Project Report

Setting up

DIALYSIS CENTER

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1. Executive Summary

Dialysis is essential for patients suffering from "End Stage Renal Disease (ESRD)" and it is observed from preliminary studies that the prevalence of Chronic Kidney Disease (CKD) the precursor to ESRD is 0.8% in India. The major contributing causes to CKD are diabetes and high blood pressure among others; these diseases are increasing at an alarming rate across the country. Hypertension is observed in 20-40 percent adults in urban areas and 12-17 percent adults in rural areas, the number suffering hypertension was estimated to be 118.2 million in 2000 and is expected to increase to 213.5 million in 2025. India is the world capital for diabetes cases with 19.3 million cases in 1995 to a projected increase to 57.2 million in 2025, but a 2004 study has projected the number of diabetes cases in India as 34.7 million already.

The cost of supporting the treatment of patients undergoing dialysis and suffering from ESRD is very high in the order of Rs 10,000 to Rs 20,000 per month; with 37% of the country's population below the international poverty line of USD1.5 per day, it is impossible to support such high treatment costs. Cost of per session of dialysis is anywhere between Rs 1000 to Rs 2000 in the private set up, low cost dialysis centers in the country provide dialysis between Rs 150 to Rs 600, and these centers are run by NGOs and supported by philanthropists.

This objective of this project is to establish dialysis center in Mumbai. The partner/consortium is expected to provide nephrology support and dialysis for patients who require the same. The center will be operated by qualified dialysis technicians and supported by trained nurses and shall operate two shifts every day, six days a week.

2. Objective

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The objective of the feasibility study report primarily is to facilitate potential NGO, Philanthropist and Organizations in project identification for partnership or sponsorship. The project feasibility may form the basis of an important decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management. The document also provides sectorial information, brief on government policies, which have some bearing on the project itself.

3. Crucial Factors & Steps in Decision Making

Before making any decision, it is preferred to evaluate the associated risk factors by taking into consideration certain key elements. These include availability of resources, academic knowledge, past experience and specific managerial and medical health care skill. At times evaluation and analysis of strengths, weaknesses, opportunities and threats (SWOT) for a particular project serves the purpose of a basic tool in decision making. Feasibility study captures all the important factors that play an instrumental role in the success of a project.

3.1. Key Success Factors/Practical Tips for Success

- Availability of reputed consultants and trained and professional Paramedical Staff.
- Reasonable and competitive fees, positioned against competitors fees.
- High standard patient care and hygienic environment for the patients, trained nurses and courteous Para-medical staff.

3.2. Opportunities

- Considering the shortage of donor kidneys, each year only a small percentage of people, who need a transplant, actually receive a kidney, for this dialysis is the only mean to get their blood filtered.
- Law against illegal kidney donors in India plays a vital role in increasing the demand for such centers.
- This treatment is cheaper than Kidney transplant, therefore higher number of patient are expected.
- It's a continuous process, a renal patient has to get the treatment every week or after every week or two, hence the demand is usually very high as compare to supply.

3.3. Threats

One of the major threats to the healthcare center is a high turnover rate of medical, paramedical staff and the consultants. To retain the consultants and other medical staff, salary and incentive package should be competitive.

4. Project Profile

The project report focuses on the establishment of a dialysis center in Mumbai.

4.1. Introduction to Dialysis

Dialysis is a process by which, when the kidneys have failed, artificial means are used to remove toxins from the body that accumulate due to non-functioning kidneys. It is one way of replacing the critical function of the kidneys, or renal replacement therapy, thereby sustaining life. Dialysis is needed when a patient loses about 85 to 90 percent of the kidney function. Like healthy kidneys, dialysis keeps the body in balance. Dialysis removes waste, salt and extra water to prevent them from building up in the body. It keeps a safe level of certain chemicals in blood, such as potassium, sodium and bicarbonate, which helps to control blood pressure and improved breathing. Most people undergo three dialysis sessions each week, for about four hours each time.

4.2. Type

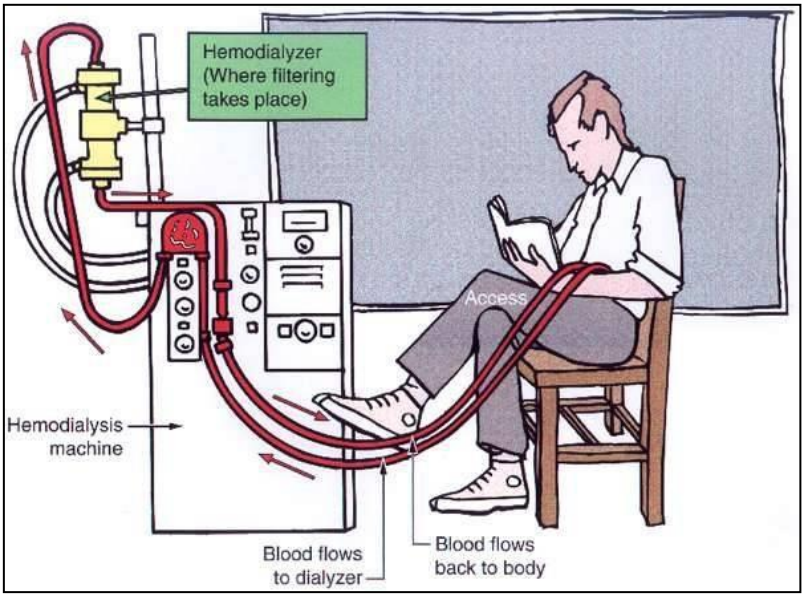
There are two types of dialysis: hemodialysis and peritoneal dialysis.

4.2.1. Hemodialysis

In this type of dialysis, an artificial unit called a dialyzer mimics the action of the nephron. To undergo hemodialysis, a person must first have a minor surgical procedure to create an access for the needles and tubing needed to connect the blood circulation to the dialysis machine. This minor surgery forms what is called an AV (arterio-venous) fistula, or a shunt, or simply a fistula. Once this is done, a person does not have to worry about difficulties being “stuck” with needles for each session of dialysis

Procedure

A person is connected to the dialysis machine via the shunt. The dialysis machine pumps the blood through the dialyzer, which filters off the waste products, excess fluid, and excess body chemicals. The newly cleaned blood flows out of the dialyzer and is returned via a different set of tubes. During dialysis, a person also receives the hormones the kidneys are unable to produce.

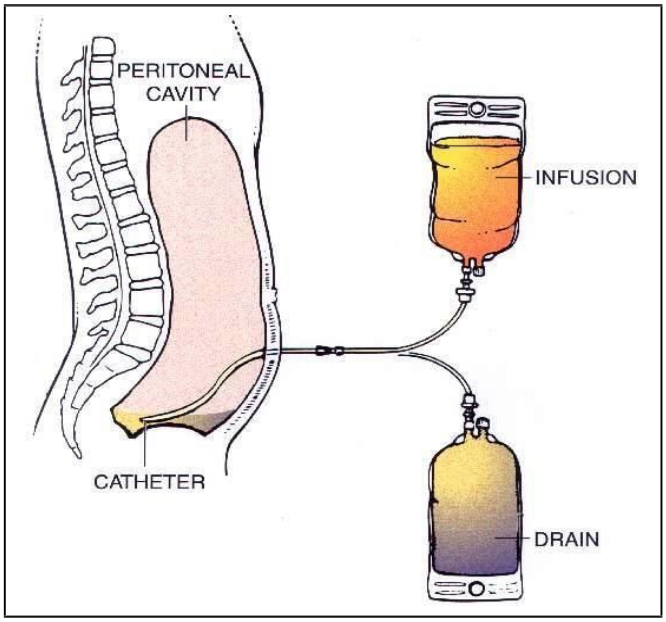


4.2.2. Peritoneal

This is an entirely different way of filtering wastes from the body. Peritoneal dialysis utilizes the peritoneal membrane, which is the lining of the abdominal cavity. The peritoneal membrane is very large, and has a rich blood supply. In people with kidney failure, the peritoneal blood supply, like all the other blood in the body, contains excessive waste products and fluid, When "clean" fluid comes into contact with that blood supply, the wastes travel into the cleaner fluid.

Procedure

A solution, called the dialysate, is fed into the peritoneal cavity (the spaces around the intestines and other organs) via a small tube (catheter) that has been placed there in a minor surgical procedure. The dialysate remains in this cavity for two to six hours, during which the wastes, extra fluid, and excess chemicals pass from the blood vessels in the peritoneal membrane into the dialysate fluid, and then the dialysate fluid is drained from the abdomen via the catheter. Once the fluid is drained, new fluid is placed to begin the process anew.



4.3. Opportunity Rationale

Growing number of kidney patients and lack of maintained infrastructure has put tremendous pressure on public sector hospitals. This has resulted in a rising demand for health services in the private sector. Moreover, introduction of latest technology, hygienic environment and professional staff attitude at private sector hospitals has also contributed to the popularity of the hospitals in private sector. In addition to this, increasing trend of medical diagnosis through sophisticated scientific medical tests has increased the need of high capital investment in the hospital sector. Philanthropist/NGO in the private sector can therefore leverage this opportunity and provide latest and dependable diagnostic services on round the clock basis, which not available in the public sector hospitals.

Constrained public sector health system, growing population, introduction of new and modern medical technologies and increased healthcare awareness in the country provides a better opportunity for the private sector to invest in the health care services.

4.4. Project Brief

The proposed project is for setting up a private Dialysis Centre. This center will comprise of 4 dialysis machines and will serve 8 patients per shift.

Table 1: Center's Capacity

Dialysis machine	**4**
Time Taken By 1 Patient	4 hours
Hours Per Shift	8
Number of Shifts	2
Patient Per Machine Per Shift	2
Patients Per Day	16
Working Days	360
Yearly Capacity	5,760

To make it more prudent we assumed the starting capacity to be 60%

4.5. Nature of Operation

A Dialysis center will be started as a project under RIDA Foundation, Charitable Trust or it can be registered under Section 8 of Indian company act 2013 as Social Enterprise. Although selection totally depends upon the choice of the managing team and RIDA Foundation team but this financial feasibility is applicable for all the models.

4.6. Project Investment

Total project cost is Rs 47,00,000/- (Rupees Forty Seven Lacs)

4.7. Proposed Location

Large government and public sector hospitals are concentrated in major cities of the country. It is planned to setup the centers in suburban area of Mumbai or remote places near to Mumbai where there is little presence of existing medical facilities.

5. Industry Analysis

The exact number of persons requiring dialysis in the country is still not known authoritatively. The Indian Society of Nephrology has established a Chronic Kidney Disease (CKD) registry and this is expected to provide useful epidemiological data in future.

In the prevention study done in Chennai, the prevalence at the community level is 8600 per million population (pmp) in the study group and 13900 pmp in the control group. The second study based in Delhi revealed a prevalence of CKD (serum creatinine more than 1.8 mg %) at 7852 pmp. The third study from Bhopal revealed an incidence of 151 pmp suffering from end stage renal disease (ESRD).

AIIMS, New Delhi conducted two studies, the first study covering a population of 4712 subjects in New Delhi who participated in a blood biochemistry test. Mean age was 42.38±12.54 years, 56.16% were male. Thirty-seven were found to have chronic renal failure (prevalence rate of 0.78%). If these data are applied to India's 1 billion populations there are ~7.85 million CRF patients in India. Aetiologically, diabetes (41%), hypertension (22%), chronic glomerular nephritis (16%), chronic interstitial disease (5.4%), ischaemic nephropathy (5.4%), obstructive uropathy (2.7%), miscellaneous (2.7%) and unknown cause (5.4%) constituted the spectrum.

In the second study by AIIMS 48 centers were distributed all over India. Data were based on prospective investigations conducted over a period of one month (33 hospitals) to three months (15 hospitals) comprising 4145 CKD patients. It showed the following aetiological pattern: diabetes (29.7%), chronic glomerulonephritis (19.3%), hypertension (14%), chronic interstitial disease and vesico-ureteral reflux (12.6%), obstruction and calculus (9.3%), ADPKD and Alport Syndrome (8.4%), undiagnosed (6.2%). This study shows that the prevalence of CRF in India is ~0.8%. If we combine the two, diabetes has emerged as the most frequent cause (30–40%) followed by hypertension (14–22%), CGN (16–20%), CIN (5.4–12.7%), heredofamilial disease (8.4%), obstruction including calculus (2.9%). The two studies, which are different in some ways, perhaps explain the wide range in incidence, suggesting regional influences.

6. Market Information

6.1. Target Patients

The major target market for the facility consists of people whose overall kidney function is so poor as to threaten adequate health and survival and are said to have end-stage renal disease (ESRD), and need renal replacement therapy in the forms of dialysis or kidney transplantation.

6.2. Facilities

As the treatment takes about three to four hours each time so it is suggested that the patient will be facilitated with TV, cable, phone, computer, air conditioners and refreshment.

7. Machinery Details

7.1. Machinery and Equipment Requirement

The major cost involved in establishing a well-equipped dialysis center is the cost involved in machinery, equipment and furnishing. The proposed Dialysis center is comprised of four dialysis machines.

Table 2: Equipment & Machinery

Description	No.	Unit Cost	Total Cost
Hemodialysis Machine	4	625,000	2,500,000
Endotoxin Filter	4	25,000	100,000
Water Treatment System	1	375,000	375,000
Instrument Sterilizers	2	5,000	10,000
Stethoscope	4	2,000	8,000
Blood Pressure Apparatus	4	1,950	7,800
Generator (5 KVA)	1	60,000	60,000
Total			**3,060,800**

Table 3: Support Equipment Requirement

Description	No	Cost Per Unit	Total
Computers	3	25,000	75,000
Computer Printer (s)	1	12,000	12,000
Telephones	4	3,500	14,000
Fax machines	1	12,000	12,000
Fans	16	1,850	29,600
Split Unit	6	30,000	180,000
32 Inch LCD For Dialysis Room	1	72,000	72,000
Total			**394,600**

To furnish the treatment rooms and visiting area the following furniture is required.

Table 4: Furniture and Fixture Requirement

Description	No.	Cost Per Unit	Total
Single Side Lift Able Beds	4	3,500	14,000
Bed Side Cabinet	1	2,000	2,000
Sofa Set for reception & Waiting Room	1	30,000	30,000
2 Seater For Dialysis Centre	1	12,000	12,000
2 Seater for Nursing Room	1	12,000	12,000
Waiting Room	4	1,200	4,800
Chairs for Consultant Room	3	3,500	10,500
Chairs for Doctors Room	3	3,500	10,500
Chairs For Nursing Rooms	4	1,200	4,800
Reception Counter	1	25,000	25,000
Tables	3	10,000	30,000
Counter Chair	2	3,500	7,000
Total			**172,600**

7.2. Options available for Machinery

Alternative Chinese machines are available; however, their prices are 2 to 3 times lower than Japanese equipment. However we use the mix of Japanese and Korean machinery for the proposed project.

8. Land/Building Space Requirement

8.1. Covered Area Requirement

Following is the covered area requirement split into various departments and sections:

Table 5: Covered Area Requirement

Building Infrastructure			5 M/c
Sl No	Space for	Dimension	Sq feet area
1	Patient waiting area	10*15	150
2	Administrative area	10*10	100
3	Doctor + observation	10*15	150
4	Dialysis area	7*3+7*4+7*2	540
5	Dialsate preparation room	10*15	150
6	Washroom	3*5*10	150
7	Nurse/Technician Station	10*10	100
8	Laboratory	10*10	0
9	Cleaning room	10*10	100
10	Store room	2*10*10	200
11	Janitor Room	5*10	50
12	Water Treatment Room	10*10	100
Total Built Area			1790

8.2. Alternative Option

One more option is, to get a place in any established hospitals on rental basis and run the dialysis center under an established banner. This will also reduce the cost related to infrastructure, construction of building and will be very helpful in attracting a good number of patients. However for a dedicated dialysis center, renting out any commercial place will also be a better option.

8.3. Utilities Requirement

- Electricity: Three phase connection would be required to cater the need of the center.
- Telephone: Four telephone lines are proposed in this feasibility report.
- Gas & water connection charges are included in pre operational expense.

8.4. Statutory and Legal Framework

The Dialysis unit shall be governed by all existing bio medical, statutory and legal laws governing an imaging center. The dialysis center along with the hospital or independently as the case and situation may apply shall get itself certified for/obtain the following certificates.

1. Building Permit
2. No objection certificate from Chief Fire Officer
3. Indian Medical Council Act and Code of Medical Ethics, 2002
4. Drugs and Cosmetics Act, 1940
5. License under Bio-medical Management and handling Rules, 1998
6. Right to Information Act
7. Consumer Protection Act, 1986

9. Consumables

Sl No	Consummable	Number Required	Cycle Reuse	Unit Cost in Rs	Cycle Cost in Rs
1	Dialyser	1	3	650	217
2	Blood Tubing Set	1	3	150	50
3	Needle Set	1	1	20	20
4	Glucometer Strip	1	1	15	15
5	Syringe	1	1	8	8
6	Saline/Dextrose solution	1	30%	25	8
7	Other Consumables				100
Total consumable cost per Cycle					417

10. Human Resource Requirement

Consultant services for this field would be available in the center, and in addition to the salary consultant will be given 20 % share of the fee:

For the proposed size of center, following manpower is required:

Table 6: Human Resource Requirement

Positions	Required	Salary Per Month	Salary Per Annum
Administrative Staff			
Chief Executive	1	50,000	600,000
Admin officer/Accountant	1	15,000	180,000
Office Boy	2	6,000	144,000
Guard	2	6,000	144,000
Sweeper	2	4,500	108,000
			1,176,000

Operational Staff			
Consultant	2	55,000	1,320,000
Medical Officers	2	18,000	432,000
Nursing Staff	4	10,000	480,000
Technician	2	8,000	192,000
Receptionist	2	8,000	192,000
			2,616,000
Total			**3.792.000**

11. Financial Analysis

11.1. Initial Project Cost

Table 7: Total Project Cost

Project Costs	Costs (Rs)
Infrastructure	550,000
Furniture	172,600
Office equipment	394,600
Plant & Machinery	3,060,800
Preliminary Expenses	521,000
Total	**4,699,000**

11.2. Estimated time for Project Completion

- 2-3 months for purchase of machinery, its installation and testing.
- 1 month for premises furnishing and staff/labor appointments.

12. Key Assumptions

Table 8: Revenue Assumptions

Description	Rs.
Dialysis Fee	2,200
Checkup Fee	300

Table 9: Electricity Assumptions

Room Electricity Consumption	
Main Power for Machines	Standard Unit 230V-240V
Generator Required	Max. 5 KVA
Rate per Unit (Rupees/Kwh)	8
Electricity Price Growth Rate	10%

Table 10: Operating Expense Assumptions

Costs	Basis
Consultants' Share	20 % of Total Fee

Table 11: Other Operating Expense Assumptions

Maintenance Cost (% of Total Machinery & Building Cost)	1%
Maintenance Cost growth rate	5%
Telephone & Communication cost growth rate	10%
Amortization of Pre-Operating Expenses	10 Years

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