

CHAPTER V

DISCUSSION AND CONCLUSION



5.1 Discussion

Capital costs represent an investment in an asset which is used overtime. Most assets, such as equipment and buildings wear out or depreciate with time but land is not depreciable asset because it maintains its value. There are two components of capital cost- one is the opportunity cost of the funds tied up in the capital asset and second component represents the depreciation over time of the asset itself. There are several methods of measuring and valuing capital cost in economic evaluation. The best method is to annualize the initial capital outlay over the useful life of the asset. This method automatically incorporates both the depreciation aspect and the opportunity cost aspect of the capital cost (Drummond, 1997). This method was adopted in this study and all the calculated capital cost reflects economic cost of capital inputs.

While calculating annual cost, the useful life of furniture was estimated from consensus of different staff by asking how long these types of furniture were lasted in the past. For medical equipment, being conservative, useful life was set around five years (Drummond, 1997). For those equipments and furniture that had already expired its lifetime, replacement value (market price), that could reflect the opportunity cost of capital asset, were used.

Economic costs of donated goods (specially drugs and equipment), that could provide a useful indicator of the capacity of government resources to be generated, were taken into account using border price. Since shadow exchange rate and official exchange rate were almost similar, the value of foreign currency was converted into local currency (Nepalese Rupee) using official exchange rate.

The allocation proportion set to distribute annual capital cost to DOTS services for tuberculosis might not be free from question. In this study, the allocation proportion for capital cost was based on time used by TB patients and other patients in the clinic. The assumption made for this calculation was physicians spent equal amount of time for all types of patients. Similar approach was adopted to calculate the proportion to allocate annual cost to TB.

The DOTS center that did not have own building and used rent free or rent pay building, to reflect the economic cost of that space, some estimates had been adopted to assess that cost on the basis of Nepal Gazette, 1999 and consensus of local people and staff to find market price. This could be more realistic in calculating economic cost rather than putting zero value for rent-free building.

When we would like to compare the total provider cost of public and public-private mix firms, one cause of cost variation might be income tax and import tax on drugs and capital goods (direct and indirect). Higher tax could increase the welfare loss. If both sector bears the same rate of taxes, it does not show any difference in provider's cost. If one sector gets exemption and another does not get any exemption on taxes, it might show distortion effect of tax, but, if tax rate is very small, the effect might be negligible. There was no tax on drugs but for other medical equipments, private sector had to pay only 1% tax. So this tax rate was supposed to have negligible effect to show distortion effect of tax.

To minimize the provider's future treatment cost, it was important to assess the necessary conditions of treatment success. Basically, quality of care, monitoring and supervision, recording and reporting, good counseling to patients and late patient chasing were important factors for successful treatment. NTC has very clear guidelines to monitor and supervise the public and public-private mix DOTS center. From NTC, a team comprised of medical officer, other officer, supervisor, Q.C Assessor and DTLA

do visit to DOTS centers in every four-month. RTLA/DTLA also do visit in the same frequency. District Public Health Office makes one visit to each DOTS center (both Public and PPM DOTS centers). Well maintained TB registers and treatment cards at DOTS centers contain a lot of information regarding TB patients that could help find the details of each patient and to chase them until cured. Quality control management regarding microscopy test is another important factor for success of DOTS service. All smear slides having positive test results and 10% having negative test result from each DOTS center were sent to regional or central laboratory for quality control purpose.

Among four DOTS Centers, three of them dealt to OPD services only. One, Birendra Police Hospital, dealt to OPD as well as IPD services to TB patients. It was known that most of them were admitted due to the far distance from their work place, severity of disease was not main cause of admission. Here, to make it comparable to other DOTS Centers, one assumption was made that IPD patients also made visits to physician as other OPD patients did.

Cost

The results show that capital cost of each DOTS center did not exceed more than 9.7% of total provider costs. In public DOTS centers, it ranged from 7.2-8.76% and in public-private mix DOTS centers from 5.5-9.7%. Since DOTS for TB is being provided in integrated manner with other services, capital investment is not a big concern.

Labor costs among four DOTS centers varied from 17-49%. The result shows that the labor cost was low with higher TB caseload and vice versa at DOTS centers. PPM DOTS center such as Friends of Shanta Bhawan (FHB) and Helping Hands Clinic, Nepal (HHCN) had more TB caseload and low labor costs (24.27% and 17.14% respectively), while low caseload DOTS centers such as Birendra Police Hospital and

Ramghat PHC had higher labor cost (30.0% and 48.94% respectively). Ideal time of physician and other technical staff might pull labor cost up at these DOTS centers.

Material costs account the lowest percentage of total provider costs. Providing radiology services added more material cost. FSB (PPM DOTS center) and Ramghat PHC (Public DOTS Center) did not have radiology unit for X-ray examination. So their material cost was about 3.5% of total cost. At rest two DOTS centers with radiology unit, the material cost ranged from 9.94-11%. This suggests that radiology service adds more cost to DOTS services.

Effectiveness

As mentioned on effectiveness section, Friends of Shanta Bhawan had achieved remarkable success for the treatment of tuberculosis. The cure rate was 93.2% for new smear-positive cases and 80% for relapse cases. The treatment success rate was 89.5% and sputum conversion rate of smear-positive cases was 85%. The defaulted rate for smear-positive case was 0%.

Helping Hands Clinics had achieved 75% cure rate, 83.3% treatment success rate, 5% default rate for new smear-positive cases and smear conversion rate for smear-positive cases was 77.8%. But treatment success rate for relapse cases was only 54.6%.

The observed treatment outcomes at PPM-DOTS centers seem to be effective. All of these indicators were either approaching or better than the standard set by WHO and National Tuberculosis center. The standard set by WHO/NTC is mentioned on effectiveness of public and public-private mix DOTS centers section.

In public DOTS center (Ramghat PHC), the cure rate for new smear positive cases was found as low as 44.4%. Also, the defaulted rate was quite higher (27.78%)- it should not exceed 10%. The Smear-conversion rate was 85%. This shows that after two month the defaulters might increase substantially. Increasing number of defaulters pose

economic burden to provider. Future cost for treatment could increase because they have to be treated under category II. Among three treatment categories, category II is the most expensive one. It was found that the drug cost (NRs 3906.3) is almost two times higher than other two categories. It adds one month more direct daily supervision (22 working days) which increases the routine service cost. From this study, the observed routine service cost per visit to pharmacy unit was NRs 31.98. The total routine service cost for three months becomes NRs 2110.68(66 x 31.98). This means that one defaulter adds NRs 6016.98 as extra burden to the provider. The drug cost and routine service cost incurred by that patient before being defaulter is considered as wastage of resources.

As depicted on section 4.5.5, Birendra Police Hospital achieved 31.2% cure rate and 37.4% treatment success rate for new smear-positive cases. Defaulter rate for new smear-positive cases was 12.5%-this defaulter rate should not exceed 10%. Both public DOTS centers did not have effective results in comparison of PPM-DOTS centers.

Cost/Effectiveness

The cost per effectiveness in public DOTS centers ranged from NRs 6729.32 to NRs 9663.89, while in PPM-DOTS centers it ranged from NRs 3514.11 to NRs 3651.70. This showed that cost per effectiveness in PPM-DOTS centers was two times lower than in public DOTS centers.

Table 5.1 presents providers' routine service cost (RSC) (without drug and direct material cost) that was apportioned to TB for 8 months. In public DOTS centers, it is almost one and half to two times more than that of PPM-DOTS centers. In public DOTS centers labor cost accounts 71-81% and in PPM-DOTS centers 60-78% i.e., the main source of variation is labor cost. If TB caseload increases, the cost per

effectiveness decreases. If TB caseload is very low, ideal time of staff pulls cost per effectiveness up. If we make TB caseload equal or almost equal in both public and PPM-DOTS centers, it could give fair cost-effectiveness ratio for comparison.

Table 5 1 Providers' Routine Service Cost (RSC) (without drug and direct material cost)

DOTS Center	Total Capital Cost	Total Labor Cost	Total material (Indirect) cost	Total Cost (% of full cost)	Full Cost
(1)	(2)	(3)	(4)	(5) = (2)+(3)+(4)	(6)
Public					
Ramghat PHC	15,928.73 (14.68)	88,928.23 (81.40)	3,602.52 (3.32)	108,459.48(59.7)	181,691.73
Birendra Police Hospital	22,993.41 (17.13)	95,686.73 (71.32)	15,503.19 (11.55)	134,183.33(42.1)	318,908.34
Public-Private Mix					
Friends of Shanta Bhawan	29,952.5 (17.90)	131,360.86 (78.52)	5,989.01 (3.58)	167,302.37(30.9)	541,173.47
Helping Hands Clinic	45,418.17 (34.15)	80,113.54 (60.25)	7,442.29 (5.60)	132,974.00(28.4)	467,417.15

Note: Figures in parentheses of columns (2), (3) and (4) indicate percentage of total cost (column 5) and that of column (5) indicates percentage of full cost.

The researcher also made an attempt to calculate cost-effectiveness ratio of Anam Nagar Poly Clinic, an PPM-DOTS center (for-profit). Its labor cost was 67.5% of total provider's cost (NRs 139,429.59) and had very low TB caseload. Total cured and complete cases were only 10 in number. The cost per effectiveness was found very high as NRs 13,942.96 (US\$ 184.92). This total cost includes salary of physicians (as opportunity cost) that Clinic did not have to pay for them. Excluding that opportunity cost, the full cost was NRs 93749.59. This gives NRs 9374.96 (US\$ 124.33) per effectiveness. It is only one sample from PPM (for-profit)-DOTS centers, so it could not be fair to say something in this regard. It needs further research to analyze it more.

5.2 Conclusion

It can be concluded that given all assumptions made to estimate costs in this study be realistic, public-private mix DOTS centers seem to be more cost-effective than public DOTS centers. In urban area, basically in metropolis and sub-metropolis, PPM-DOTS service could help reduce tuberculosis related morbidity and mortality. The decision to mobilize the private sector to help achieve NTP's objectives largely depends on cost-effectiveness of the programme. National Tuberculosis Center (NTC) could increase the efficiency of its activities with private providers. Transaction costs are generally lower if the providers are large and organized. Working with private providers having good net working would be more efficient than working with individual practitioners.

5.3 Policy Implication

As results show that cost per case to be cured is almost two times lower and effectiveness is also as per national target in PPM-DOTS centers, wider implementation of PPM-DOTS service could be suggested. With proper guidelines, wider implementation of PPM-DOTS service could help free the resources, in somewhat extent, tied up with capital and labor cost that could be used elsewhere. Private (for-profit) sector lacks interest in public health aspect of TB treatment and trust in the public sector (Hurtig et al, 2002). To deal with individual profit oriented practitioner, it seems to be more complex. Since private (not-for-profit) sector is more cost-effective for the delivery of DOTS service to TB patients, it could be selected as DOTS agency for certain defined area. Government provides policy support, drugs, laboratory supplies and training to DOTS agency and it will be responsible for the delivery of DOTS service via itself and individual practitioners.

5.4 Limitation of the study

This study was carried out from provider perspective. It did not include the patients' direct and indirect cost to have DOTS service. It did not touch the part negative externalities to the society of not treating or delaying for treatment of TB patients. The cost incurred by National Tuberculosis centers to provides training was not calculated in this study. Also, incremental analysis was not carried out in this study because it needed more additional data that could not be collected in this study.