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The Indus Hospital: Delivering Free Health Care in Pakistan

"Working in the government medical system, most of my energy was being misdirected, and life is too short. So I said, 'Let's build a hospital where our energies are better utilized.'"
—Dr. Abdul Bari Khan, CEO of Indus Hospital

In May 2011 Dr. Abdul Bari Khan was preparing the upcoming annual budget for The Indus Hospital, the 150-bed hospital he had cofounded. Bari and the other cofounders of Indus Hospital had set out to improve the health of Pakistan's poorest patients. In 2007 the hospital opened with a mission of providing "exceptional care without exception" at no cost.

Four years later, nearly 1,000 patients visited the hospital daily, and the annual operating budget was five times greater. Waiting lists for some elective procedures extended longer than one year. Ample donor funding had supported the hospital's rapid growth and boosted the founders' faith that in the next five years they could build a 750-bed, full-service tertiary hospital that included a medical college, a nursing school, and clinical research all linked to primary care.

Bari was preparing to present next year's budget to the hospital's board of directors and justify a 34% increase in operating expenses. The proposed increase reflected the hospital's need to respond to the increasing patient volume and its goal of improving care quality. As Bari looked into the future, he contemplated how the hospital could maximize its ability to impact patient health given its mission, donor base, and ability to attract qualified medical staff.

Overview of Pakistan

The Islamic Republic of Pakistan, located in South Asia, is bordered on the west by Iran, the north by Afghanistan, the Northeast by China, the east and southeast by India, and the south by the Arabian Sea (see

Sarah Arnquist and Rebecca Weintraub prepared this case for the purposes of classroom discussion rather than to illustrate either effective or ineffective health care delivery practice.

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Exhibit 1 for map of Pakistan). The country is divided into five provinces: the Khyber Pakhtunkhwa, Punjab, Sindh, Baluchistan, and Gilgit Baltistan. Islamabad is the capital city.

History

The modern state of Pakistan developed in 1947, when the Indian subcontinent was partitioned into two nations following independence from British rule. Relations between Pakistan, primarily Muslim, and India, primarily Hindu, remained tense. Disputed ownership over the border areas of Jammu and Kashmir caused two of the three Pakistan-Indian wars after partition. Modern-day Bangladesh was part of Pakistan until 1971, when it seceded with Indian support and became an independent country.[1]

Pakistan's government underwent alternating periods of civilian and military rule, marked by high levels of corruption, inefficiency, and instability.[1] Since partition, no elected civilian government had transferred power through the electoral process to another civilian government. Military regimes, which lasted 10 years on average, forcefully took over each civilian regime, which lasted three years on average.[2] In October 1999 General Pervez Musharraf led a coup that brought Pakistan back under military rule. Musharraf ruled until November 2007, when he relinquished his post and allowed parliamentary elections. A coalition government composed of two dominant political parties formed after the 2008 elections.[1]

In October 2005 a 7.7 magnitude earthquake struck northwest Pakistan, killing more than 73,000 people and affecting another 3.3 million.[3] Five years later, the Indus River overflowed, causing the worst floods in the nation's history; flooding displaced nearly 10% of the population and caused an estimated USD 10 billion in damage.[4]

Demographics

Pakistan is the sixth most populous country in the world. At least 95% of Pakistanis are Muslim (Sunni 75% and Shia 25%). Minority religions include Christianity and Hinduism.[5] The national language is Urdu. Government officials and the elite speak English. Regional languages include Punjabi, Sindhi, Siraiki, and Pashtu.[5] Two-thirds of people live in rural areas, which tend to be dominated by a few wealthy landlords. With 13 million people, Karachi is the largest city, the national economic hub, and the capital of Sindh province.

Table 1: Basic Socioeconomic and Demographic Indicators [*]

INDICATOR		YEAR
UN Human Development Index ranking	125 (out of 169)	2010
Population	184 million	2010
Urban population (%)	36	2010
Drinking water coverage (%)	90	2008
Poverty rate (% living under USD 1 per day)	22.4	2005
Gini index	32.7	2006
GDP per capita in PPP (international dollars)	2,608	2009
GDP per capita (constant 2000 USD)	656	2009
Literacy (men/women/youth; %)	69/40/71	2008

[*] This data was compiled from the following sources: United Nations (UN), UNICEF, World Bank, United Nations Educational, Scientific, and Cultural Organization (UNESCO).

Pakistan is a lower-middle-income country marked by high rates of urban and rural poverty (see **Table 1** for basic demographic statistics). The nation lags behind other South Asian countries in nutrition, literacy, gender equity, and access to health facilities. Poor sanitation and limited access to clean water are common in rural areas. Pakistan has the highest adult illiteracy rate among countries with emerging economies. In 2009 only half of the 19 million primary school-aged children were enrolled in school.[3]

Economy

Pakistan's numerous internal political disputes led to low levels of foreign investment and underdevelopment. In the late 2000s the main economic drivers were services (54.5%), agriculture (20%), and industry (23.6%). Major industries included textiles, food processing, pharmaceuticals, and construction materials.[5] Between 2001 and 2007, Pakistan's economy grew robustly and poverty decreased. Starting in 2007 with the onset of a global economic crisis and in the wake of domestic political disruptions, economic growth slowed. Subsequently, sharp oil and food price increases exacerbated the economic downturn.[4,5]

Zakat

As one of the five pillars of Islam, Muslims with accrued wealth meeting a minimum criterion must donate 2.5% of their annual savings to the poor during the holy month of Ramadhan; this practice is called *Zakat*. Zakat was intended to promote gratitude, redistribute wealth, create social security, and keep money circulating in the economy. According to the Quran, Zakat had to go directly to needy Muslims (in Pakistan, the "needy" were considered those with total wealth of less than about USD 750) or organizations that directly served the poor, often through health care, education, and marriage expenses. The government's Ministry of Zakat withdrew 2.5% from people's savings accounts before Ramadan to distribute,[6,7] although many people emptied their savings accounts beforehand and donated their Zakat directly to an organization they trusted.

Health in Pakistan

In 2010 Pakistan faced a double burden—high rates of infectious diseases and the increasing prevalence of noncommunicable diseases. The country also had high birth rates and infant and maternal mortality rates (see **Table 2** for more health indicators). Less than one-third of pregnant women received regular antenatal care, and 40% gave birth at health facilities.[3] Leading causes of mortality included pneumonia, ischemic heart disease, diarrhea, perinatal conditions, stroke, and tuberculosis. Leading causes of morbidity were hypertension, injuries, eye diseases, and malnutrition (see **Exhibit 2** for top 10 causes of mortality and morbidity).[8] Pakistan lacked universal vaccination coverage and was one of the world's last reservoirs of endemic polio virus.[†,9]

Table 2: Health System and Epidemiologic Indicators[‡]

INDICATOR		YEAR
Average life expectancy at birth (total/female/male)	66.9/66.5/67.2	2009
Maternal mortality ratio (per 100,000 live births)	260	2008
Under-five mortality rate (per 1,000 live births)	87	2009
Infant mortality rate (per 1,000 live births)	70.5	2009

[†] Polio remained endemic in four countries: Afghanistan, India, Pakistan, and Nigeria.
[‡] This data was compiled from the following sources: World Health Organization, UNICEF, UN.

INDICATOR		YEAR
Vaccination rates (% of DTP3 coverage)	73	2008
Undernourished (%)	26	2007
Adult (15–49 years) HIV prevalence %	0.1	2008
HIV antiretroviral therapy coverage (%)	7	2010
Tuberculosis prevalence (per 100,000)	373	2009
DOTS coverage (%)	100	2009
Malaria cases (per 1,000)	0.7	2008
Expenditure on health as % of GDP expenditure	2.61	2009
Government spending on health as % of total government spending	3.6	2009
Government health spending as % of total health spending	32.7	2009
Total health expenditure per capita (international dollar rate)	62.7	2009
Physician density (per 10,000)	8.1	2009
Nursing and midwifery density (per 10,000)	5.6	2009
Number of hospital beds (per 10,000)	6	2009

Mortality and health indicators varied widely by province and region. Child mortality, for example, was twice as high in rural areas as urban areas. More than 25% of children—mostly in rural areas—were chronically malnourished and lacked safe water and household sanitation.[3] In 2007 tuberculosis (TB) was responsible for 5.1% of the total national disease burden, with about 300,000 new cases annually. Pakistan's burden of multi-drug-resistant TB (MDR-TB) ranked sixth-worst in the world.[10]

Health Care Workforce

Pakistan had a health care workforce shortage, especially among nurses. The majority of health services and personnel were located in urban areas. Private traditional healers were the main source of care in rural areas.[11] The government paid physicians about USD 145–USD 212 per month. Doctors working in the private sector could earn up to four times as much. Many worked until the early afternoon in the public sector and supplemented their government salary with private practice.[12] One study estimated that about 20% of new Pakistani medical graduates emigrated annually to seek higher salaries.[13]

There was a lack of standardization and training for paramedical staff such as biomedical engineers and technicians. The government often failed to include these positions in health planning budgets.[14]

Public Health System

Pakistan inherited a centralized health care system from the British. The Ministry of Health (MOH) was responsible for providing free health services, including hospital care, to all citizens.[15] Each new government throughout the twentieth century changed the previous administration's health leadership and policies before plans could be implemented effectively. Mechanisms of accountability eroded with each change in administration, and politics weighed heavily on decisions.[16] This led to wasted resources and poor morale among civil servants described as "institutional malaise."[17,16] Starting in 2001, the government decentralized planning and administrative powers to address criticism about the failing system.[18]

Most of Pakistan's public health care infrastructure was created in the 1970s. Village basic health units were the first level of care and often lacked doctors, were understaffed, and poorly equipped. The next level of care, rural health centers, had 30-member staffs led by two male and one female medical officers to serve 50,000 to 100,000 people. The centers were supposed to be open 24 hours a day, but functionally they operated between three and five hours a day, offering X-ray, basic laboratory tests, and minor surgery facilities. Municipal-level hospitals typically had between 40 and 60 beds and offered secondary services, including obstetrics, pediatrics, and general surgery, to a catchment area of 100,000 to 300,000 people. District hospitals had about 100 beds and offered acute care and emergency services to roughly 1 to 2 million people. Major cities had state-run tertiary teaching hospitals affiliated with universities that offered subspecialty care (see **Exhibits 3a and 3b** for numbers of public and private health care facilities).[14]

Surveys showed less than 30% of people used government health care services, citing frequent health worker absenteeism, poor-quality services, inconvenient locations, and few female employees.[14] Most public-sector health services were supposed to be free, but patients often had to pay user fees and buy their own drugs and supplies.[6] Additionally, there were widespread accusations of corruption—for example, workers demanding bribes from patients, receiving kickbacks from suppliers, and stealing supplies and equipment for resale.[19] A weak judicial system, lack of accountability, low salaries, no performance recognition, and a lack of motivation, particularly among rural workers, contributed to the corruption. Care quality was not monitored systematically.[15] A former Pakistan Medical Association president explained:

> A majority of the basic and rural health units in the country are nonfunctional mainly because of the very low priority status the government accords to public health. In a country where the government is unable to provide clean drinking water, it's difficult to talk of quality health care . . . People from far-flung areas report at tertiary care hospitals in cities with complications which could have been tackled at an early stage if health units were functional in their own localities. It's not a matter of resources, but of misplaced priorities.[20]

While the government devoted 11% of its budget to education and 18% to the military, it allocated less than 4% to health care.[21] The limited investment in health led to severe resource constraints, high reliance on international donor funding, and unpredictable financial flows that impeded long-term planning.[15]

The government operated public health programs, including national immunization campaigns and the Lady Health Worker Program created in 1994, to expand access to health care for women and children in underserved areas. The government trained and paid more than 90,000 lady health workers to provide family planning services and primary care within a catchment area of 1,000 people. The program covered 60% of Pakistan, mostly in the rural areas. Health indicators in covered areas tended to be better than the national average.[22]

Civil Hospital

Public-private partnerships to boost health services were increasingly common throughout Pakistan.[14] Civil Hospital, a 1,900-bed tertiary teaching hospital in central Karachi, for example, relied substantially on private-sector support to care for more than 5,000 patients each day. The 100-year-old crumbling structure had dim, dirty hallways; crowded wards with broken, outdated equipment; and overworked, underpaid staff. Eight units were strikingly clean, organized, and well stocked with modern, functioning equipment, however. The affiliated medical school alumni had raised donations to purchase new equipment, repair broken equipment, top off salaries, and buy devices and drugs for those eight units, which were privately managed. The private investments had led to improved care delivery, decreased corruption, and more efficient use of hospital resources.

The Private Health Sector

Pakistan's primarily fee-for-service private health care sector accounted for at least 70% of health care services in the country.[17] Private services included traditional healers, for-profit clinics, high-tech specialty hospitals, and not-for-profit clinics and hospitals that provided free or discounted care to the poor.[23]

About 82% of private health care was funded through individual out-of-pocket payments. Less than 1% of health care expenses were prepaid with insurance.[9] The poor and wealthy alike relied on the private system for the majority of their health care needs, but these costs often were insurmountable for the poor, pushing them deeper into poverty by forcing them to sell assets or borrow at high interest rates.[23] Because Pakistan had low levels of health insurance, middle-class families also struggled to pay for health care.[6] A few Pakistani NGOs had experimented with small social health insurance programs, but given the magnitude of the financial constraints and political challenges facing Pakistan, little optimism existed for any government-funded universal social insurance program in the near future.[24] The government and major private businesses provided health care for their employees, retirees, and dependents through independent systems of clinics and hospitals.[10]

There was virtually no government oversight or regulation of the fragmented private sector, leaving consumers, many of whom could not read and write, to determine quality themselves. No formal prescriptions were needed to purchase medications, and counterfeit drugs were widespread. Other complaints included overcharging patients and ordering unnecessary tests.[14]

Funding channeled through the Ministry of Zakat and a similar government department called Bait-Ul-Maal accounted for 0.32% of formal health financing in 2008.[23] However, significantly more (there were no official estimates) Zakat given directly from individuals to nonprofit organizations financed the bulk of the country's charity medical care.

Charity Medical Care

At least 1,800 NGOs provided health care services in Pakistan.[14] Zakat and donations from wealthy Pakistanis, who often lived abroad, financed numerous charity hospitals, also called trust hospitals, which provided free or subsidized medical care to poor patients. Like most of the private sector, charity hospitals received minimal government scrutiny regarding quality or pricing. Some charity hospitals abused their preferential tax status and earned high profits.

Typically, charity hospitals provided curative services for acute medical problems for a single medical condition or specialty. With a few exceptions, charity hospitals did not have reputations for providing high-quality, state-of-the-art care. Over time, many charity hospitals closed or began charging patient fees to cover expenses. Reasons for failure included not hiring professional hospital management, departure of the founding champion, or an overreliance on a single financing source. One charity hospital doctor commented, "There are real issues with charity hospitals. It's not as if they are the final answer. They are trying to fill a huge gap that the government should be filling."

Two of Pakistan's most famous and well-regarded charity hospitals were the Shaukat Khanum Memorial Cancer Hospital and Layton Rahmatulla Benevolent Trust (LRBT). Founded in 1994 by a famous cricket player and named for his mother, who had died of cancer, Shaukat Khanum provided free, comprehensive cancer care to both indigent and wealthy patients. By 2011 the Lahore-based hospital was the nation's premier oncology center and had provided about USD 130 million in free cancer treatment. The hospital financed its USD 42 million annual budget through charitable donations and revenue-generating programs, including a medical school, for-profit laboratory services, and fees from wealthy patients who paid the full price for care. Shaukat Khanum saw only those poor patients with a staged cancer diagnosis

and treated only cancers with a good prognosis. Wealthy patients could pay for treatment regardless of the stage of disease.

Founded in 1984, LRBT provided free eye care throughout Pakistan. One in three eye patients in Pakistan received treatment at LRBT's 40 clinics, 14 secondary eye care hospitals, and two tertiary eye hospitals. LRBT became a premier training center for Pakistani ophthalmologists and had performed more than 1.8 million eye surgeries and treated more than 17 million patients.

The Indus Hospital

The Indus Hospital was a nonprofit, private charity hospital that opened in July 2007 to serve a catchment area of about 2.5 million people. The hospital was located in Korangi, a poor and underserved Karachi neighborhood where multigenerational families crammed into small flats stacked unevenly along the unpaved, narrow streets. The five-story, 150-bed Indus Hospital was the tallest building for miles. Indus' 20-acre campus also included a walk-in filter clinic, an open-air TB clinic, a pharmacy, and a nursing school. The hospital ground floor included a reception area; a patient welfare office; a 10-bed emergency department; six outpatient clinic rooms; areas for X-ray, ultrasound, and blood drawing; and a blood bank. The first floor housed four operating theaters, a six-bed intensive care unit (ICU), a six-bed cardiac care unit, a cardiac catheterization lab, and an endoscopy suite. The second floor included a 10-bed dialysis center and a men's inpatient ward. The women's ward and a 26-bed pediatric ward were on the third floor, and the central laboratory, a biosafety level-three lab for highly infectious materials, conference rooms, administrative offices, and the Indus Hospital Research Center occupied the fourth floor.

Background

In the 1980s a group of medical students at Dow Medical College in Karachi formed an organization called the Patients Welfare Association to raise funds for the poor patients at Civil Hospital. When a devastating terrorist bomb blast occurred in Karachi after the Russian invasion of Kabul in 1984, Civil Hospital was unprepared to cope with the catastrophe. In response, a group of young, idealistic Patients Welfare Association members led by Abdul Bari Khan, raised money to refurbish the emergency department and build a blood bank at Civil Hospital. The experience earned the group a glowing public reputation for honesty and the ability to achieve results. It also sparked in the students a lifelong commitment to expand poor patients' access to quality medical care.

Over the next two decades, Bari dedicated his career to building a cardiac surgery department at Civil Hospital. Instead of supplementing his government salary with a private afternoon practice, he raised private money to buy new technology, subsidize salaries, and sponsor cardiac procedures at the public safety-net hospital.

After 20 years and 3,000 bypass surgeries, Bari came to believe that there were two ways to improve health care in Pakistan—fight the government system or create external delivery models of high-quality, efficient care that would prompt people to demand that the government offer the same. Bari had tired of fighting corruption and inefficiencies in government. He called on his Patients Welfare Association colleagues to join him in realizing their youthful dream of running their own full-service, charity care hospital. They had all trained and worked in the United States and United Kingdom and had returned to Pakistan, where they had established successful careers.

"I was very clear from day one that the hospital had to be free," Bari said. "The people we see are the poorest of the poor. They don't have money for transport, let alone to top off their care. I know these patients from my work in the public sector."

Not all the founders initially believed that the hospital could sustain itself long term if it provided free care. After witnessing the outpouring of charity following Pakistan's devastating earthquake in 2005, however, Dr. Zafar Zaidi, Indus Hospital Medical Director and an initial skeptic, became convinced that Pakistani philanthropy could support Bari's vision. All deeply religious, the founders had faith that through their hard work resources would become available. Additionally, they had established broad networks of wealthy Pakistanis willing to donate to their charitable initiatives.

The founders also believed that all patients had a right to high-quality care, regardless of ability to pay, and that donors, in turn, would more eagerly support a charity hospital that offered patients the latest technology and the highest-quality service available in Pakistan. The chairman of the hospital's board of directors, who was also a major donor, wrote in a quarterly hospital newsletter, "In my eyes, it is not enough to help provide health care to the poor. It is essential that this health care is of the same quality that we would want for ourselves and our family. It is indispensible to keep in mind that by giving to the poor, we must add to their dignity and not take it away from them."

Planning and Building

The founders joined forces with a charity hospital that had stalled during construction due to financial and management problems. Bari then turned to his donor network for financial support. After a half-hour meeting, he secured USD 2 million in seed funding from a Pakistani industrialist. Construction began in 2005.

During the construction phase, Zaidi led the design and building of a comprehensive electronic medical information system. Zaidi estimated that buying a prebuilt electronic record system and customizing it would have cost USD 6 million. Instead, his team of software engineers built a custom-designed system for the cost of their time and hardware. The computers linked to a backup power supply that prevented workflow interruptions and data loss during frequent power outages, and remote servers backed up all information. The system architects believed that tracking all the hospital and patient data electronically would give the hospital long-term advantages for efficiencies, quality monitoring, and scalability. Indus also attracted publicity and donor attention for being labeled by the media as "Pakistan's first paperless hospital."

Nearly two years and USD 5 million in renovations later, in July 2007, Indus Hospital treated its first patient. Indus' directors—Bari, Zaidi, and other founding physicians Akhtar Aziz and Muhammad Chinoy—reported to a nine-member board of directors composed largely of Karachi businessmen. The founding physicians worked for free for the first six months. The hospital's initial services reflected the founders' specialties: cardiac, orthopedic, and urological surgery, along with anesthesia. The hospital focused on expensive procedures that patients could not afford out of pocket. The founders did not offer maternal health services, believing the high demand would overwhelm the hospital (see **Exhibit 4** for the hospital's mission and vision statements).

Indus leaders did not create a detailed, written strategic growth plan (see **Exhibit 5** for Indus Hospital timeline). Each year the leaders reviewed their clinical services and discuss whether the services fit their broad vision, if they could attract sufficient funding and staffing, and they had sufficient operational capacity. The hospital added pediatric and adult general surgery and nephrology after recruiting specialists in those areas. With donor funding, the hospital opened a 10-bed dialysis center, recruited a gastrointestinal

specialist, opened an endoscopy suite, and offered ophthalmology services. Other donors offered funding for mental health services, a neurology department, and expensive diagnostic machines, such as CT and PET scanners, but the leaders turned them down, saying the hospital wasn't yet ready for those investments. Bari said, "We want to grow fast to meet the huge needs of the community, but we have to constantly balance our growth with our commitment to high quality."

Patient Services

Patients could be admitted to the hospital in three ways: through the emergency department, by a hospital consultant, or from the outpatient filter clinic. New patients received a unique patient identification number and an electronic medical record. All staff signed into the medical information system with a biometric scan of their hands and looked up returning patients' ID numbers using their address or mobile phone number. Once registered, patients received a white card listing their name, age, and patient ID number. This card became their passport within the hospital.

The first 300 patients to arrive at the filter clinic each day received tokens guaranteeing them an appointment that day. Patients began lining up as early as 5 a.m. to receive tokens. While they waited, clinic staff announced the services the hospital did not offer, so patients needing those services, including neurology, oncology, or obstetrics, would seek care elsewhere. After checking in, some patients had to wait up to six hours to see a doctor.

Filter clinic doctors included young medical officers and pediatricians. They ordered basic diagnostic tests, such as x-rays, blood analysis, or urine cultures, through the computer system. Doctors and nurses made their rounds with mobile computers and entered patient notes, ordered tests, and scheduled appointments directly through the computer system. Lab tests were digitized as well, allowing clinicians to view patients' complete medical history at Indus. Patients needing further examination beyond the filter clinic and more sophisticated tests received follow-up appointments with a hospital consultant. All subsequent patient activity was entered real-time into the system. For example, a patient needing blood tests gave his ID card to the phlebotomist, who called up the patient's electronic record, showing the prescribed tests, on the computer. After drawing blood, the phlebotomist updated the record and sent the bar-coded blood samples to the fourth-floor lab. Lab technicians indicated the time they received the samples and ran the tests in the patient record. As results became available, they were entered automatically into the electronic record. This real-time tracking helped physicians know when to expect results and allowed them to receive urgent results instantly via cell-phone text message. The electronic system eliminated the need for nearly all paper forms, except legal consent forms, surgical checklists, outpatient prescriptions, and patient discharge summaries.

All consultations, investigations, and inpatient treatment were provided at no cost to all patients. Zaidi emphasized that there were "no cash counters in Indus Hospital." Indus did not provide any outpatient medicine. From past experience, the founders believed that patients too often sold or wasted the medicine they received for free. Indus did not assess if and how patients adhered to their medical regimens. Patients had to purchase medications at local drug shops, where the quality was unchecked. One mother of nine who came to the Indus clinic complaining of headaches and fatigue said she spent about USD 14 per week on her blood pressure medication and daily insulin injections for diabetes. She explained, "It's a huge burden, but I have no choice."

Some patients complained about the long waits in the filter clinic, particularly those who had traveled from far away and did not receive an appointment. Patients also complained that Indus did not offer obstetric services, the emergency department was too small, and that when the hospital was full, which was often, patients had to go to another free hospital and wait again. But many other patients reported being

grateful for the care at Indus and pleased that the facilities were clean, the staff was friendly and fair. (see **Exhibit 6** for patient profiles).

Indus leaders believed their commitment to quality care set them apart from other charity hospitals. The chief anesthesiologist had his bypass surgery at Indus, and Bari's mother-in-law had a pacemaker put in there.[§] The hospital recruited volunteers to act as patients, test the system, and report on their experience. Managers spent time on the hospital floors monitoring patient flow and supporting staff to ease bottlenecks and solve problems. Managers empowered front-line staff to provide honest feedback and involved them in the decision-making process.

Tuberculosis Programs

Indus began treating TB patients in 2007. While collecting data about health needs in Korangi, researchers from Interactive Research and Development (IRD), a not-for-profit organization that secured international grants to carry out global health research in Pakistan, noticed the high rates of TB. IRD worked with Indus staff to become one of the National Tuberculosis Program's TB drug distribution centers. In 2008, IRD staff convinced Indus leaders to expand the TB program further to treat patients with MDR-TB, something the government did not treat. Indus raised private money to purchase the expensive second-line drugs[**] for MDR-TB, and leaders traveled to Peru, Turkey, and Geneva to learn about building a MDR-TB program that met the World Health Organization's Green Light Committee[††] standards.

Indus' TB program expanded to include nutritional support with monthly food baskets, transportation funding, and volunteer treatment supporters who visited patients twice daily to monitor medication adherence. In November 2008 Indus became the first and only TB treatment site in Pakistan to receive Green Light Committee approval. This recognition gave Indus access to discounted, quality-assured second-line drugs and attracted domestic and international attention. In 2009, with funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria ("Global Fund"), the National TB Program contracted Indus to be its first official MDR-TB treatment site for about 100 patients. "They essentially made up for their lack of progress by calling us a partner," recalled IRD Executive Director Aamir Khan. Indus and IRD worked with the National TB Program to apply for Global Fund Round 10 financing to expand the TB programs. The Global Fund awarded Pakistan USD 153 million for TB, including USD 136 million specifically for MDR-TB treatment. Indus was slated to receive USD 39 million as a sub-recipient of the MDR-TB funding to develop a network of 11 treatment sites in two provinces for 500 patients by 2015.

To support the expanded TB program, Indus built a high-tech laboratory capable of safely diagnosing MDR-TB and an open-air TB clinic. The clinic incorporated state-of-the-art infection control measures and was located behind the filter clinic. It had its own pharmacy and X-ray machine, so TB patients did not commingle with patients in the main facilities. If TB patients had to be hospitalized, Indus referred them to a government hospital that specialized in TB services (see **Exhibit 7** for a photo and description of the open-air clinic).

Research

In partnership with IRD, Indus leaders created the Indus Hospital Research Center. Public health research was a nascent field in Pakistan, so IRD leveraged international connections to build local research capacity. Indus' electronic records system provided IRD researchers with a valuable database. In 2007 IRD

[§] Family members made generous donations to the hospital following these services in lieu of paying an actual bill.

[**] MDR-TB medicine cost about USD 1,411 per patient per year, and the monthly food baskets cost USD 424 per patient per year.

[††] The Green Light Committee was a multi-institutional health-based partnership established by a World Health Organization working group to promote access to and rational use of concessionally priced drugs for MDR-TB.

secured a two-year, USD 1.3 million research grant on childhood pneumonia that provided funding for pediatrician salaries, patient recruitment, and geospatial community mapping. When the grant ended in 2009, Indus maintained the expanded pediatric services. Furthermore, impressed donors pledged USD 2 million toward a new pediatric wing. "Using research grants to start and sustain clinical services for a couple of years is a model that benefits both Indus and IRD," Khan said. "We've realized that when doing research in poorer communities, being able to link patients to health care services is very valuable."

Through the research partnership, Indus leaders learned about the hospital's surrounding community. IRD mapped local clinics and drug stores. Health care workers visited patients' homes to deliver care and saw their living conditions. Surveys revealed local household demographic information and disease epidemiology.

With this new data and understanding, the founding surgeons gained a deeper appreciation for the importance of primary care and community-based prevention services. In 2009 and 2010 Zaidi, another Indus doctor, and two IRD researchers traveled to the United States for public health training in epidemiology and health care delivery models. "My surgeon's perspective expanded from considering how one hospital could make a difference not just for individual patients but also potentially impact the health of an entire community," Zaidi reflected.

Hospital Staffing

Unable to abandon his commitment to the donors who invested in the cardiac surgery department at Civil Hospital, Bari maintained his position there in the mornings. He arrived at Indus in the afternoon to fulfill his duties as hospital CEO. Bari estimated he worked 18 hours per day, six days per week. "With faith, commitment, and sincerity of purpose, you can achieve anything, but the hard work is always there, whatever the feat it is," he said. Indus leaders fostered a faith-driven culture at the hospital and looked for a similar combination of moral commitment and dedication in new staff. In contrast to government employees, however, Indus employees could not leave early for Friday congregational prayers and had to work on some Muslim holidays.

In fiscal year 2010–2011 Indus employed 566 clinical and administrative staff. Indus' total payroll was about USD 1.86 million.

Initially, Indus paid employees less than the commercial market rate, relying on the hospital's mission to attract staff. By year three, Indus' administrators realized that recruiting and retaining qualified staff was the hospital's main growth-limiting factor.. In June 2010 the hospital hired a consulting firm to survey local health care salaries. After reviewing the findings, Indus raised nearly all staff salaries so that ancillary staff, nurses, and residents' salaries matched the local market rate. General surgeons and internists received close to the market rate (an internist's monthly salary was about USD 1,500). Indus could not match salaries for specialists (an anesthesiologist with cardiac experience earned about USD 2,350 monthly at Indus). To recruit these specialists, Indus looked for people with "an innate desire to help those who cannot help themselves," Zaidi said. Indus also gave physicians the opportunity to supplement their income by participating in research grants and seeing patients in private practice after 5 p.m. All staff paid less than about USD 200 per month, the wage of an ICU nurse, received one free meal from the hospital cafeteria per shift. Other staff could eat for about 40 cents per meal.

Attracted by hospital leadership and its values, Mansoor Khan quit a busy private orthopedic surgery practice to work at Indus.. Mansoor Khan monthy salary at Indus was equivalent to four knee replacements in his private clinic. Some days, after seeing 40 patients at Indus, he felt overwhelmed and discouraged by the immense need. To combat feelings of despondency, he focused on his impact. "If you salvage one

breadwinner," he said, "you look after the welfare of a dozen people. If that person is back to work in three months, you've saved hundreds of problems that come from lack of money."

Indus clinicians saw large volumes of diverse cases in a setting where high-quality care was considered a patient's right. For example, Mansoor Khan said, hospital administrators allowed him to perform a newer, more expensive hip replacement technique, called hip resurfacing, on select younger patients. The newer implant cost four times as much as the old technology, and the procedure was scarcely available in Pakistan, but Mansoor Khan believed the cost was worth it: "If you do a traditional hip replacement in a young person whose joint was destroyed in a car accident or by tuberculosis and they go back to pushing a fruit cart or laying bricks and sleeping on the floor among 20 people and using a toilet in the ground, that joint is only going to last a couple of years." News that a charity hospital performed the procedure shocked the Karachi medical community and made local headlines. Mansoor Khan called this a "halo procedure" because it attracted the attention of current and future donors. He believed Indus' reputation for emphasizing quality and access to newer technologies also attracted trainees. Despite this, Zaidi said, finding quality staff who subscribed to Indus' mission presented an ongoing challenge.

Training Programs

Hospital leaders met with all staff to reinforce the hospital's mission and values. A donor described why he felt this was important: "The philosophy should not remain in the board room. It must trickle down to the all levels. Now, the leaders bring in batches of employees and repeat their philosophy to all the employees. This is not normal in Pakistan—to educate the employees."

Additionally, the hospital developed staff training programs based on internally created standard operating procedures. To ensure reliability and correctness of care delivered, the hospital was working toward developing ways to assess care quality and hold clinicians accountable. Several departments had developed care protocols. For example, the emergency department adopted a standard procedure for responding to chest pain cases, and surgeons completed quality checklists during each operation. These protocols were a starting point for quality and cost controls, a manager said, but the hospital still had much work to do around developing a quality-improvement process.

After reports of poor nursing quality, including negligence and incorrect drug administration, leaders decided that new nursing graduates needed further training and that Indus' had too few nurses working per shift, even though the ratios were in line with those of other Karachi hospitals. In 2010 Indus lowered the hospital's nurse-to-patient ratios to match international quality standards. The hospital also developed strict nursing guidelines and started an internal training program. Indus trained its best nurses to become managers and instructors who then trained and monitored the rest of the nursing staff. New nursing applicants had to pass two assessments before being hired on a conditional basis. Nurses who made it through the initial probation period received ongoing training and specialization based on internally designed teaching modules.

In 2009 Indus received approval from the College of Physicians and Surgeons of Pakistan to train medical residents. The departments of urology, orthopedics, general surgery, anesthesia, and infectious diseases each took on two residents in 2010. The fiscal year 2011–2012 budget called for creating a family medicine residency program. Leaders hoped it would improve the quality of outpatient care and develop a cadre of future primary care doctors. The hospital planned to eventually build a medical school on its campus. Indus' senior leaders wanted to identify rising stars and cultivate in these individuals the hospital philosophy, Bari said. "Sustainability is how you transfer your mission to future leaders," he said. "Our responsibility at Indus is to make a good system and develop future leaders to run it."

Hospital Volume

Administrators could extract hospital activity data from the information system to inform planning and system improvement. Without any formal marketing campaigns, patient volume increased rapidly, particularly in the emergency department and outpatient clinics. In fewer than four years, staff had performed 18,000 surgeries, seen more than 600,000 patients in Indus' clinics and emergency department, and provided 800,000 diagnostic tests. The waiting list for elective orthopedic surgery extended 12 months, and for cardiac angioplasty, four months (see **Exhibit 8** for hospital service volumes).

In fiscal year 2010–2011, the hospital had an average daily census of 96 patients and admitted 11,500 patients. That year, the hospital performed more than 5,000 surgeries; orthopedic surgery was the most common, followed by general adult surgery. The 113 general ward beds were full 90% of the time. The six-bed ICU and six-bed cardiac care unit almost always were full. The lack of available beds for pre-operative and post-operative patients led to under use of the operating theater, catheterization lab, and other hospital resources. In an effort to maximize use of these areas, the hospital tried to lower the average length of stay by performing more outpatient procedures that did not require an overnight stay.

The hospital was unprepared for the exponential growth in emergency department patients, which increased from 1,500 patients in fiscal year 2007–2008 to nearly 100,000 patients in fiscal year 2010–2011. Doctors in the 24-hour, 10-bed emergency department saw more than 400 patients per day. The emergency department waiting area filled daily, and patients lined the main corridor in wheelchairs and on gurneys. Commonly, patients came via a charity ambulance or private rickshaw after dog bites or motor vehicle accidents; or they arrived with chest pain, malaria symptoms, and other maladies caused by the poor standard of living in the local area. To maximize flow through its emergency department and operating rooms, Indus hired part-time orthopedic surgeons to operate on trauma cases in the evenings after the elective cases finished. When the hospital was full, which was often, Indus referred surplus patients to other government or charity hospitals. After data showed that more than 50% of patients were children, Indus dedicated 26 general ward beds to pediatrics. The hospital instituted a policy not to add extra beds in corridors and walkways.

Walk-in clinic visits increased from 23,500 in fiscal year 2007–2008 to about 80,000 in fiscal year 2010–2011. Nine medical officers saw about 30 to 40 patients per day in the filter clinic. Indus did not collect data on patient followup or adherence, limiting their ability to quantify the impact of service delivery on health outcomes. .

Finances

In fiscal year 2010–2011, Indus provided about USD 5 million in free medical care, roughly five times the value of services provided in its first year of operations. The hospital's annual operating budget had grown to about USD 5 million. About 43% of revenue came in the form of Zakat; 24% was unrestricted cash donations from individuals and corporations; and 34% was in-kind donations of equipment, supplies, and medications (see **Exhibits 9–11** for Indus financial documents).

All patients treated at Indus Hospital underwent financial interviews to determine if they qualified for Zakat. Patient welfare officers asked about patient household size, monthly income, business assets, jewelry, insurance policies, and other forms of wealth. About 65% of patients were Muslim and poor enough to qualify for Zakat. Bari approved each Zakat patient's application and expenses and could personally guarantee donors their money was being used as they wished.

Using the electronic records system, Bari could review the multiple pages of expenses for each patient, listing medications, consumables, and clinicians' time. Each item was traceable back to the person who

ordered and administered it. An internal auditing team used the system to review the hospital's accounting on a monthly basis to monitor for fraud. External auditors also completed quarterly audits of all inventory and expenditures. Additionally, the hospital provided detailed accounting to major donors to demonstrate that their money was used accordingly. No patient ever saw a bill. The 35% of patients who were not Muslim or did not qualify by Zagat standards still received free care financed by the hospital's general donation fund.

Hospital administrators created their budget based on department goals, expansion plans, projected volumes, and other factors. Once approved by the board of directors, the budget became the hospital's annual fundraising target. In four years, the hospital had always met its funding targets. One major donor, the executive of a textile exporting company, said his company supported Indus "because its leaders have decades of experience proving they can deliver results in a transparent manner." He felt reassured that Indus was "taking care of every cent the donors are paying." Although Bari believed that in answer to the staff's hard work, God would provide, he also believed in prudent planning. As Zaidi explained,"[The electronic records system] has given us a great edge in terms of data management. When we go to a donor, we can show them the data, and they can see that we are not compromising on quality."

As the hospital's service volume and operating budget grew, Bari needed better budget projections and line-by-line expense reporting. The hospital finance team developed a system for determining actual costs for roughly 600 procedures based on invoices and time and motion analysis that tracked staff and equipment utilization for each procedure. Indus' projected budget for 2009–2010 was only 5.5%, or about USD 210,000, off from its actual expenses and revenues. As the hospital's volume increased, the unit cost for nearly all procedures decreased.

Hospital leaders hoped they could start an endowment fund during fiscal year 2010–2011, but delayed the goal to fiscal year 2011–2012. They decided to make their fundraising efforts more formal. The hospital created a Communications and Resource Development Office to develop a donation collection system and expand the donor base. In 2010 Indus hired an operations manager to formalize the hospital's systems for management, planning, and quality improvement.

To continue improving and expanding the capability of the electronic medical records system, Zaidi hired two in-house software engineers who worked solely on developing new features and developing an open-source version to share with other hospitals around the world. The Pakistani Army already was adapting Indus' electronic information system to use in its hospital network. "In our original charter we committed to being cutting edge, and this [electronic records] system is futuristic for Pakistan, where most systems don't work," Zaidi said.

Future Challenges

In 2011 Indus had drawings for a 750-bed hospital that included every major medical specialty, including those it currently lacked. Leaders also planned to build a medical school and clinical research buildings, expand the outpatient clinic, and renovate and enlarge the existing nursing school. Donors had pledged funding for a pediatric wing, trauma center, and a second floor on the filter clinic. Donors also offered to buy equipment, such as a CT scanner and MRI machine. With funding from the Global Fund, Indus would expand its TB program to 11 cities by 2015.

Bari and the other leaders were grappling with how to best handle the increased patient volume and to continue improving qualityof services. The proposed fiscal year 2011–2012 budget called for a 34% increase for training programs and service delivery(see **Exhibit 12** for increased budget justifications). The budget also allocated funds to launch a program in family medicine. Bari realized they needed to enhance the link

between inpatient and outpatient care in order to prevent unnecessary hospitalizations and ensure that patients stayed healthy after being discharged. Indus pediatric surgeon Lubna Samad said, "I think what we all agree on at Indus hospital is that a hospital can make an impact only if it's one part of a health care delivery system. The tertiary facility has to be part of a care network that is adapted to the local needs. On paper this seems simple, but in practice, the challenges are huge."

Among the first challenges was fundraising for outpatient, preventive care. Primary care was not a familiar concept in Pakistan, and many people believed that public health efforts remained the government's responsibility. Zaidi explained:

> Financially, it's easier to make the case to donors to support tertiary care. You can say, "Look at the machines your money will buy, and here are the patients your money fixed.' Investing in public health is a drop in the ocean, and it's more difficult to make donors feel emotionally connected to vaccinating 5,000 anonymous children who never become sick.

In preparation for the board meeting, Bari questioned why Indus was expanding beyond specialized surgeries and building a health system in parallel to the public sector.

List of Abbreviations

DOTS	directly observed therapy short course
GDP	gross domestic product
ICU	intensive care unit
IRD	Interactive Research and Development
MDR-TB	multi-drug resistant tuberculosis
MOH	Ministry of Health
PPP	purchasing power parity
TB	tuberculosis
USD	United States' dollars

Exhibit 1 *Map of Pakistan*

Source: Open-source map.

Exhibit 2 *Top 10 Causes of Mortality and Morbidity in Pakistan, 2000*

Rank	Mortality	Morbidity/Disability
1	Diarrhea	Hypertension
2	Childhood lower respiratory infection	Injuries
3	Tuberculosis	Eye diseases
4	Rheumatic heart disease	Malnutrition
5	Chronic liver disease	Birth diseases
6	Congenital malformations	Congenital malformations
7	Birth diseases	Dental diseases
8	Ischemic heart disease	Ischemic heart disease
9	Child septicemia	Anemia (in women)
10	Other respiratory diseases	Mental retardation

Source: HyderA. Applying Burden of Disease Methods in Developing Countries: A Case Study from Pakistan, *American Journal of Public Health*, August 2000, vol 90. No. 90.

Exhibit 3a *Public Health Sector Infrastructure in Pakistan, 2009*

Infrastructure Type	Number
Basic health units	4,872
Dispensaries	4,916
Rural health centers	595
Hospitals	965

Source: The Global Fund to Fight AIDS, Tuberculosis and Malaria Round 9 Proposal Form, 2009.

Exhibit 3b *Estimated Private Health Sector Infrastructure in Pakistan, 2004*

Infrastructure Type	Number
General practitioners	20,000
Laboratories	420
Dispensaries	340
Maternal homes	300
Small hospitals	520
Urban tertiary hospitals	6

Source: Shah GH, Ejaz N. The Role of NGOs in Community Health in Pakistan—NGO Pulse Report, 2005.

Exhibit 4 *Indus Hospital Mission and Vision Statements*

Mission: To provide health and excellence driven comprehensive unconditional medical services to the humanity—free of charge only to please Allah SWT.

Vision: The Indus Hospital is a state of the art tertiary care center accessible to the public free of charge. Local and expatriate professionals provide specialized medical care in accordance with Good Clinical Practices, with an emphasis on innovation and research. The tertiary care facilities at the hospital will be complemented by community outreach programs focused on prevention and early detection of disease, encouraging community involvement and ownership.

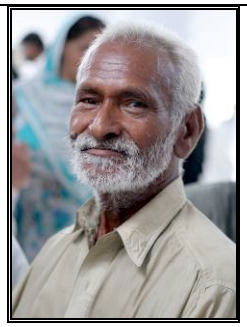
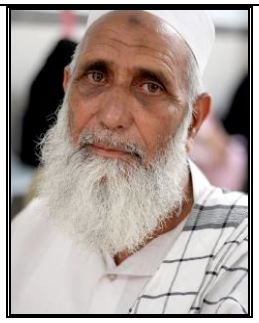
Source: The Indus Hospital.

Exhibit 5 *Indus Hospital Timeline*

2007	♦ Indus Hospital starts outpatient clinical services. ♦ The first patient is admitted for surgery. The hospital's initial clinical services include urology, orthopedics, and general pediatric and adult surgery. ♦ Infectious disease clinic opens to treat tuberculosis patients.
2008	♦ The 10-bed dialysis center opens. Laboratory services expand to include hematology, chemical pathology, microbiology, parasitology, and immunology. A tuberculosis diagnostic facility opens. ♦ The hospital is running at full inpatient capacity. ♦ The first child undergoes cardiac surgery. ♦ The first angiography is performed. ♦ Indus' DOTS plus program receives the first approval in Pakistan from the World Health Organization's Green Light Committee to treat MDR-TB patients with quality assured second-line drugs.
2009	♦ Indus opens a pediatric ward for children up to age 14. ♦ Indus' tuberculosis research and services featured in the *New York Times*. ♦ Indus receives accreditation from the College of Physicians and Surgeons Pakistan to be a postgraduate training institute for medical residents in anesthesia, general surgery, orthopedics, urology, nephrology, and infectious diseases. ♦ Indus performs its 10,000 surgery and 10,000 dialysis sessions. ♦ Indus adds ophthalmology services with funding from the Care and Kindness Society.
2010	♦ Medical residents begin their training at Indus with a maximum of two residents per specialty area. ♦ Indus laboratory services receive international accreditation for maintaining quality services. ♦ Indus inaugurates the open-air TB clinic on World TB Day. ♦ Indus starts a community cohort study with IRD to assess rates of certain noncommunicable diseases and household characteristics of the surrounding community. ♦ Indus adds gastroenterology services with endoscopy and also adds laparoscopic urology surgical capability.
2011	♦ Indus receives the first GeneXpert Machine in Pakistan to improve diagnosis of TB. ♦ Indus expands TB services with funding from the Global Fund.

Source: Collated by case writers from Indus Hospital data.

Exhibit 6 *Indus Hospital Patient Profiles*

	Three-year-old Alex visited pediatric surgeon Lubna Samad after experiencing rectal bleeding for months. He received no diagnosis after a prior visit to a different hospital, where his parents spent USD 1.50 for a doctor consult and USD 14 for a stool test. Dr. Samad was dismayed that the previous exams did not include a basic rectal exam. Samad felt a small polyp and scheduled a polyectomy and circumcision for the following week. Alex was Christian and did not qualify for Zakat, but the general donation fund paid for his care.
	Muhamad Riaz, 64, was a fruit vendor who earned about USD 70 per month to support a household of four. He came to Indus for the second time in May 2011 for a rash on his stomach and complaints of liver problems. He left home at 4 a.m. to be in line by 5 a.m. to receive one of the 300 daily clinic appointments. Six hours later, he was still waiting. Riaz said he did not mind waiting because the care was free, the clinic was clean, and the staff was fair. The government hospitals had long waits, along with additional fees and patients bypassing the lines because they knew someone or paid a bribe. Private hospitals were too expensive, he said.
	Rehmat Gul, 62, visited Indus for the first time in May 2011 seeking treatment for a kidney stone. He already had paid USD 7 to a private clinic for an ultrasound but couldn't afford treatment there. Gul said he judged the quality of medical care based on the cleanliness of the facilities and whether doctors and staff treated patients kindly. So far, Indus met his approval. No one had asked for a bribe, and the clinic was clean. Gul had to quit working as a security guard because of medical problems. Paksitan had no social safety net for the elderly or disabled, so he relied on his children for financial support.
	Zubaida, 38, and her two teenage sons participated in Indus Hospital's community cohort study, which included a survey and basic health screenings to determine the local prevalence of noncommunicable diseases, such as diabetes, eye problems, and hepatitis. Zubaida lived in a conservative fishing community where the average monthly income was about USD 60. Most study participants signed their consent forms with a thumbprint because they were unable to read and write. Few women would show up to the health screenings unaccompanied by their husbands.
	Najima was one of Indus' 150 MDR-TB patients. Halfway through her two-year treatment, Najima's symptoms were largely gone, and the 35-year-old mother of three was no longer confined to bed. Her treatment program included free medicine, twice-daily support from a treatment supporter, money for transportation to the hospital, and a monthly food supply for the family. Before Najima's family found Indus, her husband sold 25 buffalo—the family's entire wealth—to pay for her medical care. The treatment failed because Najima required expensive second-line drugs. Having nothing left, they moved from the village to Karachi.

Source: Photos and interviews collected by case writer Sarah Arnquist.

Exhibit 7 *Indus Hospital Open-Air TB Clinic*

Pakistani architect Tariq Quaiser designed the Indus Hospital's open-air TB clinic with a specialized design that optimized natural ventilation for increased airflow that effectively minimized the spread of disease.

Source: Global Health Delivery Project case writers.

Exhibit 8 *Indus Hospital Service Volumes*

	July 2007–June 2008	July 2008–June 2009	July 2009–June 2010	July 2010–March 2011
Surgery	1,713	4,477	6,532	5,097
Cath lab	3	600	1,202	880
Endoscopy	0	0	1	493
Lithotripsy	122	270	237	107
Medical admissions	155	1015	1799	1641
Inpatient Subtotal	**1993**	**6362**	**9771**	**8218**
Walk-in clinic	23,517	59,669	83,320	56,706
Consultant clinic	22,903	52,236	76,853	63,289
Emergency room	1,508	25,280	63,908	90,800
Outpatient Subtotal	**47,928**	**137,185**	**224,081**	**210,795**
Lab tests	34,096	141,667	237,706	233,534
X-rays	5,845	22,792	38,105	38,138
Ultrasounds	2,181	5,800	9,482	8,267
ECG	1,452	4,488	6,197	19,121
Echogram	179	782	1,649	1,203
ETT	32	217	347	265
Total Tests	**43,785**	**175,746**	**293,486**	**300,528**

Source: The Indus Hospital.

Exhibit 9 *Total Value of Medical Care Provided to Patients at Indus Hospital in USD, July 2007–March 2011*

	July 2007–June 2008	July 2008–June 2009	July 2009–June 2010	July 2010–March 2011 (9 months)	Total
Inpatient	546,687	1,815,853	3,046,296	2,443,622	7,852,457
Outpatient	483,120	1,460,774	1,701,160	1,757,976	5,403,031
Total	1,029,807	3,276,626	4,747,456	4,201,598	13,255,488

Source: The Indus Hospital.

Exhibit 10 *Comparison of Costs at Indus Hospital to Other Hospitals*

	Indus Hospital (USD)	Average Prices at Karachi Commercial Hospitals* (USD)
Outpatient clinic visit	0.71	2.82
Consultant clinic visit	2.06	3.53
Dialysis per session cost	23.53	50.82
Coronary artery bypass graft (CABG)	1,764.71	2,823.53
Lithotripsy	31.76	65.88
Single hip replacement	1,029.41	1,647.06
Single hernia repair	88.24	141.18
Average ward bed day cost	6.82	10.73
ICU day without ventilator	44.71	52.71

*Reflects published prices and not necessarily costs.

Source: The Indus Hospital.

Exhibit 11 *Indus Hospital Expenses and Revenues*

		2009–2010 Budgeted	2009–2010 Actual	2010–2011 Budgeted	2010–2011 Actual	2011–2012 Budgeted
Revenues (USD)						
	Donations	709,412	1,216,134	1,724,706	1,517,647	1,809,412
	Zakat	1,882,353	2,195,862	2,117,647	2,090,588	2,941,176
	Donations in kind*	501,694	1,728,473	935,294	1,055,294	1,372,941
	Total Revenue	**3,093,459**	**5,140,469**	**4,777,647**	**4,663,529**	**6,123,529**
Expenses (USD)						
	Clinical expenses	1,759,011	2,076,042	1,943,892	2,002,353	2,411,126
	Salaries and benefits	1,532,485	1,476,473	2,145,147	2,028,235	3,097,960
	Overheads	522,342	472,091	524,151	524,706	614,053
	Total Operating Expenses	**3,813,838**	**4,024,607**	**4,613,190**	**4,555,294**	**6,123,139**
Additional budgeted Expenses (USD)						
	TB program	NA	NA	592,376	477,647	1,214,181
	Capital expenditures	3,470,000	3,470,000	4,087,059	3,669,412	1,691,347
	Endowment reserve	NA	NA	922,588	0	1,224,706
Total Expenses		**7,283,838**	**7,494,607**	**10,215,213**	**8,702,353**	**10,253,373**

*Includes revenues from research grants and the Global Fund.

Source: The Indus Hospital.

Exhibit 12 *Justifications for Indus Hospital 2011–2012 Budget Increases*

New services	Family medicine, histopathology, hematology, medical records, legal counsel, planning, laundry, nursing school campus, dermatology
New protocols	ICU and anesthesia, electronic information system
Strengthening of services	Pediatrics, internal medicine, electronic information system
Improving services	Nursing, nursing education, pharmacy
Expanding services	Orthopedics, urology, finance, human resources, purchasing, residency programs

Source: The Indus Hospital.

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