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Health City Cayman Islands

The day we turn anyone away from this place of healing is the day we have failed as an institution and betrayed God's commandment.

— Dr. Devi Shetty, Health City Cayman Islands

February 26, 2014. The meeting had been underway for two hours; yet the Health City Cayman Islands (HCCI) senior management team was not able to finalize the pricing of the different procedures at the new hospital. To keep the team focused, Dr. Shetty, Chairman of Narayana Health (NH), reminded everyone "Scale of operations will be critical for affordability as well as the planned expansion." HCCI was the outcome of Dr. Shetty's vision of bringing the NH affordable healthcare model to the western hemisphere. The first phase of HCCI, a 104-bed hospital located at the East End of the Grand Cayman Island, was developed jointly by NH, a complex of health centers based in India, and Ascension, the largest not-for-profit health system in the United States. The hospital had been inaugurated just the day before and the first group of patients was anticipated in mid-March (refer to **Exhibit 1** for a picture).

Smiling Leonisha Lofters had beamed at the inauguration and on occasions looked a bit bewildered. In 2010, NH's flagship hospital in Bangalore had operated on four-year-old Leonisha *gratis* to treat the serious heart condition she was born with. In the process she became the first Caymanian beneficiary of NH's philosophy of affordable care. Dr. Shetty reminded the gathering, "Today, a hundred years after the first cardiac surgery, only ten percent of the world's population can afford one. The rest, if they ever need a cardiac surgery, gradually perish." In a rare display of unison, the islands' governing party and the opposition attended the event to support the notion that no one should be denied healthcare, a life should not be determined by a price.

Present at the inauguration among others was Gene Thompson, a third generation Caymanian entrepreneur and the HCCI Project Director. Thompson thoughtfully remarked, "HCCI presents a significant opportunity for the Cayman Islands, long dependent on the financial services and tourism industry, to develop medical tourism as the third leg of the island economy and perhaps to fundamentally change the nature of this island country." Thompson knew that as many as 300 of the thousand odd local school children who had traipsed through the facilities just a week prior to the opening had expressed interest in healthcare careers.

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The cost of the 104-bed hospital was US$70 Million; US$30 Million debt in addition to the US$40 Million equity investment shared 70:30 by Ascension and NH. Initial plans for expansion of HCCI included growing to over 2,000 beds covering all major specialties like neurology and oncology, a medical university and an assisted-care living community (refer to **Exhibit 2** for expansion plan). Estimated cost for this expansion was $2B over 10 years. Looking forward Dr. Ashutosh Raghuvanshi, CEO of NH, remarked "The Cayman health city, a conglomeration of multiple super-specialty hospitals within a single campus, will set the global benchmark for affordable high-quality care. It will also accelerate our effort to take tertiary care to other relevant markets like Africa."

Narayana Health

Narayana Health (NH), formerly known as Narayana Hrudayalaya, was founded in 2001 by Dr. Devi Shetty in Bangalore, India. Dr. Shetty, a personal physician to Mother Teresa, recalled, "As a scientist, I am not a religious person, but in the Mother's presence, one felt the divine." She encouraged him to use his surgical skills to serve the poor. In turn, and in an unlikely combination, Sam Walton's celebrated Wal-Mart model led Shetty to aspire to the 'Wal-Martization' of healthcare—delivering high-quality care at low costs—initially for cardiac care for the poor in India.

The NH cardiac hospital at Bangalore grew rapidly to house 500 beds, 10 operating theatres, two cardiac catheterization labs,[a] and its own blood and valve banks. The physicians, NH employees earning attractive fixed salaries, worked long hours and surgeons did an average of 10–12 cardiac surgeries a week compared to a weekly average of 2-4 surgeries by a typical surgeon in the US. The resulting learning led to excellent outcomes; specifically for coronary artery bypass graft (CABG) procedures, a common cardiac surgery across the world, NH had 1.27% mortality rate and 1% infection rate compared to rates of 1.2% and 1%, respectively in the United States.

The scale also led to efficiencies in procurement and utilization of expensive medical devices (e.g., CT scan machines). Select medical devices, like the steel clamps used during beating-heart surgeries, were reused after strict sterilization procedures and though such reuse was not permitted in the US, it was not uncommon in many countries in Asia, Europe and Africa. Moreover Dr. Shetty believed that through better process design and incomparably greater practice, NH had learned to manage risks related to med-device reuse judiciously. More importantly investment decisions at NH were guided purely by clinical needs; all equipment critical to patient care was readily available, yet the design of the hospital like the building exterior, out-patient areas, staff offices etc. was minimalist. Multi-tasking was common; for example the nurses performed the duties of respiratory therapists and this not only reduced staff numbers but also led to better care quality due to fewer staff touching the patient. Moreover, routine tasks (e.g. follow-ups, data-recording, less complex surgical tasks) were done by less experienced, lower-qualified staff (e.g., residents, nurses) instead of senior physicians.

Over time its strong reputation, expertise in hospital operations, relations with suppliers, and access to other specialists like nephrologists and endocrinologists, allowed NH to provide other forms of tertiary care. To help with the expansion, NH raised $89 million in 2008 from American International Group Inc. and JP Morgan's private equity arm, in exchange for a 25% stake in the company. By 2011 the cardiac hospital had evolved into a multi-specialty "health city" that consisted of a 25-acre campus and housed a 900-bed heart hospital, a 1,400-bed cancer hospital, a 500-bed orthopedic and trauma hospital, a 300-bed eye hospital, an organ transplant institute and departments in neurosurgery, neurology, pediatrics, nephrology, urology, gynecology and

[a] Catheterization labs are used for cardiac procedures like angiogram and angioplasty that require the insertion of a catheter into a chamber or vessel of the heart

gastroenterology (refer to **Exhibit 4** for NH Income Statement). NH replicated the multi-specialty health city model in other cities like Kolkata and Ahmedabad and began to build 200- to 300-bed general hospitals in smaller Indian cities.[1] The goal was to operate 30,000 beds by 2018, a size that would be larger than other big hospital systems in India like Apollo and Fortis (about 10,000 beds each) and comparable to the largest hospital chains in the US e.g., the Hospital Corporation of America (42,000 beds at 165 hospitals) and Community Health Systems (31,000 beds at 204 hospitals).

India, with a population of 1.2 billion, had less than a million hospital beds. The country had to invest in an additional three million beds to meet the WHO recommended average of three beds for every 1,000 people. NH partnered with India's largest construction company in 2012 to develop the 200-bed super-specialty Mysore Hospital at a cost of $6 Million in eight months; similar hospitals in India cost $25 Million and took two years to construct. The hospital used prefabricated material and was a single-storied structure with sheet metal roofs, thereby minimizing costs related to construction, expensive fire safety systems and elevators. The layout and large windows allowed natural lighting and ventilation and minimized electricity and air-conditioning usage; only the operating theaters and intensive care units were air-conditioned as they needed sterile environments. Floor space requirement and therefore construction costs were reduced as the waiting areas were located outside in the landscaped greenery. Also, the hospital used low-cost tiles and seating instead of marbles and high-end furniture. However no compromise was made when it came to medical equipment and critical equipment like CT scanner, MRI, Cath-Lab were procured from leading international vendors.

By 2013 the volume of cardiac surgeries at the NH Bangalore hospital had reached 7,800 (5,000 adult and 2,800 pediatric cases) and 17,600 catheterization lab procedures; about 2,400 of the adult cardiac surgeries were CABG procedures. These volumes exceeded those in most, if not all, hospitals in the world. Overall 15,900 cardiac surgeries performed by the NH Group in 2013 accounted for 12% of the 135,000 (approx.) cardiac surgeries performed in India; in contrast there were more than 500,000 cardiac surgeries per year in the US. In an effort to help patients who could not afford to pay, the hospital routinely subsidized procedures based on earnings from paying patients and donations; in 2013 about 37% of the patients paid below the $1,600 breakeven cost for CABG. The list price for a standard CABG procedure at NH was US$3,000 (inclusive of all surgical and hospitalization costs); however the large number of subsidized cases resulted in an average realization of $2,000 (refer to **Exhibit 3** for a CABG procedure level statement). The NH CABG price was lower compared to the average price of US$5,000 at other Indian private hospitals; similar surgeries in the US for insured patients could cost up to US$80,000. Higher end packages at NH, that offered private rooms instead of general ward, varied between US$3,500–$4,000, Dr. Shetty observed, "The clinical care is same for all patients; patients paying more get non-medical amenities like private rooms".

Dr. Shetty was aware that innovative mechanisms would be critical to address the accessibility and affordability gaps burdening the healthcare system in India. NH worked with the Indian Space Research Organization to manage the world's largest telemedicine program and treated over 50,000 heart patients in India. The telemedicine facility was also made accessible to more than 800 clinics across the world, including Malaysia, Mauritius, and the capitals of 53 African countries. Looking at the plight of the poor farmers in India, Dr. Shetty realized the need for a low-cost health insurance program and pioneered the concept of micro-health insurance in India. The 'Yeshaswini' insurance program, started in 2003 with the support of the local Government, allowed its 4 million members access to more than 1,600 surgical treatment modalities by paying a premium of 11 cents a month.[2]

Dr. Shetty's work was recognized in India and by the global community.[3] Moreover in January 2011, the NH Cardiac Hospital at Bangalore was accredited by the US-based Joint Commission International (JCI), the not-for-profit global division of the Joint Commission Resources established in

1994 to help healthcare organizations around the world to improve their performance. The accreditation by JCI validated the high quality care at NH and this led to an increased number of patients visiting NH from countries in South Asia, the Middle East and Africa.

Dr. Shetty reflected, "Just 20 years back when I was starting my career in India after my training in England, I told my senior that we need a hospital where we can do 20 cardiac surgeries a day. People laughed at the idea as we were not even doing 20 cardiac surgeries a year in our hospital then. Today 14 surgeons at the Bangalore hospital do 25-30 cardiac surgeries each day." But he recognized the long journey ahead, "I believe we can disassociate the wealth of a nation from its quality of healthcare. However if the world healthcare scenario has to change, the approach to healthcare in the US has to change." When asked many-a-time by observers how this might come about, he mused enigmatically on one occasion that the most profitable tertiary hospital in the world would take the form of "a large hospital ship on the international waters close to the US providing affordable care."

Health City Cayman Islands

Cayman Islands, a one-hour flight from Miami, Florida, was a British Overseas Territory in the western Caribbean Sea and consisted of three islands: Grand Cayman, Cayman Brac, and Little Cayman, with a total population of approximately 50,000 (see **Exhibit 5** for a map). Known for its natural beauty, the Cayman Islands' GDP per capita (US$ 58,000) was the 14th highest in the world and the highest in the Caribbean. Tourism and financial services together represented 75% of the country's GDP; however both the sectors depended on the US economy and were cyclical in nature.

The Great Recession in US (December 2007 to June 2009) had severely affected the economy of Cayman. In July, 2009, Premier McKeeva Bush approached local businessmen Gene Thompson and Harry Chandi to discuss options for diversifying the local economy. Chandi, a Cayman resident of Indian origin, had nurtured a relationship with Dr. Shetty since the surgeon's treatment of Chandi's father. Chandi told Thompson about Dr. Shetty's dream of opening a hospital close to the US and together they presented to the then Premier Bush the economic potential of medical tourism for the Cayman Islands. Medical tourism was one of the fastest growing segments in the healthcare industry and hundreds of thousands of patients in need of procedures like cardiovascular surgery, orthopedic surgery, dental and eye treatment, and alternative medicine visited countries like India, Singapore, and Thailand every year (see **Exhibit 6** for a comparison of medical procedure prices across countries). It was estimated that during 2007 at least 100,000-150,000 Americans traveled abroad for medical care (not including the many Americans who traveled abroad for dental treatment) and at the same time a large number of patients from countries that lacked quality tertiary care came to the US. Given the easy access to Cayman Islands for the 950 million people in the Americas and the Caribbean Islands and the island's reputation as a preferred tourism destination, the Cayman Government decided to explore the possibility of collaborating with Dr. Shetty in establishing the islands as a medical tourism hub. One late night in August, 2009 Chandi called Dr. Shetty. Chandi later reflected, "I know at least one important person in every country of the world and keep looking for opportunities to create value; but I did not entirely foresee the chain of events that call would trigger."

Dr. Shetty's recent efforts on developing a hospital in Guadalajara, Mexico, had stalled as NH could not come to an agreement with the local Mexican partners. The opportunity to establish a hospital in Cayman seemed ideal for demonstrating the NH model to the medical community in the US and across the world. Soon after Chandi's call, Dr. Shetty visited Cayman in September 2009 to meet the then Premier Bush and in October, 2009 NH signed a Memorandum of Understanding with the Cayman Government to develop the Health City Cayman Islands (HCCI).

Dr. Shetty was aware that the Cayman Government's role was critical in establishing the health city and specifically sought help with nine items (see **Exhibit 7**). The key was that the Cayman government recognized Indian medical degrees and allowed Indian doctors and nurses from NH to practice in Cayman, as they were intimately familiar with the high-quality affordable NH model. This would also allow them to avoid any staffing challenges during the planned expansion in the future.

Later on Chandi remarked "You know, ignorance is bliss. Gene and I were so excited about HCCI, we never pushed back on Dr. Shetty. We just asked the Government for everything we thought will help the effort." Though the Cayman Government was open to discussing many of the requests, they refused to recognize Indian medical degrees. Cayman had its own Medical Council, Nursing Council, Pharmacy Council and the Council for Professions Allied with Medicine; foreign medical practitioners intending to practice on the islands had to satisfy the requirements of these councils. Undeterred, Dr. Shetty invited Premier Bush to visit the NH Health City in Bangalore.

In December 2009, the then Premier Bush, Minister for Health Mark Scotland, and other senior representatives from Cayman visited Dr. Shetty in India. They were aware of Dr. Shetty's single minded focus on quality and affordability but the interactions at the Bangalore hospital convinced them that his low-cost, high quality model would be the ideal platform to launch Cayman Islands' medical tourism initiative. So they agreed to the request to recognize Indian medical degrees. On the 7th of April, 2010, the agreement regarding the development of HCCI was signed. According to the agreement, the first phase of HCCI would be a hospital offering a limited number of specialties but subsequent phases would expand the hospital in scope and size, set up a medical college, and develop assisted-living homes for seniors. The assisted living homes, similar to ones in Florida, were meant for the aging US population who found medical care in US to be prohibitively expensive.

The HCCI agreement included several concessions. Cayman had historically been a tax exempt location and the Government's main revenue source was from duties on imports; the agreement exempted HCCI from all tax liability for a period of 25 years irrespective of any changes to tax laws. Moreover HCCI would not pay any customs duty on the first $800 million of medical equipment and medical supplies brought to Cayman; in the absence of this duty exemption, HCCI would have to pay duty rate of 22.5% on these imported supplies. The agreement also capped the non-economic damages awarded in medical malpractice cases at HCCI to US$620,000 and this subsequently led to significant reduction in insurance costs for HCCI. Finally to help international patients coming to HCCI, the Government agreed to a new medical tourism visa that would be available to an incoming patient within 48-72 hours of the patient being approved by the HCCI hospital for a visit.

The Cayman Government sensed that HCCI would improve the access to healthcare for Caymanians and perhaps for the 38 million inhabitants of the Caribbean. The two existing hospitals at Grand Cayman Islands had limited capability to deliver tertiary care. Caymanians, in need of such treatment, were usually flown to hospitals in Florida after a long visa process that typically took 3-4 weeks. According to the Cayman Islands Health Services Authority, about 400 Caymanians were sent overseas with heart complaints in 2008 alone and in the same year approximately US$14.5 million was spent on cardiothoracic surgeries in the US.[4] It was estimated that the total cost of CABG for a Caymanian at a hospital in Miami was $102,000; the same procedure would cost the patient $8,000 at NH Bangalore (the costs include medical treatment, air-travel, hotel, visa and other costs).[5] The hospital was expected to be particularly attractive to those less affluent in the Caribbean. For example, pediatric patients with congenital heart problems from Haiti had vastly different socio-economic circumstances compared to retired expats settled in the Cayman seeking tertiary care.

Over the next year, Thompson, who had by then taken up the Project Director role for HCCI, and Chandi worked with the Cayman Government on the legislative amendments necessary to support

the clauses in the HCCI agreement. Thompson also visited government representatives and community leaders and talked to thousands of locals about the project—the NH mission, the credentials of NH medical staff, HCCI's scope and focus, and what the HCCI meant for the island.

The Caymanians gradually warmed up to the idea. The HCCI construction project would create immediate employment opportunities for the locals. Moreover 20 percent of the initial staff of 140 was expected to be Caymanian and as the health city expanded it was estimated that about 30-40 percent of the total 8,000 jobs created would be staffed by locals. Additional revenue in millions of dollars was expected for hotel, restaurant, retail and transportation businesses and for the government in terms of work permit fees, visa fees and duties earned on import of non-medical supplies.[6] The local medical practitioners seemed comfortable about the quality of care to be provided at HCCI and less concerned that the new hospital would end up as a competitor if they did not have enough tertiary patients; rather they sensed the possibility of future collaborations. Lastly, the HCCI staff would allow the local youth to identify new role models and avail of the HCCI medical college to pursue careers in healthcare.

In July 2011, NH was in the process of purchasing land in Grand Cayman. However before initiating construction, Dr. Shetty wanted to partner with a US healthcare organization willing to co-invest in the HCCI project. In fact NH had initiated these discussions as early as mid-2010 but the scale, novelty and uncertainty of HCCI made the potential partners hesitant.

Ascension

Ascension Health was formed in 1999 when the four provinces of the Daughters of Charity of St. Vincent de Paul and the Sisters of St. Joseph of Nazareth, Mich. brought their health systems together with the belief that collaborating and working together at their combined scale would lead to synergies. Over the next few years the membership of Ascension Health included representatives of other religious orders like the Sisters of St. Joseph of Carondelet and the Congregation of Alexian Brothers. As the diverse member base explored integration possibilities, they agreed to a strategic architecture that allowed them to collaborate selectively in developing and promoting a healthcare model that worked, was safe, and was accessible by and affordable for all. Initially, the group focused on patient safety and supply chain management to improve clinical outcomes and reduce procurement costs.

Over time the members of Ascension Health sensed that they would realize greater benefits by collaborating on long-term strategic questions related to business partners, international initiatives, asset base optimization, and adoption of innovations. However this called for an organization structure that allowed part of it to focus on things other than the day-to-day management of multiple facilities. Thus, on January 1, 2012, a parent organization called Ascension was created. Ascension Health became a subsidiary of Ascension and continued to focus on serving patients. Ascension's other subsidiaries provided services like medical equipment management, treasury management, resource and supply management, venture capital investing, and physician practice management to its members and other external healthcare organizations. During 2013, Ascension earned $400 million in income from operations on total operating revenue of $17 billion. At this point Ascension Health managed around 19,000 beds at over 110 hospitals and employed more than 155,000 associates in more than 1,900 sites of care in 23 US states and the District of Columbia.

From its inception, the leadership at Ascension was aware of the unsustainable economics of US healthcare. Despite spending more than 17% of GDP on healthcare, significantly higher than other developed countries, US health outcomes like life expectancy were poorer. They were also deeply

concerned at the plight of the millions of under-insured and uninsured in the US. Thus, in 2013, Ascension provided $1.5 billion in care of persons living in poverty and other community benefit programs. Ascension realized, however, that charity was inadequate, and thus looked for opportunities to transform US healthcare. Ascension Ventures, established in 2001, specifically looked for such opportunities. By 2013, Ascension Ventures had seven large US non-profit healthcare systems as limited partners (including Ascension) and it regularly shared healthcare technology, service and medical-device solutions from its portfolio companies with the approximately 300 hospitals and multiple facilities managed by its partners.

Ascension also believed that the US healthcare system would benefit by learning from other countries. Executive VP John Doyle noted, "Unlike in other industries like automotive, the US healthcare industry has been slow to adopt innovations developed in other geographies." As early as 2010, Dr. Anthony Tersigni, the President and CEO of Ascension, was interested in finding ways to partner on the HCCI project with Dr. Shetty, who at the time was in discussions with others. Nonetheless, these initial conversations opened up the opportunity for TriMedx (a subsidiary of Ascension that focused on bio-medical engineering) to start working with the NH Health City in Bangalore and the Ascension leadership and Dr. Shetty stayed in touch. In late 2011 Dr. Shetty approached Ascension with the proposal of a partnership on the HCCI project and in April, 2012, NH and Ascension announced a JV to develop the first phase of HCCI. Dr. Tersigni looked forward optimistically as he remarked, "This effort will provide Ascension opportunities to examine and learn about different approaches to providing healthcare to all with special attention to those who are poor and vulnerable, focusing on innovative ways to provide high-quality medical care at lower cost. These learnings then can benefit facilities in the United States and worldwide as we address one of the most challenging periods in our history."

The initiative raised questions at Ascension, of course. One related to the likelihood of HCCI rates being lower than the contracted rates Ascension hospitals had with the Caribbean insurance companies. Doyle recalled, "We have many views within Ascension and some are asking why we are doing this when we have so much to do within the US. Some are questioning whether it is possible to transfer innovative practices from Dr. Shetty's hospitals in India to the US given their lower salaries, lower cost of medical supplies and lower risk of malpractice litigation."

HCCI First Phase: Setting up the 104-bed Hospital

The construction of the HCCI hospital started in February 2013 (see **Exhibit 8** for the overall project timeline). The facility was designed by a US architect in collaboration with an architectural firm from the Cayman Islands. The design followed JCI standards and borrowed ideas from the recently completed NH Mysore Hospital to incorporate features like wall insulated concrete forms (ICF) to reduce electricity bills, two floors to ensure easy compliance with safety regulations and to minimize construction costs. Some features were marked departures from Western norms. One was the open-bay 17-bed intensive care unit (ICU) rather than individual private ICU rooms (see **Exhibit 9** for a picture of the ICU). Though there were four ICU private rooms, most patients were expected to be in the open ward as that would allow the nursing station to have an easy view of all patients and be staffed with fewer nurses. Another noticeable difference was the large windows throughout the building. Other than saving on electricity costs, Dr. Shetty believed the natural light helped in patient healing and allowed physicians to be more productive and creative.

The 107,000-square-foot building, able to withstand the strongest hurricanes, was built through a joint-venture consisting of a Caymanian construction company and one based in the US. About 65% of the construction labor consisted of locals and the effort involved 40 independent local heavy

equipment operators. Only specialists not available on the island were hired from the outside and the vast majority of materials were procured from local businesses. The construction effort took only a year (about a year less than the timeline in the US) due to long hours at the site, unlikely in settings with labor unions, and by adopting innovative construction practices. For example, using modular pre-fabricated bathrooms saved a couple of months as significant plumbing work was avoided. The project planned to use solar energy and implement Sea Water Air Conditioning (SWAC), a system that would draw cool deep seawater for the hospital's air-conditioning system, to reduce air-conditioning costs by 75 percent. Doyle remarked, "We were surprised that not only was the facility ready within a year but the cost per bed of the hospital came to US$400,000 in a developed country like the Cayman Islands compared to US$1-2 million in the US. We're hopeful that some of the construction techniques and approaches used for HCCI can be applied to lower the cost of hospital construction in the US."

NH also learned from the construction phase. The HCCI team had realized that procuring oxygen for clinical purposes would be exorbitantly expensive as liquid oxygen cylinders had to be shipped in from outside the island. The decision was to construct a dedicated oxygen generation plant (see **Exhibit 10** for picture of the oxygen plant). Dr. Raghuvanshi remarked, "We never thought of this before but now realize that this makes financial sense in many of our high volume hospitals in India."

A mobile technology based healthcare product called iKare System, already in use at NH India, was implemented at HCCI. The algorithm-based smart technology product accessed real time clinical data to assist doctors' diagnoses and nurses adherence of clinical protocols. The technology also allowed remote monitoring of HCCI patients by specialist medical personnel at NH India during the night shift at Cayman.

Meanwhile, the NH team in India focused on medical equipment procurement. They knew that the significantly higher costs (4x-5x) of medical equipment and supplies in the US would be a key challenge in replicating the high-quality affordable healthcare model. Accordingly the strategy was to source, to the extent possible, from the existing supplier base in India and ship to Cayman. The approach worked well and NH spent a total $7 million on medical equipment for HCCI versus an estimated $20 million minimum had they procured from the US. A similar strategy for medical supplies led to price agreements that, though higher (2x) than the rates at NH hospitals in India, were significantly lower than the US rates. However, it remained to be seen whether NH could manage a global supply chain for critical deliveries on an ongoing basis, especially as HCCI expanded and there was likely pressure from suppliers not to use India-pricing worldwide.

From April to July, 2013, a group of 96—18 doctors, 30 nurses, 26 paramedical technicians and 22 administration staff—were selected in India based on prior experience and interviews by Dr. Raghuvanshi and Dr. Abraham, Facility Director & Head of Medical Services. HCCI salaries were higher (2x-5x) compared to Indian salaries but lower than corresponding US salaries (0.5x-1x) and accounted for the fact that salary differences for medical staff between the US and India were higher for the non-physicians compared to physicians. Over the next six months, the non-physician staff attended a soft skill development program that focused on cultural sensitivity, language and communication, accent neutralization, interpersonal skills etc. The primary aim of the training was to ensure that the nursing staff, usually a reticent group focused on execution in hierarchical work-settings in India, was able to support a 'world' culture at HCCI such that a patient from any country would feel comfortable. Moreover, the entire staff completed the American Heart Association certification programs like BLS (Basic Life Support), ACLS (Advanced Cardiac Life Support) and PALS (Pediatric Advanced Life Support). Dr. Abraham commented "The team is one of the best I have seen in my 20+ year career in the UK and India. They have worked together extensively in the past, share a similar work culture that values excellence in outcomes and care deeply about patients."

The 104-bed HCCI hospital, focused on cardiology, cardiac surgery and orthopedics, had four operating theaters, one catheterization lab, one hybrid lab[b], a 17-bed intensive care unit and its own blood bank and would support a maximum of 4 cardiac surgeries, 15 cath-lab procedures and 10 orthopedic procedures per day. In the beginning the hospital planned to see approximately 60 outpatients a day. The per day outpatient volume was anticipated to increase to 350 patients by 2017, 750 patients by 2021 and 1,000 patients in 2025. The HCCI hospital planned on getting accredited by JCI in 2015 after the first year of operations as that would provide additional comfort to both the medical community and the patients in the region.

As the inauguration date approached, the HCCI management team wondered how the insurance companies and the patients in the US and the Caribbean would perceive the NH model designed in and for the very different context of India. The team was however unsure of what elements of the core model to adapt and appreciated the need for experimentation and learning in the coming months. Acknowledging the role of Ascension in the HCCI adaptation process, Dr. Abraham noted, "Ascension is helping with the billing processes and systems necessary to work with the insurance companies; an area new for NH given the reimbursement models in India. Also Ascension's success in improving patient safety and familiarity with quality initiatives in the US is an asset to HCCI."

Interestingly, on February 24, the day before the inauguration, the Wall Street Journal carried a pull-out section which revisited the decade long debate regarding the cost and sustainability of the US health system.[7] The same day, Forbes had an online article "Why Changing Health Care Is Hard" that suggested the risk-averse culture of physicians, the inertia of the existing system, the misaligned reimbursement system that incentivizes pay-per-procedure and the continuing fascination with expensive new technology made the transformation of US healthcare challenging.[8]

Initiating Operations

The day after the inauguration the HCCI management and senior executives from NH and Ascension met to review the operations plan and finalize the pricing of different procedures. The marketing team from HCCI had been in discussions with insurance companies, both government and private, and large employers in the Caribbean since early 2013. A similar effort of onboarding the US insurance companies and large employers was being managed in parallel by a team from Ascension. Although these conversations had until then been positive, the team realized the need to finalize the procedure rates before any formal agreement could be put in place. Moreover, the pricing details would also be critical for the upcoming patient referral process discussions with the primary and secondary healthcare centers in the region.

A preliminary analysis early in the project had suggested that pricing the CABG procedure around $50,000 would result in about 200 CABG cases during the first year and this volume would grow to a somewhat steady 450 CABG cases per year by the fifth year of operations; however the team wondered if pricing CABG at $50,000 would be appropriate. What should the HCCI rates be given the limited flexibility in increasing prices post the initial agreement with insurance companies?

Ultimately, would Dr Shetty's model successfully transfer out of India? Would the model be relevant to the developed world, as well as to other parts of the developing world?

[b] Hybrid Lab is a set-up that allows both surgeries and catheterization procedures to be performed in the same room.

Exhibit 1 Health City Cayman Islands Hospital

Source: Health City Cayman Islands.

Exhibit 2 HCCI Expansion Plan: From 2014 to 2024

Phase	Year	Hospital Specialty	Total Beds	Allied Expansion
1	2014	Cardiac Care, Orthopedics	140	
2	2016	Neurology, Oncology, Nephrology, Urology, Gastroenterology	500	Nursing University
3	2019	Expansion of bed capacity, addition of transplant programs	1,000	Medical and Paramedical University, Assisted Living
4	2022	Expansion of bed capacity	1,500	Assisted Living Expansion
5	2024	Expansion of bed capacity	2,000	Assisted Living Expansion

Source: Health City Cayman Islands.

Exhibit 3 CABG Procedure Margin at NH Health City, Bangalore, India

Particulars	Rs.	US$
Average Realization Per CABG Procedure[a]	120,000	2,000
Expenses		
Medical Consumables[b]	34,200	570
Gross Profit	85,800	1,430
Expenses		
Medical Staff[c]	32,000	533
Administration & Support Functions[d]	6,650	111
Overhead[e]	23,300	388
Operating Profit	23,850	398

Source: Casewriter research.

[a] Average realization across subsidized and unsubsidized patients.

[b] Includes cost for all consumables from admission to discharge.

[c] Includes cost for all medical staff (surgeons, anesthesiologists, nurses) from admission to discharge.

[d] Includes costs related to functions like HR, Finance, Billing, Registration, Support Staff etc.

[e] All overhead items including but not limited to electricity, linen laundry, food, R&M, housekeeping, waste mgt.

Exhibit 4 Income Statement of NH Group, India

Particulars	FYE March 31, 2013 (Rs.)	FYE March 31, 2013 (US$)
INCOME		
Revenue from Operations	8,248,697,927	137,478,299
Other Income	24,789,724	413,162
Total Revenue	**8,273,487,651**	**137,891,461**
EXPENSE		
Cost of materials consumed	2,308,576,508	38,476,275
Employee benefits expenses	1,545,439,413	25,757,324
Other operating expenses	3,441,591,851	57,359,864
Total operating expenses	**7,295,607,772**	**121,593,463**
EBITDA	**977,879,879**	**16,297,998**
Finance Cost	156,781,687	2,613,028
Depreciation and amortization expense	422,607,822	7,043,464
Profit Before Tax	**398,490,370**	**6,641,506**
Current Tax	84,000,000	1,400,000
Deferred Tax	54,359,657	905,994
Profit After Tax	**260,130,713**	**4,335,512**

Source: NH.

Exhibit 5 Cayman Islands Map

Source: Wikipedia, "Caribbean General Map," http://en.wikipedia.org/wiki/List_of_Caribbean_islands#mediaviewer/File:Caribbean_general_map.png, accessed May 1st, 2014.

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Exhibit 6 Comparison of Medical Procedure Prices (in '000 US$)

Procedure	US[a]	Medicare Rate in US	US Commercial Insurance Rate	India	Singapore	Thailand
CABG Procedure	120	58	80	5	13	20
Knee Replacement	50	20	28	9	13	10

Source: Casewriter research.

[a] US prices reflect prices paid by uninsured patients.

Exhibit 7 Nine Point Request by Dr. Shetty to Cayman Government

Point 1: Cayman Government will cap the amount of insurance claims related to non-economic losses in medical malpractice cases

Point 2: Cayman Government will recognize medical qualifications from India and approve Indian doctors and nurses to practice in Cayman

Point 3: Cayman Government will issue work permits for HCCI staff from India so that they can come and work

Point 4: Cayman Government will support the Health City in Cayman initiative in principle as it will bring large economic opportunity to Cayman

Point 5: Cayman Government will allow HCCI to set up a large scale medical school to train nurses and doctors

Point 6: Cayman Government will permit HCCI to build a large assisted living community

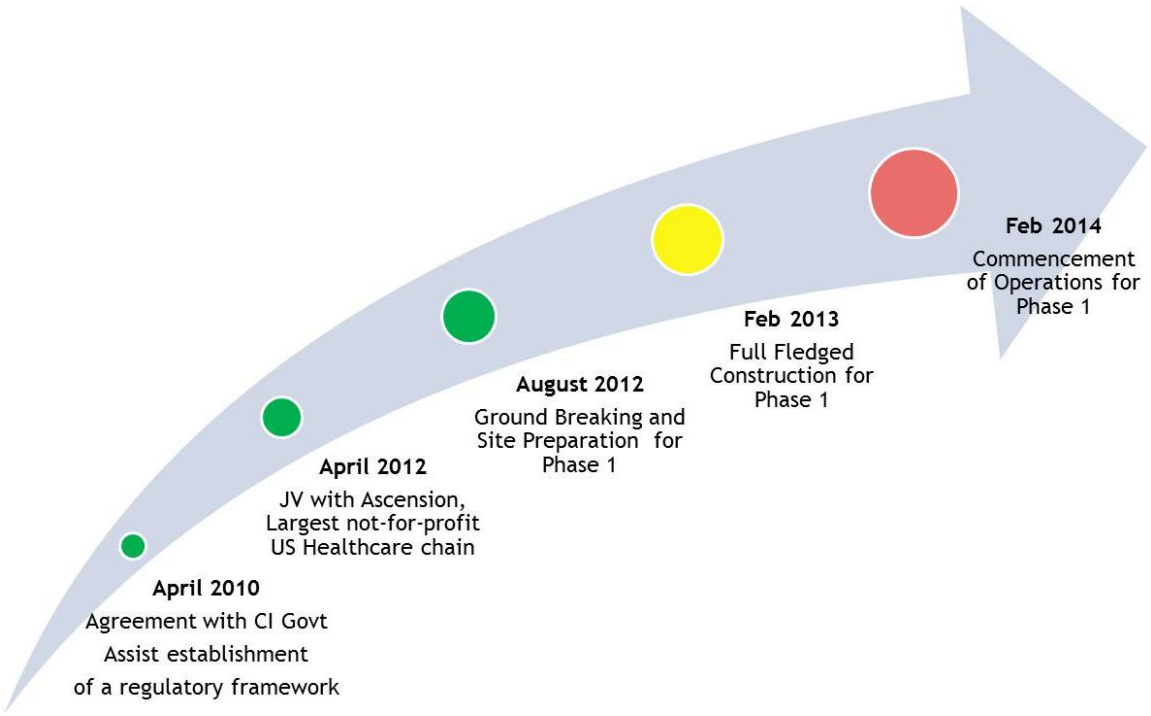
Point 7: Cayman Government will help HCCI to obtain land at reasonable costs for the project

Point 8: Cayman Airways will work with HCCI to provide cheap fares and new flights to bring patients to Cayman

Point 9: Cayman Government will upgrade the airport to accommodate the increase in arrivals

Source: Health City Cayman Islands.

Exhibit 8 HCCI Development Timeline



Source: Health City Cayman Islands.

Exhibit 9 Intensive Care Unit (ICU) at the Health City Cayman Island Hospital

Source: Health City Cayman Islands.

Exhibit 10 Oxygen Plant at HCCI

Source: Health City Cayman Islands.

Endnotes

[1] Tarun Khanna, Tanya Bijlani, "Narayana Hrudayalaya Heart Hospital: Cardiac Care for the Poor (B)," HBS No. 712-402, (Boston: Harvard Business School Publishing, 2012).

[2] Health City Cayman Island website accessed on March 3rd, 2014 www.healthcitycaymanislands.com.

[3] NH's work was profiled in several publications like the Wall Street Journal, which referred to Dr. Shetty as the Henry Ford of cardiac surgery, Forbes, Fortune and BusinessWeek. The Government of India awarded Dr. Shetty the Padma Shri in Medicine in 2003 and the Padma Bhushan, one of the highest civilian honours, in 2011. Among many other awards, he also received the 'Ernst & Young—Entrepreneur Of The Year' in 2003 and 'The Economist Innovation Awards 2011' for lowering healthcare costs for the masses.

[4] Cayman Compass. http://www.compasscayman.com/caycompass/2014/03/11/Cayman-patients-could-be-referred-to-Health-City/, (accessed on March 15, 2014).

[5] Cayman health insurance companies typically pay more to US hospitals than rates negotiated by US insurance companies.

[6] Brochure for Grand Opening Celebrations—Health City Cayman Islands.

[7] *Wall Street Journal*. February 24, 2014. Journal Report—Health care.

[8] Roy Smythe, "Why Changing Healthcare is Hard," *Forbes*, February 24, 2014, http://www.forbes.com/sites/roysmythe/2014/02/24/why-changing-health-care-is-hard/, (accessed on March 14, 2014).