



## Case

### *Muljibhai Patel Urological Hospital*

*Build a World-class Institution for Comprehensive Kidney Care*

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#### **Abstract**

*The case traces the history and evolution of a healthcare system from the dreams of an undergraduate medical student, who perceived the inadequacy of medical facilities in his home town, to a world-class healthcare system handling all aspects of urology and nephrology through sheer dedication and visionary leadership. Dr Virendra Desai, a young man after completing FRCS from UK came back to his home town, in the early 1970s to initiate healthcare facilities for the treatment of kidney, where he observed the incidence of kidney problems were acute while modern treatment facilities were non-existent. For resources he approached Jayaramdas Patel, an industrialist of the region. Jayaramdas Patel agreed to fund the project on one condition: that Dr Virendra Desai commits himself to build only world-class facilities. Thus began the saga of self-less dedication of a team of people led by Dr Virendra Desai and Jayaramdas Patel, which in three decades gave them a place in the sun. By the early years of the millennium, the Muljibhai Patel Urological Hospital has emerged as a world-class hospital for all aspects of urology and nephrology that attracted patients from all over India and many developing countries, a center of high profile research in urology and nephrology, a center for education and training in super specialty areas as also a center for international conferences. The case illustrates that world-class capabilities in healthcare system does not primarily depend on abundance of resources, but it emanates from dedication, alignment of values, vision, strategic thinking and leadership.*

**Key words:** *World-class Healthcare system; Dedication; Visionary Leadership; Institution Building.*

Nadiad<sup>1</sup>, a sleepy rural town, 45 km from Ahmedabad, in Western India is an unlikely place, in public perception, to be the centre for super-specialty treatment of urological and nephrological diseases. Muljibhai Patel Urological Hospital, Nadiad (MPUH), generally known as the Nadiad Kidney Hospital, is the chosen destination for patients with urological problems from all over western India and

to some extent from abroad. The hospital receives student doctors as well as practitioners for specialized training programmes conducted by the hospital's training wing, Jayaramdas Patel Academic Centre (JPAC).



## The Beginning

Dr Virendra Desai, one of the founders of the hospital, who hailed from the region had chosen to specialize in urology in the early 1970s, primarily because he had observed the relatively high incidence of kidney stones among the populace of Nadiad and the surrounding areas. After completing his medical education and specialization in urology (FRCS) from UK, he returned to India with the dream of setting up a hospital exclusively for treating kidney stones. Dr. Desai approached industrialist-philanthropist Jayaramdas Patel, for financial support. Mr Patel agreed on one condition that it should be a world-class hospital. The common vision of Dr. Desai and Jayaramdas Patel led to setting up the hospital, which was named Muljibhai Patel Urological Hospital to perpetuate the memory of Jayaramdas Patel's late father. The hospital, with 25 beds, was inaugurated in 1978 by the Hon'ble President of India, Dr. Neelam Sanjeeva Reddy<sup>2</sup>.

Unfortunately Dr. Virendra Desai did not live long to see the growth of the hospital. He had, however, the forethought to induct very eminent doctors like Dr. Mahesh Desai and Dr. Mohan Rajapurkar. Dr. Mahesh Desai was an eminent urologist then practicing in Ahmedabad and had obtained his MBBS and M.S. degrees from B.J. Medical College, Pune. Subsequently he received fellowship from the Royal College of Surgeons of London and Edinburgh in 1973 and received specialized training in urology<sup>3</sup>. After returning to India, he started his practice in Ahmedabad. However, realizing the importance of institutionalized treatment for kidney diseases, he very soon joined hands with Dr. Virendra Desai. Dr. Mohan Rajapurkar, MD, Chief of Nephrology and Medical Director, has been associated with the hospital from its initial stage in 1979. Dr. Rajapurkar was responsible for setting up the first live donor kidney transplantation and maintenance dialysis programme in Gujarat. He was also instrumental in offering a post-graduate teaching programme in nephrology, which is recognized by the National Board of Examinations. He is a member of Credentials and Scientific Committee of the Indian Society of Nephrology. He is also convener of the Chronic Kidney

Disease Registry of the Indian Society of Nephrology. He received the prestigious Dr. B.C. Roy Award for his contributions to the field of nephrology.

## Philosophy

According to MPUH, it tries to live up to its philosophy that 'every person deserves world class care.'<sup>4</sup> The hospital further emphasizes that 'when we say every life, we mean it'<sup>5</sup>. It never turns away any patient. In addition to excellent medical care, MPUH also 'provides the ever so important and often neglected human touch (exhibit 1) and continuous support to the patients and their family members to help minimize the trauma that is inherent in the wake of the discovery of a kidney ailment'<sup>6</sup>.

## MPUH'S mission is:

- To provide world class care to all kidney patients irrespective of their socio-economic background: from psychological comfort through counseling, education and openness in communication, to physical treatment and relief to enable them to live life to the full, as before.' The hospital firmly believes that "every life deserves to be lived in full".
- 'To provide comprehensive kidney care from simple surgical removal of kidney stones and treatment for enlarged prostates, to kidney transplants with minimal intrusion and rejection to providing effective solutions for uro-oncological<sup>7</sup> patients.
- 'To become the single enlightened centre for advanced study, research and training in urology and nephrology'<sup>8</sup>.

The hospital firmly believed in providing holistic care: healing, teaching and research<sup>9</sup>.

MPUH is specialized in the routine removal of kidney stones, prostate surgeries, dialysis, and kidney transplants to highly complex uro-oncology cases, and female and pediatric urology. Today, MPUH is recognized as a centre of excellence for healing, teaching, and research by the medical fraternity and



governments across the world. (See Exhibit 2 for milestones)

## Infrastructure

There were six most modern operation theatres well equipped for open, endoscopic, and robotic-assisted surgeries.<sup>10</sup> Operation Theatre-1 (OT-1), designed and built by Karl Storz, was for laparoscopic surgeries and has a high definition screen and on-table connections which can be used to transmit live surgeries through ISDN lines. It also has facilities for live recording during the surgery. OT-2 (also designed and built by Karl Storz) was for endo urology and stone surgeries. OT-3 was for endo urology. All surgeries in urology (stone, laparoscopy, etc.) could be performed there. OT-4 was for endoscopic surgeries. OT-5 was exclusively for donor nephrectomy, whereas OT-6 was for renal recipient surgeries. All these theatres were connected to a 100-seat auditorium, which had international transmission facilities.

## Technology

The hospital had always been in the forefront in having the state-of-the-art technology. Some of these were:

- da Vinci Si robot<sup>11</sup> for laparoscopic surgery
- Ablatherm (France) robotic assisted high intensity focused ultrasound (hifu) for cancer of prostate<sup>12</sup>
- Donier Compact Delta Lithotripsy Machine<sup>13</sup> (Germany). This was the state of art lithotripsy machine from Dornier who was the pioneers in Lithotripsy. The shock wave lithotripter performs remote controlled operations with integrated and iso-centric ultrasound and x-ray.
- Mini and micro PCNL facilities<sup>14</sup>
- Autoclave and plasma sterilization<sup>15</sup>
- Prostate histo-scanning equipment<sup>16</sup> (for the first time in India)
- 15 dialysis machines.

The da Vinci robot assisted surgical system, which costed Rs.10 crore in 2013 (plus a yearly maintenance cost of Rs.40 lakh per year), helped the surgeon carry out most 'delicate and highly complex' surgeries through a few tiny incisions on the body. The first generation robot which was introduced in 1999 had four interactive robot arms. The surgeon could see the entire area to be operated on a 3 D screen. In addition, the system allowed the surgeon sitting in front of a console to operate a patient<sup>17</sup>. Intuitive Surgical, Inc. the manufacturer subsequently launched the latest addition to the line of robots called da Vinci Si with enhanced features. Da Vinci Si had five interactive arms, enhanced 3-D (HD) vision, and highly magnified image, in addition to other advanced features,<sup>18</sup> according to Intuitive Surgical.

According to *The Economist* Intuitive Surgical played a very dominant role in the market for robotic instruments.<sup>19</sup> Over 2000 robots have been supplied by Intuitive Surgical to hospitals all over the world so far, which supported about 200,000 robot-assisted surgeries every year. Hospitals in India which have installed the robot for surgery include Medanta, AIIMS, Escorts, Chettinad Health City, Rajiv Gandhi Cancer Institute, and Asian Heart Institute, according to a report in the Times of India<sup>20</sup> Muljibhai Patel Hospital installed the da Vinci Si in 2010 and had so far carried out about 124 robot-assisted surgeries. According to the *Times of India* report, there are only 14 surgeons in India at present that can do robot-assisted surgeries<sup>21</sup>.

## Other Facilities<sup>22</sup>

### Computer Networking

The hospital had implemented extensive computer networking among various departments. For example, the Registration Counter, Outpatient Department, Laboratory, Billing Counter, Stores and Purchase, Finance, Consultation rooms, and the enquiry counter are all connected through networking.

Similarly operation theatres were networked with the surgeons' cabins. Hospital statistics and operative videos were easily accessible and are made available to all the doctors for research and preparation of scientific



## Library

A centrally air conditioned library with a collection of over 4500 books and academic journals was started in 1990 to enable research. In addition, there was a library for patients maintained by the Social Work Department of the hospital.

## Sterilization

The hospital had installed advanced sterilization facilities for sterilization of clinical tools and equipment. Even the plates and utensils used in the cafeteria were sterilized everyday.

## Cafeteria

An automated cafeteria prepared quality food for patients and their relatives. The cafeteria provided food of the region to the patients.

The hospital had a modern laundry and pharmacy open 24 hours. The hospital's laboratory had all modern equipment for testing facilities. Own laboratory and pharmacy help in brining down the overall costs to the patients. (See Annexure 1 for various categories of rooms.)

## Human Resources

The hospital had 47 doctors (specialists and super specialists) on its rolls.<sup>23</sup> While the doctors were highly committed and service oriented one of the noteworthy features of the hospital was the high service orientation among employees at all levels. According to the hospital sources, 'MPUH believed every life deserves world-class care, which is possible not only through state of the art equipment and skillful techniques but also through the care, compassion and concern. The hospital practices charity, but not at the cost of quality'.<sup>24</sup> The hospital not only employed the best technology and skills, it has also ensured delivery of the highest service quality which was comparable with international service quality, according to the Statistician of the Hospital.

The hospital treated over 5000 new patients every year. It had 15 dialysis machines working round the clock performing 900-1000 dialysis every month.<sup>25</sup> About 70

per cent of these patients were on maintenance while 30 per cent of the patients were awaiting kidney transplant. The hospital performed over 100 kidney transplants every year. If more kidneys were available, the hospital could do more transplants, feels Dr. Mahesh Desai. One of the major problems related to availability of kidneys for transplant was Indian laws which prevented acquisition of donor kidneys from anyone other than immediate blood relatives. The hospital strictly followed the law.<sup>26</sup>

The hospital performed over 3000 surgeries every year. Recently, for the first time in India, a three-month infant underwent robot-assisted pyeloplasty<sup>27</sup> surgery at the hospital. While the hospital had conducted 196 laparoscopy pyeloplasty<sup>28</sup> surgeries on adults and grown up children, it was for the first time that a surgery of this type was done on a three month old child.<sup>29</sup> A consultant urologist Dr. Craig A Peters, Chief of Division of Surgical Innovation, Sheikh Zayed Institute of Pediatric Surgical Innovation in Washington DC conducted the successful surgery with the help of a team of doctors from MPUH.<sup>30</sup>

The hospital was the first in Gujarat to acquire a da Vinci Si robot for robotic surgery. According to the hospital sources, within a short period since its introduction, 124 robot-assisted surgeries (including 55 radical prostatectomy) have been performed which included some highly complex surgeries.<sup>31</sup>

## Pricing Policy

The hospital charged differential rates depending on the category of room a patient opted for stay during hospitalization. However, the treatment was same for all despite the category of room chosen. Differential charges for different category of patients are done with the idea of using the surplus generated from high income group patients to cross-subsidize economically weak patients. The hospital also scouted, when necessary, and accepted donations to meet the cost of treating economically weak patients. The hospital also did not pass on some of the fixed costs to the poor patients while costing was done. The donation route was used also for acquiring the latest technology. More



than 200,000 patients were beneficiaries of the munificence of donors (Exhibit 4). The hospital not only took special care of poor patients, but also made efforts to find accommodation for relatives in the nearby Shri Santram Ashram, a religious trust.

### **Muljibhai Patel Society for Research in Nephro-Urology (MPSRNU)**

The Society for Research in Nephro-Urology was formally inaugurated in 1989 by the then Vice-President of India, Dr. Shankar Dayal Sharma. The society was set up with the idea of innovation. 'Having already adopted world class technology and techniques in kidney care at the hospital, the Muljibhai Patel Society for Research in Nephro-Urology was set up to actively work at and catalyze the development of new, improved and innovative solutions in urology and nephrology more suited to indigenous condition<sup>32</sup>. The society has been actively participating along with other leading research societies in contributing to achievements in kidney care. Journals, books, and papers from across the world are available to researchers at the society's library.

### **Education, Research and Training**

The hospital has been a recognized centre for the three-year super specialization programme leading to DNB<sup>33</sup> by the National Board of Examinations, New Delhi. Every year, it admits nine students (four in urology, three in nephrology, and two in anesthesia) who have Master's degree in surgery or in medicine for the super-specialization programme. In 2013 the hospital was in the process of introducing DNB teaching programme in pediatric urology.<sup>34</sup>

### **Jayaramdas Patel Academic Centre (JPAC)**

The Jayaramdas Patel Academic Centre, an initiative of the Muljibhai Patel Society for Research in Nephro-urology, was set up in 2007 with the aim of creating 'a world class centre of academic excellence for urology and nephrology, a repository and exchange of medical information and data where knowledge will be imparted and shared, skills developed and honed

through instruction, discussions, hands-on practicals and protective interaction in order to alleviate pain and help one live as it is meant to be'<sup>35</sup> (Exhibit 9). JPAC's vision was 'to encourage and facilitate the setting up of similar knowledge centres across the globe in order to make available the best medical expertise and capability locally.' Its motto was 'Enter to Learn; Exit to Serve'<sup>36</sup>.

The hospital sources stated that 'while well known hospitals like MPUH have acquired the latest technology, equipment, and superior skills, others in the sub-continent do not have them to deliver the best practices.' Through teaching, training, and hands-on practicals, the centre tries to close this gap.

JPAC has conducted several training programmes in nephrology with participants drawn from India and abroad.<sup>37</sup> JPAC had modern class rooms with interactive facilities, a dry laboratory and wet laboratory, library with access to online libraries, an auditorium, and an equipment museum (Exhibit 5). Specialist doctors from all over the world were invited to conduct workshops at JPAC (Exhibit 6). Besides lectures and interactive observation of live surgeries, there were hands-on training sessions first in the dry laboratory on machines and simulators, followed by sessions in the wet laboratory.

### **Education of Patients and Relatives**

The hospital gives a great deal of importance to educate patients and their relatives, especially in the case of patients suffering from end-stage renal disease (ESRD). It believed that this special patient education programme enabled patients to know about the disease and ways to deal with its treatment course.<sup>38</sup>

Lectures by experts were also arranged every month. The hospital had been very active in the field of community education. It recently organized an epidemiological survey for prostatic diseases among the ageing male population in Kheda-Charotar districts.<sup>39</sup>

The hospital has published a number of booklets on kidney stones and treatment, kidney transplant, and dietary guidelines for the benefit of patients and their



relatives.

### **International Conference**<sup>40</sup>

MPUH hosted the 12th Video Urology World Congress at Goa in 2000 and also the Millennium International Urology Congress at Delhi.

Hosted the First World Summit on Radical Prostatectomy in 2002 and the First World Summit on Kidney Surgery.

In 2004, recognizing the contributions and capabilities of MPUH, the Endo-urological Society of USA entrusted MPUH with the task of hosting the 22<sup>nd</sup> World Congress of Endo-urology on behalf of India.

The hospital conducted Asian Robotic Urology Symposium in 2011 in which multi-institutional live surgery transmission was done by experts in the field of Robotic Surgery.

The hospital had organized in March 2012 an international "Laparo-robotic symposium "Cutting-edge Technology," wherein over 100 delegates from India, Germany, USA, Japan, Netherlands and Nigeria participated.

### **Recognitions**

MPUH has been recognized by the international community<sup>41</sup>

Societe International d'Urologie has accredited the Hospital as an official SIU Training Institute. The Endourological Society of the International Society of Nephrology has approved MPUH for fellowship training. The Cleveland Clinic Foundation (Glickman Urological Institute) had established collaborative ties with MPUH. It includes joint collaborative research projects, and exchange programme for exposure to endo-urologic surgery. The Endo Urological Society, New York, and the International Society for Nephrology have recognized the hospital for fellowship training and the Cincinnati Children Hospital has recognized the hospital for pediatric urology. The Department of Nephrology was selected as 'Sister Renal Centre' by the Department of

Nephrology of Arkansas University.

MPUH has been accorded the ISO 9001: 2000 certification by Bureau Veritas Quality International (BVQI) for 'design, development and delivery of clinical services for urology and nephrology including kidney transplantation'. Bureau Veritas offered certification in quality, health and safety, social responsibility, and environment.

### **Awards**

Muljibhai Patel Hospital won the prestigious Ramakrishna Bajaj National Quality Award Trophy instituted by the Indian Merchant's Chamber in 2011. It was the first hospital in Gujarat to win this award.<sup>42</sup>

### **Awards for the Doctors of MPUH**

The doctors at MPUH were known for their contributions in the area of medicine and social work not only in India but abroad also Dr. Mohan Rajapurkar was a recipient of Dr. B.C. Roy Award for his contributions in the area of Nephrology.<sup>43</sup>

Mrs. Sujata Rajapurkar, Medical Social Worker and Transplant Coordinator, MPUH Nadiad, received the prestigious Council of Nephrology Social Workers International Social Worker Award, 2010 on April 27, 2011 from the National Kidney Foundation, USA.<sup>44</sup>

Recently, during the World Council of Endo-urology, 2011 at Kyoto, Japan, according to a report, MPUH doctor Dr. Shashikant Mishra won two prizes for his paper and presentations.<sup>45</sup>

### **Leadership**<sup>46</sup>

Dr. Mahesh Desai joined hands with Dr. Virendra Desai who had established the Muljibhai Patel Hospital right from the beginning, though he was doing private practice in Ahmedabad. Dr. Desai now was the Managing Trustee of MPUH and was the Medical Director of the Hospital. He was also the Honorary Managing Director of Muljibhai Patel Society for Research in Nephro-Urology and Director of the Jayaramdas Patel Academic Centre.



Dr. Desai was a renowned urologist, has done MS in General Surgery, and had received fellowship (FRCS) from Royal College of Surgeons of London and Edinburgh. He had also received specialized training in urology. He has held many national and international positions in the field of Urology, some of which were:

- President, Urological Society of India (2006-2007).
- Chairman, Sub-specialties, Society International d'Urologie (SIU) (2004-2009)
- Chairman, Scientific Committee, Endourology Society Inc.. (2007 - present)
- President, Asian Society of Endourology (2008 - present).
- Chairman, Endourology Education Training Site Committee of Endourology Society Inc. (2008-present).
- Member, International Committee of American Urological Association (2008 - present).
- President-Elect, Society International d'Urologie (SIU) (November 2009 - present).

Dr. Mahesh Desai was visiting professor to a number of institutions; some of the prominent among these were:

- Duke University, USA
- Stanford University, USA
- Cleveland Clinic, USA
- University of Vienna
- University of Southern California, USA
- Singapore University, Singapore Hamad Medical Corporation, Qatar
- Jikei University School of Medicine, Tokyo, Japan
- Bangabandhu Sheikh Mujib Medical University, Dhaka
- Tribhuvan University, Institute of Medicine, Kathmandu, Nepal
- Wochardt Kidney Hospital Hospital, Calcutta

He was also on the advisory board of various committees. For example, Dr. Desai was a member, Specialty Advisory Board in Urology, National Board of Examination, New Delhi and Member, Expert Committee for Development of Standard Treatment Guidelines, Ministry of Health & Family Welfare, Government of India.

Dr. Desai, according to the hospital sources, had mastered the most modern treatment for stone disease and developed innovative techniques in Percutaneous Nephrolithotripsy (PCNL), Ureterscopy, and ESWL<sup>47</sup>. So far, he had done more than 12,000 PCNL, probably the largest number in the world. He also expanded the use of ultrasound in Urology.

He did the first kidney transplant in Gujarat in 1980. Till 2013, the hospital has done over 2070 kidney transplants.

Dr. Desai has conducted 93 workshops. He has published 110 scientific papers in national and international journals, which had helped in putting the Muljibhai Patel Urological Hospital as one of the premier institutes in urology not only in India but also internationally.

As stated earlier, Dr. Mahesh Desai had received a number of national and international awards. The doctors at MPUH are known for their contributions in the area of medicine and social work not only in India but abroad also. Dr. Mahesh Desai, the medical director of the Hospital was a recipient of Dr. B.C. Roy Award in "recognition of the best talents in encouraging the development of specialties in different branches of medicine" from the President of India. He had also received a number of other prestigious national and international awards. For example, he had received President's Gold medal of Urological Society of India, President's Gold Medal for West Zone Chapter of USI, the United Nation's international award for medical scientific group in the field of urology and 'late Dr. Piyush V Patel Award for excellence' in medical field at the 105<sup>th</sup> Annual celebration of Ahmedabad Medical Association.

Recently, he was selected for the prestigious 2012 American Urological Association Presidential Citation and also received the prestigious 'St. Paul's Medal, 2012' instituted by the British Association of Urological Surgeons.

## Future Challenges

Simply put, the hospital stated that: 'more with better health and care.' The hospital would like to increase the number of kidney transplantations, as there was a large number of patients waiting. Dr. Mahesh Desai felt that the challenge was to cadaver<sup>48</sup> transplantation to meet the increasing demand for kidneys. A special-interest group of professional social workers headed by Dr. (Mrs.) Sujata Rajapurkar, Chairperson, Association of Renal Social Worker and Transplant Coordinators, was working on education and awareness creation programmes.

Dr. Mahesh Desai felt that medical research was undertaken in a big way only in the Western World. He felt that the incidence and pattern of diseases in countries like India were vastly different from the west. Additionally, the priorities assigned by the western world would not necessarily reflect the requirements of the developing world. This gave greater scope for good quality research. With the idea of accelerating quality research, the hospital has acquired to land adjacent to the hospital to build a modern research facility.

Another dream of Dr. Desai is related to the general ward. The general ward in hospitals in India was meant for poor patients who could not afford to pay room charges. To keep the charges low, hospitals in India pack a large number of patients in the general ward. At Muljibhai Patel Hospital, a general ward accommodated 15 patients. Dr. Desai felt that this arrangement was demeaning to the patients, as there was very little privacy for patients as well as the relatives attending the patients. He, therefore, wanted to build rooms with three beds each with separators to maintain privacy in place of the general ward.

Yet another concern of Dr. Desai has been the haphazard growth in the infrastructure, especially in the area of physical infrastructure. As the hospital grew from a small facility to treat mainly problems of kidney stone among patients in the western region to a hospital with international reputation in kidney care and urological diseases, it kept on adding facilities from time to time

depending upon the immediate needs resulting in indiscriminate growth in the physical structure of the hospital.

## End Notes

1. **Nadiad** is a sleepy rural town, 45 kilometers south of Ahmedabad, a prominent city in the state of Gujarat, India. Nadiad is the headquarters of Kheda district administration and is a major station on the Ahmedabad-Mumbai railway line. In 1971 the town had a population of 108,269; by 2011 the population had grown to 196,793.
2. Muljibhai Patel Urological Hospital, *Every Life deserves to be lived in Full*, Nadiad
3. **Urology** is the branch of medicine that focuses on the surgical and medical diseases of the male and female urinary tract system and the male reproductive organs. **Nephrology** is the branch of medical science that concerns with the study of normal kidney function, kidney problems, its treatment etc. **Dialysis** is the medical terminology referring to the process for removing waste and excess water from the blood, and is used primarily as an artificial replacement for lost kidney function in people with renal failure.
4. Muljibhai Patel Urological Hospital, *Every Life deserves to be lived in Full*, Nadiad
5. *Ibid.*
6. **Oncology** is the branch of medical science that deals with tumours. Treatment of cancer comes under this branch of medical science.
7. Muljibhai Patel Urological Hospital, *Every Life deserves to be lived in Full*, Nadiad
8. *Ibid*
9. *Ibid*
10. **Endoscopic surgery** uses scopes going through small incisions or natural body openings in order to diagnose and treat the disease. Another popular term is minimally invasive surgery (MIS), which emphasizes that diagnosis and treatments can be done with reduced body cavity invasion. Robotic surgery is a method of perform surgery



using very small tools attached to a robotic arm. The surgeon controls the robotic arm with a computer.

11. The **da Vinci Surgical System** is a robotic surgical system made by the American company Intuitive Surgical. Approved by the Food and Drug Administration (FDA) in 2000, it is designed to facilitate complex surgery using a minimally invasive approach, and is controlled by a surgeon from a console. The system is commonly used for prostatectomy (relating to prostate gland), and increasingly for cardiac valve repair and gynecologic surgical procedures. The manufacturer chose to call the system 'da Vinci System', because it is Leonardo da Vinci's study of human anatomy that eventually led to the design of the first known robot in history. Da Vinci robots are in operation in hospitals across the globe, most commonly for hysterectomy (removal of ovary in the female reproductive system) and removal prostate glands. The "Si" version of the da Vinci system was priced at about US\$2 million, in addition to several hundred thousand dollars of annual maintenance fees. Medical professionals were looking for a more economical system.
12. Ablatherm Integrated Imaging High Intensity Focused Ultrasound (HIFU), as a technology has been in use for almost 15 years for treating cancer of the prostate. USA has been slow in approving its usage.
13. **Lithotripsy** is a medical procedure involving the physical destruction of hardened masses like kidney stones.
14. PCNL is the acronym for Percutaneous Nephrolithotomy; it is a surgical procedure to remove stones from the kidney by a small puncture wound (up to about 1 cm) through the skin. It is most suitable to remove stones of more than 2 cm in size and which are present near the pelvic region. It is usually done under general anesthesia or spinal anesthesia.
15. **Plasma medicine** is an innovative and emerging field combining plasma physics, life sciences and clinical medicine to use physical plasma for therapeutic applications. Initial experiments confirm that plasma can be effective in *in vivo* antiseptics without affecting surrounding tissue and, moreover, stimulating tissue regeneration. Based on sophisticated basic research on plasma-tissue interaction, first therapeutic applications in wound-healing, dermatology and dentistry will be

opened. Plasma, described as the fourth state of matter, comprises charged species, active molecules and atoms and is also a source of UV-photons. These plasma-generated active species are useful for several biomedical applications such as sterilization of implants and surgical instruments as well as modifying bio-material surface properties. Sensitive applications of plasma, like subjecting human body or internal organs to plasma treatment for medical purposes, are also possible. 'Plasma medicine' is an emerging area and is the subject of inter-disciplinary research at leading research labs.

16. HistoScanning is a process that shows the tissue alterations in the prostate accurately and at an early stage thus helping in the diagnosis and treatment of the cancer of the prostate. [www.intuitivesurgical.com](http://www.intuitivesurgical.com)
17. *Ibid*
18. [www.mpuh.org/about-us/infrastructure](http://www.mpuh.org/about-us/infrastructure)
19. *The Economist*, March 3-9, 2012.
20. *The Times of India*, March 3, 2012
21. *Ibid*
22. [www.mpuh.org/about-us/infrastructure](http://www.mpuh.org/about-us/infrastructure), *op. cit.*
23. *Ibid*
24. [www.mpuh.org/about-us/our-culture-performance](http://www.mpuh.org/about-us/our-culture-performance)
25. [www.mpuh.org/about-us/our-quality-policy-states](http://www.mpuh.org/about-us/our-quality-policy-states)
26. Muljibhai Patel Urological Hospital, *Every Life...*, *op. cit.*
27. The Indian Express, "In a first, 3-month-old undergoes robot-aided surgery in Nadiad, January 15, 2012 ([www.indianexpress.com/story-print/899649](http://www.indianexpress.com/story-print/899649)).
28. Pyeloplasty is a surgical process to repair the kidney, specifically, it repairs a part of the kidney called the renal pelvis which has a funnel-like structure that connects the kidney to a tube called the urethra. Laparoscopy is a type of surgical procedure in which a small incision is made, usually in the navel, through which a viewing tube (laparoscope) is inserted with the purpose of visual examination of the inside of the abdomen by means of a laparoscope as also surgical operation (as tubal ligation



- or gallbladder removal) involving laparoscopy.
- 29. The Indian Express, "In a first, 3-month-old undergoes robot-aided surgery in Nadiad, January 15, 2012 ([www.indianexpress.com/story-print/899649](http://www.indianexpress.com/story-print/899649)). *Op. cit*
- 30. [www.mpuh.org/health-care-services/department of urology](http://www.mpuh.org/health-care-services/department-of-urology)
- 31. Muljibhai Patel Urological Hospital, Every Life.... *op.cit.*
- 32. *Ibid*
- 33. **Diplomate of National Board (DNB)** is the title awarded by the [National Board of Examinations \(NBE\)](http://www.nbe.ac.in), an autonomous academic body under the Ministry of Health and Family Welfare, Government of India to candidates who successfully complete their postgraduate or postdoctoral medical education under it.
- 34. [www.mpuh.org/about-us/recognised](http://www.mpuh.org/about-us/recognised)
- 35. Muljibhai Patel Urological Hospital, Jayaramdas Patel Academic Centre, *Enter to Learn; Exit to Serve*, Nadiad.
- 36. *Ibid.*
- 37. *Ibid.*
- 38. [www.mpuh.org/about-us/patient-education](http://www.mpuh.org/about-us/patient-education)
- 39. [www.mpuh.org/about-us/our-remedial-potential](http://www.mpuh.org/about-us/our-remedial-potential)
- 40. [www.mpuh.org/about-us/milestones](http://www.mpuh.org/about-us/milestones)
- 41. [www.mpuh.org/about-us/recognized](http://www.mpuh.org/about-us/recognized)
- 42. [www.mpuh.org/about-us/milestones](http://www.mpuh.org/about-us/milestones)
- 43. [www.mpuh.org/.../](http://www.mpuh.org/.../)
- 44. [www.mpuh.org/about-us/recognized](http://www.mpuh.org/about-us/recognized)
- 45. [www.Indiaheartbeat.com](http://www.Indiaheartbeat.com)
- 46. [www.mpuh.org/about-us/board-trustees](http://www.mpuh.org/about-us/board-trustees)
- 47. Extracorporeal shock wave lithotripsy (ESWL) uses shock waves to break a kidney stone into small pieces that can more easily travel through the urinary tract and pass from the body.
- 48. Cadaver is the medical and legal terminology denoting a deceased human body meant for dissection.

**Exhibit-1**

<b>The MPUF Edifice</b>
<i>Built on the firm foundation of the vision of its founders</i>
<i>the commitment and ethics of its management and administration</i>
<i>the faith of its patients;</i>
<i>standing firm and growing</i>
<i>due to the dedication of its doctors and residents</i>
<i>who create new synergies everyday with their expertise</i>
<i>together with the world class technology,</i>
<i>infrastructure and equipments available to them,</i>
<b><i>MPUH is a temple of healing</i></b>

*confident and assured  
of the support of its well-wishers.*



Source: "Every Life Deserves to be Lived in Full", Muljibhai Patel Urological Hospital, Nadiad

Exhibit-2: <b>Muljibhai Patel Urological Hospital, Nadiad</b> MILESTONES	
1978	Shri. Neelam Sanjeeva Reddy, Honorable President of India, inaugurated Muljibhai Patel Urological Hospital (MPUH).
1980	First Live Donor Kidney Transplant Operation in Gujarat performed.
1981	Urodynamics Laboratory started functioning.
1984	Muljibhai Patel Society for Research in Nephro-Urology (MPSRNU) was formed, approved by the Department of Scientific

	and Industrial Research, Government of India.
	Donations made to MPSRNU qualified for 200% exemption U/s. 35(1)(ii) of the Income Tax Act,1961.
1985	Started Department of Endourology for treating kidney stones through Endoscopic Procedures for the first time in the country.
	Introduced Ureterscopy for the first time in the country.
1989	Dr. Shankar Dayal Sharma, Hon. Vice President of India, inaugurated the new



	Dr. Shankar Dayal Sharma, Hon. Vice President of India, inaugurated the new building and Shri. Haribhai Desai Lithotripsy Centre.
	Acquired Lithotripter and Laser for the treatment of stone.
1991	New Urodynamic Laboratory installed.
1992	Government of Gujarat recognized the institution by granting reimbursement to its employees for treatment received at the hospital.
1993	Received approval from the National Board of Examination, New Delhi, for conducting DNB Teaching Programme in Urology and Nephrology.
	24 hours Medical Store started functioning.
	Biochemistry section of our Laboratory fully automated.
1994	Started Department of Andrology for treating male infertility and sexual impotency.
1995	Acquired state-of-the-art equipment for the treatment of prostate known as Transurethral Needle Ablation (TUNA) of Prostate.
	Started Angioplasty Procedure in Reno vascular Hypertension.
1997	The department of Nephrology was selected as "Sister Renal Centre" by the Department of Nephrology of Arkansas University, U.S.A.
1998	Department of Pediatric Urology started functioning.
1999	Laparoscopic Donor Nephrectomy was performed in this institute for the first time.
	Animal Laboratory started functioning.
	ISO 9001:1994 accorded to the institution, which is the first charitable hospital in the country for this recognition.
	Acquired state-of-the-art colour doppler.
	Acquired video dynamics machine.
2000	Launched website of our Hospital "www.mpuh.org"
	Hosted the 12th Video Urology World Congress at Goa.

	Ranbaxy "Centre of Excellence" inaugurated.
	Crossed 1000 Live Donor Kidney Transplantation Operations.
	Hosted the Millennium International Urology Congress at Delhi.
2001	Dornier Lithotripter acquired for the treatment of stone.
	Fellowship Exchange Program with Cleveland Clinic Foundation, USA.
2002	Recertified for ISO 9001:2000 by BVQI.
	Hosted the 1st World Summit on Radical Prostatectomy.
2003	Hosted 1st World Summit on Kidney Surgery.
	Got the first prize from World Endourology Society for our clinical assay, first time in Asia.
2004	Installed O.R-1 (Major Operation Theatre) System. First Installation in India; equipment from Karl Storz Germany.
	Installed Riwo-net Operation Theatre System. First Installation in India; equipment from Richard Wolf Germany.
	Hosted 22nd World Congress on Endourology (WCE'2004) at Mumbai.
2005	Re-certified 2nd time as per ISO 9001:2000 by BVQI.
	Crossed 1500 Renal Transplant Operations.
2006	Awarded CRISIL Healthcare Grading "A" to the institution – 1st Charitable Hospital in India recognized as Grade "A".
	Implemented Excelicare Software – a full fledged Hospital Information System for hospital.
	Tied up with Cincinnati Children's Hospital Medical Centre (CCHMC) for developing advanced pediatric service, training and research in the field of pediatric urology and its allied branches.
	Acquired Digitised X-ray (Agfa CR25), modern technique in radiology.
	Installed CORE-Richard Wolf (Major O.T.), an unique operation theatre in India having combination of OR-1 and CORE-O.T.
	Established the central office for Chronic Kidney Disease (CKD) Registry of India; a project of Indian Society of Nephrology.



2007	Inaugurated Jayaramdas Patel Academic Centre (JPAC) by Honorable Governor of Gujarat Shri. Naval Kishore Sharma on 21st January 2007.
	Received approval from the National Board of Examination, New Delhi, to conduct DNB Teaching Programme in Anesthesia.
2008	Inaugurated High-speed 16-Slice MDCT Scan Centre.
	Inaugurated Veeda Clinical Research's CPU (Clinical Pharmacology Unit) – India's 1st Clinical Pharmacology Unit for Renal impaired patients.
	Re-certified 3rd time as per ISO 9001:2000 by BVCI.
	Upgraded our Urodynamic laboratory with Duct Logic G-2.
	Microbiology section of Laboratory updated with Microbial Detection System.
	Modified Karl Storz OR-1 and HD.
	Acquired Robotic HIFU – EDAP TMS for the least invasive treatment of Prostate Cancer without surgery first time in India.
2009	The quality management system upgraded to ISO 9001:2008 by BVCI.
2010	Inaugurated Rohit J Patel Department of

	Uro-oncology by Honorable Minister of Health, Government of Gujarat, Shri. Jaynarayan Vyas on 11th January 2010.
	Acquired state-of-the-art da Vinci Si Robotic Surgical System, MPUH became the first charitable hospital in India to install a robot for urological surgery.
2011	The quality management system at MPUH re-certified for the 2nd time to ISO 9001:2008 by BVCI.
	Crossed 2000 Live Donor Kidney Transplantations.
	MPUH becomes the first hospital in India to install the "Prostate scanning".
	Crossed 2000 Laparoscopic operations consists more than 800 Donor Nephrectomy.
	Performed 125 Robotic surgeries within one year.
	Installed, for the first time in India, Prostate Histoscanning.
	MPUH declared the winner of the prestigious IMC Ramkrishna Bajaj National Quality Award Trophy-2011 - the first hospital in Gujarat to win this Award.
Source: Muljibhai Patel Urological Hospital	

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