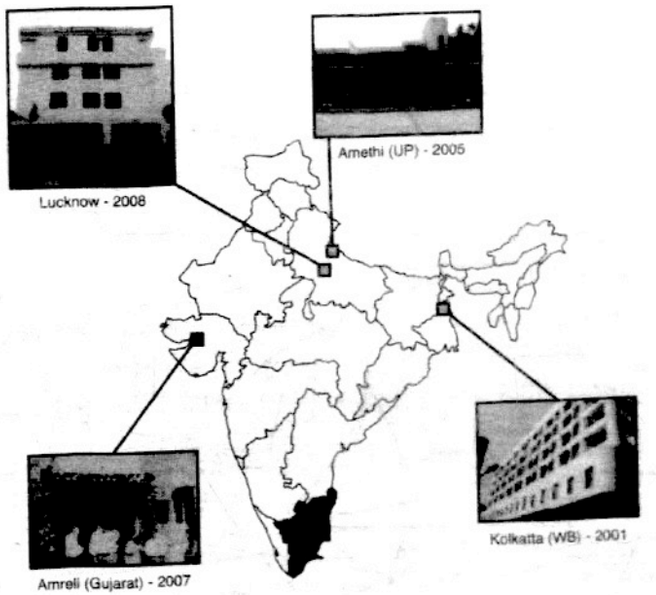
- Children constitute 3 percent of the world's blind population; childhood blindness has not been given its due importance during allocation of resources.
- The major causes for needless blindness—either preventable or avoidable—are refractive errors, lens anomalies (cataract 0.05 percent), and retinopathy of prematurity.
- Screening of school children done mainly to detect and treat refractive error, amblyopia, and rarely other diseases.
- Aravind Eye Care has developed a unique process where the school teachers are given training at the base hospital, and they do the basic screening before the ophthalmic team examines the children with an extended human resource.

- Aravind Eye Care intends to cover special schools for the visually impaired and integrated school in this area.

Scaling up Services by Developing Business Models and Extending to the Northern Part of India

AMECS—Aravind Managed Eye Care Services

- Aravind eye hospitals located in Tamilnadu and Pondicherry contribute to 42 percent of the cataract surgeries performed in the State of Tamilnadu and 5 percent of the overall national performance.
- This scale of operations is made possible by adopting innovative approaches and strategies: standardized systems and processes, innovations in human resources management, compassionate patient-centered care, and backward integration for the supply of critical resources like human resources and consumables.
- Aravind has now developed the approach of Managed Eye Care as a strategic direction to address the basic issues of providing eye care in the underserved regions.
- The goal is to perform 500,000 surgeries annually through 25 eye hospitals by the year 2015.
- This process involves working with local partners who are socially conscious individuals/organizations wanting to invest in eye care.
- While the partner organization invests in capital expenditure and local liaisons for the seamless implementation of the project, Aravind will carry out complete turn-key solutions starting from planning, operationalizing the project, implementation, and monitoring.
- Aravind is currently working with four such like-minded organizations in the states of West Bengal: Madhya Pradesh Birla group, Uttar Pradesh-Rajiv Gandhi Charitable Trust, Gujarat-Sun Pharma Group, and Rajasthan-Narotam Sekhsaria Foundation.
- Aravind has currently opened three hospitals in places like Kolkatta (West Bengal), Amethi (Uttar Pradesh), Lucknow (Uttar Pradesh), and Amreli (Gujarat).



LAICO—Lions Aravind Institute of Community Ophthalmology

- A major part of LAICO's activities centers around enhancing the capacity of existing and new eye hospitals worldwide for comprehensive organizational development through sharing the best practices in eye care. It works in collaboration with international voluntary organizations such as the Lions Clubs International Foundation, Sightsavers International, Christian Blind Mission, International Eye Foundation, Right to Sight, Seva Foundation, ORBIS International, Lavelle Fund for the Blind, and the World Health Organization.
- Consultancy is carried out in phases.
  - Needs assessment visits
  - Vision building workshops
  - Follow-up visits and monitoring followed by a final situation analysis visit
- Until December 2008, LAICO has provided this service to 249 eye hospitals spread across the country and in other developing nations.

- The following management and skills development courses on eye care services are offered at LAICO:
  - Management Priorities in Eye Care Delivery
  - Management Training for Eye Care Program Managers
  - Management Training and Systems Development for Hospital Administrators
  - Community Outreach
  - Fellowship in Eye Hospital Management
  - Training in Eye Hospitals Operation Project Management Training for Eye Care
  - Instrument Maintenance and Training

Aurolab

- On September 30, 2007, Dr. Allen Foster, president, Christian Blind Mission, inaugurated the new facility.
- The new facility is located in a sprawling campus amid the lush grounds of Aurofarm that sets the atmosphere for dedicated work, while the beautiful design of the building inspires employees to do even better than what Aurolab has been doing for the past 16 years.
- Aurolab has commenced operations in the new facility, and each division is expanding its capacity and upgrading its technology to take advantage of the available space.
- The factory is a 110,000 square-foot operating area including the 20,000 square feet of clean rooms. The new facility is constructed as per the international regulations, like Schedule M, USFDA, and UK MHRA.

Dr. G. Venkataswamy Eye Research Institute

From the initial days of performing large-scale operational studies on barriers of service delivery, research at Aravind has grown all areas of research in ophthalmology—basic, clinical, operations research including community outreach and, with the establishment of Aurolab, product development. To integrate all these, the Dr. G. Venkataswamy Eye Research Institute was formed to be the nodal body.

The research activities at Aravind reflect Aravind's commitment to finding new ways to reduce the burden of blindness. The combination of high clinical load, extensive community participation, and access to a large network of eye hospitals provide ideal opportunities for conducting clinical, laboratory, population-based studies, and social and health system research.

Numerous randomized, controlled trials have been made possible by virtue of the high patient load. The integration of the manufacturing arm of the Aravind Eye Care System, the Aurolab, helps the clinicians to work in close tandem with engineers and designers to develop and evaluate new instruments and allied gadgets. Now, with the establishment of Centers of Excellence within Aravind's specialty clinics, along with its continued emphasis on academic rigor and its recent thrust on developing comprehensive service delivery models in areas like Diabetic Retinopathy, Glaucoma, and Pediatric ophthalmology, and its rapid strides in the field of tele-ophthalmology with remote consultation and teleconferencing between hospitals, Aravind is poised as never before to take on new challenges in research.

Training

Aravind Eye Care System with the support of the Indian Space Research Organisation has established a Virtual Academy for teaching and training ophthalmologists, eye hospital managers and administrators, and midlevel ophthalmic personnel through an online system. Initially it will cover the five centers of Aravind, and later the network will be extended to 30 to 40 partner hospitals out of 227 hospitals LAICO is currently working with.

So far, 10 percent of the ophthalmologists from India have undergone some sort of clinical training at Aravind.

Aravind is also a recognized center for MRCO (Member of Royal College of Ophthalmology) and ICO (International Council of

Ophthalmology) examinations. It has been recognized by The Tamilnadu Dr. MGR Medical University to offer postgraduate courses in ophthalmology and postdoctoral programs in clinical ophthalmology.

LAICO (Lions Aravind Institute of Community Ophthalmology) is recognized by the Indian Institute of Technology (IIT) Madras to offer a doctoral program in healthcare and biomedical engineering.

Eye Bank

Rotary Aravind International Eye Bank, started in 1998, is one of the six accredited eye banks in India that has received accreditation from IFETB (International Federation for Eye and Tissue Banks) and is also a lifetime member in the EBAI (Eye Bank Association of India).

IT Services

Aravind Computer Department was started in 1983 with two Apple computers for patient statistics and report generation. A LAN was set up in 1990, and online system patient care management was implemented in March 1991, with 11 computers at Madurai. In Tirunelveli, an online system was implemented in 1995, and in Theni, it was implemented in 1997. Coimbatore and Pondicherry hospitals were started in 1997 and 2001, respectively, with online systems from day one. More recently this has also been deployed in our managed hospitals.

Recent developments include

- Implement "EyesTalk" software in other hospitals for ophthalmologists/physician/eye care providers in any part of the globe to consult with Aravind Eye Hospitals ophthalmologist
- Aravind Virtual University: a facility to conduct classes, discussion, and sharing thoughts over satellite connectivity
- Wireless PDA applications in patient care and facility maintenance
- Aravind Diabetic Retinopathy Screening software, a simple and valid tool to assist in the detection of sight-threatening retinopathy and could supplement dilated fundus examinations (diagnostic procedures that employ the use of mydriatic eye drops to dilate or enlarge the pupil to obtain a better view of the internal surface of the eye) by ophthalmologists on patients to detect diabetic retinopathy
- Provision of primary eye care services to 30 centers across Tamilnadu through Aravind Tele-ophthalmology network.

ICICI: Financial Services for the Poor

The world's poor traditionally are trapped in the dilemma of having neither money nor the means to borrow any. Micro financing to the level of their needs has not been part of the agenda of formal banking, until now. For the poor in India, particularly in rural areas, ICICI Bank, the second-largest banking institution in the country, is beginning to convert the poorest of the poor into customers and, thus, at the same time empower them.

Ms. Pundiselvi, in the village of Nahramalaiphur, for instance, procured a bank loan to lease a small parcel of land to raise chilies for cooking and flowers for decorative purposes. The cost of the land was 10,000 rupees ($200) for the season, and the seeds cost a few thousand rupees. So far, Ms. Pundiselvi has paid back 7,000 rupees ($140), or 70 percent of the loan, from income generated from her land. In the same village, Ms. Saraswathi owned and operated a small grocery shop with a small inventory and limited selection of goods. With a 10,000 rupees ($200) loan, she expanded her existing shop and now enjoys a boost in monthly income. Ms. Saraswathi has never missed a monthly payment and has paid back 6,000 rupees ($120), or 60 percent of her loan. One enterprising woman pooled the money from a loan with other family assets and dug a new well for her village. She charges other farmers and villagers 25 rupees ($.50) per hour to pump water for irrigation purposes. The irrigation system the pump feeds has also increased the yield of her own nearby fields.