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## Appendix A: Questionnaire for Patients Survey

### Cost Effectiveness of Early Case Detection for Visceral Leishmaniasis in Nepal

Identification Number: \_\_\_\_\_

Name of the patient: \_\_\_\_\_

Age \_\_\_\_\_ Sex \_\_\_\_\_ 1 = Male 2 = Female

Address : VDC \_\_\_\_\_ Ward \_\_\_\_\_

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#### **(To be filled from service provider's records)**

1. Clinical symptoms at presentation \_\_\_\_\_ Date \_\_\_\_\_

Fever for \_\_\_\_\_ days

(Please tick)	<u>Normal</u>	<u>Enlarged</u>
Spleen		
Liver		
Lymphnode		

2. Screening test performed \_\_\_\_\_ 1 = DAT 2 = Aldehyde 3 = Dipstick

Confirmatory test (Bone marrow), if any 1 = Yes 2 = No

3. Outcome of the test \_\_\_\_\_ 1 = Positive 2 = Negative

4. Diagnosis \_\_\_\_\_ 1 = VL 2 = Non-VL

5. Treatment \_\_\_\_\_ 1 = First line 2 = Second line 3 = Not given

If 3, please specify \_\_\_\_\_

6. Follow up: (Please tick)

	<u>Date</u>	<u>Clinical Outcome</u>
1.		
2.		
3.		
4.		
5.		

7. If hospitalized, number of days of hospitalization \_\_\_\_\_

#### **(To be asked to patients)**

1. Can you remember when you first noticed the fever? \_\_\_\_\_

2. Did you go to seek health care then? \_\_\_\_\_ 1 = Yes 2 = No

If No, why \_\_\_\_\_

3. Do you remember how long it took you to seek health care since you first noticed the fever? \_\_\_\_\_
4. How far is the hospital from your house? \_\_\_\_\_
5. How did you travel to the hospital? \_\_\_\_\_
6. How long does it take to go to hospital from your house? \_\_\_\_\_
7. How much did you pay or have to pay to reach there? \_\_\_\_\_
8. How much time did you spend for your treatment there? \_\_\_\_\_
9. If you spend more than a day, where did you stay? \_\_\_\_\_
10. How much did you pay per night of your stay there? \_\_\_\_\_
11. Do you normally work? 1=Yes 2=No  
If yes, how much do you earn? \_\_\_\_\_ per day/month/year
12. Did any of your relatives accompany you while you came to the hospital? \_\_\_\_\_
13. If they work, how much do they earn? \_\_\_\_\_ per day/month/year
14. Did any of your family members take care of you at home? 1=Yes, 2=No  
If yes, how many of them? \_\_\_\_\_  
If they work, how much do they earn? \_\_\_\_\_ per day/month/year
15. Drug cost
- |    | <u>Drugs</u> | <u>No. of units consumed</u> | <u>Price per unit</u> | <u>Total expenses</u> |
|----|--------------|------------------------------|-----------------------|-----------------------|
| 1. |              |                              |                       |                       |
| 2. |              |                              |                       |                       |
| 3. |              |                              |                       |                       |
16. If hospitalized:
- |  | <u>Days of hospitalization</u> | <u>Per day charge</u> | <u>Total cost</u> |
|--|--------------------------------|-----------------------|-------------------|
|  |                                |                       |                   |
17. Days of morbidity
- First day of fever \_\_\_\_\_ Date of diagnosis \_\_\_\_\_ Recovery date \_\_\_\_\_
18. If you made other expenditure related to your treatment, can you please specify?
- |    | <u>Type of expenditure</u> | <u>Units consumed</u> | <u>Unit price</u> | <u>Total</u> |
|----|----------------------------|-----------------------|-------------------|--------------|
| 1. |                            |                       |                   |              |
| 2. |                            |                       |                   |              |
| 3. |                            |                       |                   |              |
| 4. |                            |                       |                   |              |
19. How long could you not work while you well sick? \_\_\_\_\_ days

## Appendix B: Background Information on Nepal

(Source: CIA Fact Sheet, 1999)

**Chief of state:** King.

**Head of government:** Prime Minister.

**Capital:** Kathmandu.

**Official language:** Nepali.

**Official religion:** Hinduism.

**Location:** Southern Asia, between China and India

**Geographic coordinates:** 28 00 N, 84 00 E

**Area:** *Total* - 140,800 sq km

*Land:* - 136,800 sq km

*Water* - 4,000 sq km

**Land boundaries:** Total 2,926 km

**Border countries:** China (1,236 km & India 1,690 km)

**Elevation extremes:** *lowest point:* Kanchan Kalan 70m, *highest point:* Mount Everest 8,848 m

**Natural Resources:** quartz, water, timber, hydropower potential, scenic beauty, small deposits of lignite, copper, cobalt and iron ore.

**Monetary unit:** 1 Nepalese rupee (NRs)=100 paisa (paisa);

Valuation (Jan. 1998) 1 U.S.\$=NRs 68.65; POUND STERLING 1 =NRs 109.63.

### Demography

Population: 23,698,421 (July 1998 est.)

Age distribution: *0-14 years* - 42% (male 5,087,855; female - 4,779,941)

(July 1998 est.) *15-64 years* - 55% (male 6,655,865; female 6,387,255)

*65 years and over* - 3% (male 392,141; female 395,364)

*at birth* - 1.05 male(s)/female

Sex ratio: *under 15 years* - 1.06 male(s)/female

*15-64 years* - 1.04 male(s)/female

*65 years and over* - 0.99 male(s)/female

Population projection: (2000) 23,042,000; (2010) 28,698,000.

Doubling time: 25 years.

Nepalese 53.2%; Bihari (including Maithili and Bhojpuri)

Ethnic composition (1991): 18.4%; Tharu 4.8%; Tamang 4.7%; Newar 3.4%; Magar 2.2%;

Abadhi 1.7%; other 11.6%.

Religious affiliation (1991):	Hindu 90%; Buddhist 5%; Muslim 3%; Kirat 1.7%; Christian 0.2%; other 0.3%.
Major cities (1993 est.):	Kathmandu 535,000; Lalitpur 190,000; Biratnagar 132,000; Bhaktapur 130,000.

### **Vital statistics**

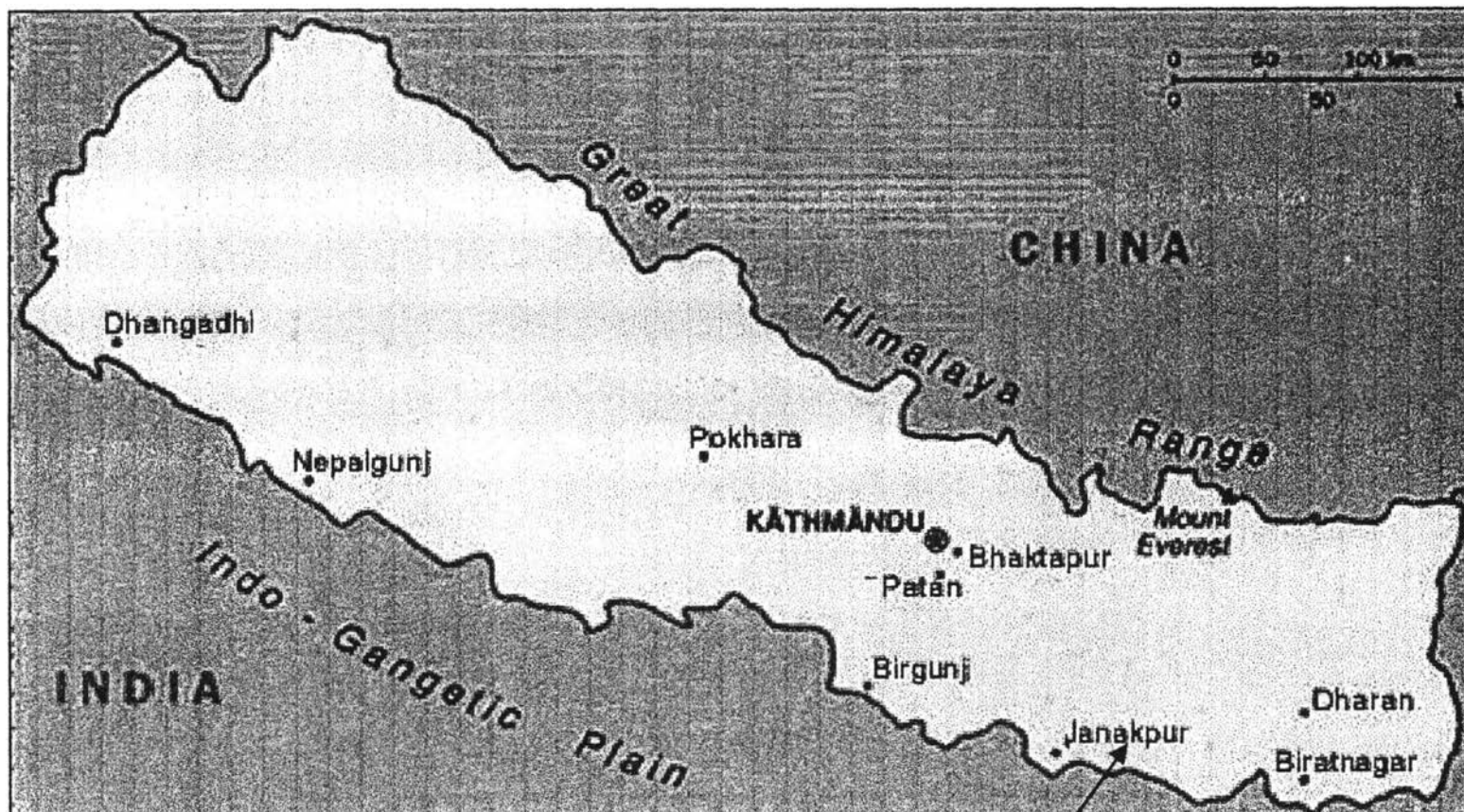
Birth rate per 1,000 population (1998 est.):	35.66
Death rate per 1,000 population (1998 est.):	10.44
Population Growth rate:	2.52% (1998 est.)
Total fertility rate (avg. births per childbearing woman; 1998 est.):	4.87
Life expectancy at birth: (1998 est.)	male 58.04 years; female 57.74 years; total population 57.89 years
Infant mortality rate:	75.98 deaths/1,000 live births (1998 est.)
Net migration rate:	0 migrant(s)/1,000 population (1998 est.)
Major causes of death per 100,000 population:	n.a.; however, the leading causes of mortality are infectious and parasitic diseases, diseases of the respiratory system, and diseases of the nervous system.

### **National economy**

	<i>Revenues: \$ 536 million</i>
Budget (FY 96/97 est.)	<i>Expenditures: \$8.18 million, including capital expenditures of \$NA.</i>
Public debt (external, outstanding; 1997 est.):	U.S.\$2,6 billion.
Economic aid:	ODA, \$ 411 million (FY 97/98) <i>real growth rate - 4.2 %</i>
GDP:	<i>per capita - \$ 1,370 (1997 est.)</i> <i>composiytion by sector – agriculture 40%, industry 21%, services 39% 91997 est.)</i>



Inflation rate:	consumer price index- 7.5% (1997 est.)
Labour force:	<i>Total</i> - 10 million (1996 est.) <i>by occupation</i> - agriculture 81%, services 16%, industry 3%
Fiscal Year	16 July - 15 July
Tourism (1995):	receipts from visitors U.S.\$117,000,000; expenditures by nationals abroad U.S.\$136,000,000. rice 3,578,830, sugarcane 1,568,700, corn (maize) 1,331,060,
Production (metric tonnes except as noted).	wheat 1,012,930, potatoes 898,350, millet 282,440, pulses 185,640; livestock (number of live animals) 7,008,420 cattle, 5,783,140 goats, 3,302,200 buffalo, 859,000 sheep, 670,340 pigs; roundwood (1995) 20,822,000 cu m; fish catch (1995) 21,148.
Agriculture, forestry, fishing(1996):	
Mining and quarrying (1995):	limestone 350,000; salt 7,000; talc 1,500.
Manufacturing (value added in U.S.\$'000,000; 1994):	food products 70; textiles 70; wearing apparel 50; tobacco products 37; nonmetal mineral products 32.
Construction: n.a. Energy production (consumption):	electricity (kW-hr; 1994) 908,000,000 (940,000,000); coal (metric tonnes; 1994) none (115,000); petroleum products (metric tonnes; 1994) none (343,000).
Population economically active (1991):	total 7,339,586; activity rate of total population 39.7% (participation rates: ages 10 years and over, 57.0%; female 45.5%; unemployed [1980] 5.5%).
Household income and expenditure (1984-85)	Average household size (1991) 5.6; income per household NRs 14,796 (U.S.\$853); self-employment 63.4%, wages and salaries 25.1%, rent 7.5%, other 4.0%; expenditure: food and beverages 61.2%, housing 17.3%, clothing 11.7%, health care 3.7%, education and recreation 2.9%, transportation and communications 1.2%, other 2.0%.
Sources of income:	



Appendix C: Map of Nepal

Source: CIA Fact Sheet, 1999

Siraha district, the study area, is near Janakpur.

## Appendix D: Staffing Costs

### Staffing Costs of Health Facility Based Case Detection Program (in Rupees, 1999 prices)

Category	Number	Gross Salary/month	Daily cost	Time spent in VL activities	Attributable days of salary/yr	Annual Salary attributable to VL activities
	(1)	(2)	(3) =(2)/26	(4)	(5)	(6)= (1)x(3)x(5)
<b><i>Salary and benefits</i></b>						
Medical Superintendent	1	6210	238.85	1 hr/day	45.29	10817.34
Sr. Medical Officer	1	6210	238.85	1 hr/day	45.29	10817.34
Nurses	1	4701	180.81	1 hr/day	45.29	8188.78
Lab Technicians	2	4601	176.96	56 hrs/month	96.00	33976.62
Auxiliary Nursing Midwives	4	3380	130.00	1.5 hrs/day	67.93	35323.60
Lab Assistants	3	4008	154.15	2 hrs/day	90.57	41885.14
Vector Control Assistants	1	4095	157.50	1 hr/day	45.29	7133.18
Store Keeper	2	3846	147.92	30 mins/day	22.64	6697.96
Administrative Assistants	2	3846	147.92	30 mins/day	22.64	6697.96
Medical Recordist	1	4095	157.50	20 mins/day	15.10	2378.25
Driver	1	3734	143.62	5 days/month	60.00	8616.92
<b>Total Salaries</b>						<b>172533.08</b>
<b><i>Field allowances</i></b>						
Medical Officer	1		200.00	5 days/month	60.00	12000.00
Vector Control Assistants	1		150.00	5 days/month	60.00	9000.00
Lab Assistants	1		150.00	5 days/month	60.00	9000.00
Driver	1		115.00	5 days/month	60.00	6900.00
<b>Total Field Allowances</b>						<b>36900.00</b>
<b>TOTAL STAFFING COSTS</b>						<b>209433.08</b>

Total working days in a year = 317

Total working hours in a day = 7

For Medical Superintendent, for example, the attributable days of salary per year =

$$(1 \times 317)/7 = 45.29$$

## Appendix E: Capital Costs

### Calculation of Capital Costs of Hospital Based Case Detection Program (in Rupees, 1999 prices, Discount rate of 10 per cent)

<i>Inputs</i>	<b>Purchase Price</b>	<b>Year of purchase</b>	<b>Useful life*</b>	<b>Current Price***</b>	<b>Annuali- zation factor</b>	<b>Annual cost</b>	<b>Alloca- tion %</b>	<b>Annual program Cost</b>
Building	8500000	1979	30	57183749.57	9.427	6065954.13	0.20	1213190.83
Land**				2400000.00		240000.00	0.20	48000.00
Vehicle	280160.76	1994	10	451200.48	6.145	73425.63	0.16	12070.00
Furniture**			5	317000.00	3.791	83619.10	0.20	16723.82
<b><i>Equipment</i></b>								
Calorimeter	11000	1998	4	12100.00	3.170	3817.03	0.29	1090.58
Pipette	2500	1998	2	2750.00	1.736	1584.10	0.29	452.60
Centrifuge	5000	1995	10	7320.50	6.145	1191.29	0.29	340.37
Microscope	80000	1997	5	96800.00	3.791	25534.16	0.29	7295.47
Refrigerator	19000	1994	5	30599.69	3.791	8071.67	0.29	2306.19
Oven	5000	1997	5	6050.00	3.791	1595.88	0.29	455.97
Incubator	5000	1997	5	6050.00	3.791	1595.88	0.29	455.97
Differential counter	1500	1999	2	1500.00	1.736	864.06	0.29	246.87
Water bath	1450	1999	3	1450.00	2.487	583.03	0.29	166.58
Autoclave	5000	1996	5	6655.00	3.791	1755.47	0.29	501.56
Weighing machine	6000	1995	10	8784.60	6.145	1429.55	0.29	408.44
Generator	55000	1994	5	88578.05	3.791	23365.35	0.20	4673.07
<b><i>Total equipment</i></b>	<b>196450</b>			<b>268637.84</b>		<b>71387.49</b>		<b>18393.68</b>
<b>TOTAL CAPITAL COST</b>	<b>8976610</b>			<b>60620589.11</b>		<b>6534386.54</b>		<b>1308378.33</b>

\* Obtained from interview with Medical Superintendent, Administrator, Accountant and Lab Technicians, where applicable.

\*\* Replacement value as estimated by the hospital staff.

\*\*\* Calculated using  $C_t = C_0(1+r)^t$  where,  $C_t$ =Current price,  $C_0$ =Purchase price,  $r$ =Discount rate  
 $t$ =Years since purchase

## Appendix F: Material Costs

### Material Costs to Health Facility Based Case Detection Program (in Rupees, 1999)

Category	Qty. used	Unit cost	Annual cost	Allocation basis	Proportion of allocation	Cost to Program	Remarks
<b>DIRECT to Activity</b>							
<b>Investigations</b>							
Bone marrow	170	224.50	38165.00			38165.00	
TC/DC	170	24.35	4139.50			4139.50	
Hb test	170	20.00	3400.00			3400.00	
Aldehyde	170	26.10	4437.00			4437.00	
<b>Total investigations</b>						<b>50141.50</b>	
<b>Drugs</b>							
SAG	170	780.00	132600.00			132600.00	
Ampho. B	12	11200.00	134400.00			134400.00	
<b>Total drugs</b>						<b>267000.00</b>	
<b>Food</b>	<b>2040</b>	<b>30.00</b>	<b>61200.00</b>			<b>61200.00</b>	
<b>Total DIRECT</b>						<b>378341.50</b>	
<b>INDIRECT to Activity</b>							
<b>Building related</b>							
Routine repair maintenance			600000.00	243 sqft/1215 sqft	0.20	12000.00	
Electricity and Water			300000.00	-do-	0.20	6000.00	
Heating and generator	1800 lit	23.00	41400.00	-do-	0.20	8280.00	150 lit/mth
Lubricants	12 lit	170.00	2040.00	-do-	0.20	408.00	1 lit/month
<b>Total building related</b>						<b>188688.00</b>	
<b>Administration</b>							
Telephone			3000.00	170 cases/1013 IPD cases	0.17	503.45	
Postage/ photocopying			14000.00	-do-	0.17	2349.45	
Stationery			3000.00	-do-	0.17	503.45	
Printing			3500.00	-do-	0.17	587.36	
Others			5000.00	-do-	0.17	839.09	
<b>Total administration</b>						<b>4782.82</b>	
<b>Vehicles</b>							
Petrol	96000 km	5.00	480000.00	60 days/360 days	0.17	80000.00	1 lit - 8km, 1 lit= Rs 40
Oil	96 km	170.00	16320.00	-do-	0.17	2720.00	1 lit - 1000 km=Rs 170
Maintenance			150000.00	-do-	0.17	25000.00	
<b>Total vehicles</b>						<b>107720.00</b>	
<b>Laundry</b>			8400.00	170 cases/1013 IPD cases	0.17	<b>1409.67</b>	Rs 700/mth contract
<b>Cleaning</b>			60000.00	-do-	0.17	<b>10069.10</b>	Rs5000/mth contract
<b>Total INDIRECT</b>						<b>312669.10</b>	
<b>TOTAL MATERIAL COST</b>						<b>691010.60</b>	

## Appendix G: Calculation of Unit Costs for Investigations

Items required	Quantity	Unit price	Total costs	Remarks
<b><i>Bone marrow</i></b>				
Bone marrow needle	0.5	350.00	175.00	One needle is used for two tests
Xyloquene	2 ml	1.50	3.00	
Syringe	2	5.00	10.00	
Handyplast	2	2.00	4.00	
Stain	10 ml	0.80	8.00	Rs 400 for 500 ml
Slide	10	2.00	20.00	
Betadine	2 ml	1.50	3.00	
Spirit swab	2	0.75	1.50	
<b>Total</b>			<b>224.50</b>	
<b><i>TC/DC</i></b>				
Slide	1	2.00	2.00	
Stain	2 ml	0.80	1.60	Rs 400 for 500 ml
Syringe	1	5.00	5.00	
Counting chamber	1	9.00	9.00	Rs 1800 for 200 tests
WBC dilutinmg fluid	1	2.00	2.00	
Spirit swab	1	0.75	0.75	
Vial	1	4.00	4.00	
<b>Total</b>			<b>24.35</b>	
<b><i>Aldehyde</i></b>				
Syringe	1	5.00	5.00	
Tube	1	12.00	12.00	
Spirit swab	1	0.75	0.75	
Farmalin	2 drops	0.05	0.10	16 drops = 1 ml = Rs 0.40
Serum separated tube	1	8.25	8.25	
<b>Total</b>			<b>26.10</b>	
<b><i>Hb test</i></b>	<b>1</b>	<b>20.00</b>	<b>20.00</b>	Brabkins solution 5ml @ Rs 4 per ml

## Appendix H: Calculation of drug costs to providers and patients

Name of drugs and accessories	Quantity	Unit price	Costs to		Total costs	Remarks
			Providers	Patients		
<i>Treated with SAG</i>						
SAG	6 vials	130	780		780	
Syringe	60	5		300	300	
Other drugs						
Iron tablets	60	2		120	120	
Analgesic	2 tabs	50		100	100	
<b>Total</b>			<b>780</b>	<b>520</b>	<b>1300</b>	
<i>Treated with Amphotericin B</i>						
Amphotericin B	14 vials	800	11200		11200	Given only when the patient is not responding to SAG
Syringe	12	5		60	60	
Saline	14 pints	25		350	350	
IV set	4	25		100	100	
Canula	4	60		240	240	
<b>Total</b>			<b>11200</b>	<b>750</b>	<b>11950</b>	

## APPENDIX I: Summary Statistics of VL Cases Interviewed

		Outreach Detection Program	Health Facility Based Detection Program
<b>Number of cases interviewed</b>		28	22
<b>Male : Female</b>		1:2	1:1
<b>Age</b>	Mean	27.5	24.3
	Min	5.0	8.0
	Median	25.5	25.0
	Max	65.0	50.0
	SD	15.3	12.1
<b>Earnings (Rs per day)</b>	Mean	35.1*	58.8
	Min	25.0*	25.0
	Median	35.0*	40.0
	Max	70.0*	300.0
	SD	11.5*	64.8
<b>Days of absence from work</b>	Mean	59.4	100.7
	Min	30.0	12.0
	Median	30.0	90.0
	Max	270.0	330.0
	SD	54.2	75.3
<b>Duration of morbidity (days)</b>	Mean	172.3	145.8
	Min	60.0	40.0
	Median	120.0	127.5
	Max	730.0	395.0
	SD	140.5	95.1
<b>Time between infection and seeking health care (days)</b>	Mean	80.3	57.6
	Min	5.0	2.0
	Median	52.5	30.0
	Max	270.0	300.0
	SD	44.2	72.4
<b>Distance to hospital (kms)</b>	Mean	32.0	18.6
	Min	1.0	3
	Median	35.0	16.5
	Max	40.0	60
	SD	9.1	13.5
<b>Time of travelling to hospital (hrs)</b>	Mean	1.8	2.0
	Min	1.0	1
	Median	2.0	1.5
	Max	3.0	7
	SD	0.4	1.5
<b>Days spent in hospital for treatment</b>	Mean	10.1**	12.8
	Min	1.0**	0
	Median	1.0**	5.5
	Max	30.0**	38.0
	SD	12.0**	14.1

\* n = 27 \*\* n = 10



## Appendix J: Patients Costs

Costs to patients due to VL by different headings (in Rupees, 1999 prices)

		Outreach Detection Program (n=28)	Health Facility Based Detection Program (n=22)
<b>Opportunity costs to relatives in accompanying patients to hospitals</b>	Mean	192	1076
	Min	25	33
	Median	40	937
	Max	1200	3600
	SD	365	982
<b>Opportunity costs to relatives for taking care of the patient at home</b>	Mean	333	1660
	Min	0	0
	Median	0	1175
	Max	1800	7300
	SD	602	1738
<b>Indirect costs to patients due to absence from work</b>	Mean	2016	6483
	Min	0	480
	Median	1200	4500
	Max	10800	32400
	SD	416	7478
<b>Out of pocket drug costs</b>	Mean	354	1430
	Min	0	0
	Median	0	500
	Max	4825	9000
	SD	982	2141
<b>Out of pocket costs of hospitalization</b>	Mean	15	384
	Min	0	0
	Median	0	322
	Max	300	1350
	SD	60	357
<b>Travelling cost</b>	Mean	87	58
	Min	60	0
	Median	80	44
	Max	180	200
	SD	4	56
<b>Total indirect costs</b>	Mean	2542	9220
	Min	775	1485
	Median	1525	8540
	Max	10830	39980
	SD	2273	8380
<b>Total direct cost</b>	Mean	848	2883
	Min	60	580
	Median	112	2154
	Max	8380	9120
	SD	346	2277
<b>Total costs</b>	Mean	3391	12103
	Min	855	3253
	Median	1670	9954
	Max	14380	47695
	SD	3397	9460

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