Treatment of Chronic Hepatitis B in India: What is the cost of life?

A major factor contributing to the spiraling cost of healthcare is the use of new drugs, procedures and devices. About 50%–75% of the increase in the cost of healthcare every year is attributed to newer developments in medical technology. India, with its limited resources, and chaos in medical planning, shows wide disparity between the way the rich and the poor are treated. Many public sector hospitals guzzle resources and provide inadequate service, while there are some private ‘mercenaries’ as well in the profession. Private medical entrepreneurs often prescribe state-of-the-art treatments with questionable indications, whereas patients in public sector hospitals die due to lack of affordable simple medical measures such as antibiotics. From an economic viewpoint, one often hears that India needs only ‘herb-prescribing bare-foot doctors’. However, a poor man’s medicine need not be ‘poor medicine’. In a country where most people do not have access to safe drinking water, should one spend public funds for genetic engineering or transplantation? Are we using our resources rationally in India? Are our prescribing habits cost-effective? Thanks to aggressive marketing by pharmaceutical agencies, India—where often, quinine and stibogluconate is not readily available in the market—is on the road to becoming one of the largest consumers of recombinant cytokines in the world.

This issue of the Journal has a thought-provoking paper by Aggarwal et al. on the cost-effectiveness of the treatment of chronic hepatitis B in India. The authors have used the Markov transitional probability model to show that interferon therapy for hepatitis B would cost approximately Rs 432 500 for each year of life gained, which is 20.5 times the per capita gross national income of India. The authors argue that interferon therapy for chronic hepatitis B may not be cost-effective in India and should not be paid from public funds. The paper fills a felt need for research into cost-benefit analyses. Its results are contrary to those of most western studies as well as one from China. This may be due to differences in the cost estimates, lower income levels in India and lack of health insurance for payment of healthcare. Does this mean that we should stop prescribing interferon for chronic hepatitis B?

The use of linear mathematics to predict the unpredictable in medicine has been criticized in the past. David Naylor from the Institute for Clinical Evaluative Sciences, University of Toronto has given us seven good reasons why clinicians should maintain a healthy scepticism about the results of cost-effectiveness analysis. I discuss below these reasons in relation to the paper by Aggarwal et al.

1. In cost-effectiveness analyses, ‘utilities’ are added to adjust the estimated life-years for associated variations in quality of life, on a scale that rates perfect health as 1 and death as 0 (to make the result a ‘cost-utility’ analysis giving costs per quality-adjusted life-year, or QALY). However, this assumes that the costs of standard treatments and their responses have been evaluated in the same rigorous fashion as the new intervention. Obviously, this is an unrealistic assumption.

2. In such analyses the costs are often not reliable. In particular, long term costs are seldom understood with precision. Short term costs can vary from hospital to hospital, state to state, and year to year. For example, in the paper by Aggarwal et al., the ‘annual recurring cost of evaluation and treatment of decompensated cirrhosis’ is estimated to be Rs 10 000, while it may cost as much for just 1 day of hospitalization with hepatic encephalopathy in some hospitals in India. Also, they have arrived at ‘the estimated cost of treating various complications of cirrhosis, by discussion with a group of physicians who frequently care for patients with chronic liver disease’.

3. Long term survival benefits (i.e. life-years gained) with new treatments are seldom defined at the point when hard decisions must be made about their adoption. Thus, educated guesswork is the norm which again is not accurate. It has been shown that development of cirrhosis among 30-year-old individuals reduces estimated life expectancy by 37.8 years, but in the present study,
preventing development of cirrhosis by interferon treatment led to only 0.6 years of life gained. In a similar study carried out elsewhere on 20-year-old patients, life expectancy increased from 3.1 to 4.8 years.\(^8\)

4. The utilities used to ‘adjust’ the life-years gained are variable and the methods used to derive them are debatable. No clear basis exists for deciding whether to use patients, doctors or nominated representatives of the general public to derive such utility values.

5. Thus, cost–utility analysis puts 3 uncertain quantities (cost estimates, estimates of gain in life expectancy and estimated utility weights) together in a single unstable ratio. The authors do try to make some allowance for uncertainty with one-way sensitivity analyses, but cannot be expected to accurately explore the effects of simultaneously varying the 3 key inputs in any analysis.

6. Cost-effectiveness analyses are done with a view to maximize utilization of available resources. Other strategies (e.g. ‘satisficing’, wherein one settles for a modest gain to avoid the risk for large losses) may be equally rational in some clinical and policy contexts.\(^10\) The state of Oregon in USA used cost-effectiveness calculations in its decision to stop funding transplants for Medicaid recipients, with a disastrous outcome.\(^11\) This experience challenges the concept that cost-effectiveness analysis offers a simple mechanism for rational allocation of healthcare resources. The Oregon experiment\(^12\) led to the development of a unique method to set priorities by using, apart from cost–utility analyses, public attitudes and values.

7. Many alternative treatments have not been rigorously appraised with cost-effectiveness analysis. The question remains as to how one can apply these results to choose an alternative treatment strategy for funding. Unfortunately, the cost-effectiveness and cost–utility ratios for most treatments are so unstable that the results of an intervention are strongly dependent on the assumptions used in the analysis.\(^13\) Ideally, the assumptions should have been based on data collected in India, which, it seems, are non-existent. For example, the average rate of progression to cirrhosis without treatment has been reported to be much higher (12.7%) in another paper\(^14\) than in the present one.\(^3\) Also, some of the Indian reports showing better responses to interferon treatment (up to 72.5% seroconversion)\(^15\) can significantly change the cost-effectiveness of the therapy. Finally, the value for life has not been considered in the present paper as has been done in other such analyses.\(^16\) In the Indian scenario, with a predominant joint family system and often a single earning member with multiple dependants, what is the cost of life?

Interferon is an effective treatment for chronic hepatitis B and in principle, should be recommended to all patients with the disease. It is the cost of the drug that has been found to be high vis-à-vis the per capita income in India. Does interferon really need to be so expensive? For pharmaceutical companies drug development is a risky business that requires a large expenditure. Therefore, the price of a new drug is determined more by the cost of drug development than by the incremental cost of producing an additional tablet.\(^17\) The high cost of interferon, which is not a new drug any more, may partly be due to the amount spent by pharmaceutical companies to lure health professionals by sponsoring ‘academic’ meetings. Ultimately, it seems that a poor patient does not earn enough to make the treatment ‘cost-effective’. However, the authors’ contend that interferon therapy should not be paid from public funds. Does it mean that we should deny expensive drugs to a poor public servant, but prescribe it freely to a businessman who is rich because he fixes the cost of many life-saving drugs at exorbitant levels despite low production costs? Or, should we prescribe it only to public servants with a pay-packet more than Rs 23 000 per month, to make the drug more cost-effective? These issues need to be debated not only among health planners, policymakers, politicians and the general public but also by healthcare professionals. Indeed there are no clear answers. The authors concede that with the recent availability of interferon at cheaper rates, the therapy is likely to be cost-effective.

Cost-efficacy studies are a must for health planners to set priorities. There is an inevitable conflict between the physicians’ traditional advisory role and the financial
concerns of health planners. While the treating doctor focuses on the best interests of his patient, the health planner seeks to utilize available resources to provide maximum benefit to maximum numbers. A health planner will always consider it more cost-effective to vaccinate the public than treat ill persons. A clinician interpreting such a cost–benefit analysis may be reminded of an imaginary society called ‘Erewhon’ created by the Victorian social critic Samuel Butler (1835–1902). When confronted with fashionable ideas from one expert or another, the citizens of Erewhon were ‘easily led by the nose and quick to offer up common sense at the shrine of logic...’ In contrast, when using the results of cost-effectiveness analyses, physicians should temper their interpretations with common sense, compassion and a sense of justice.

REFERENCES


A. C. ANAND, VSM
Department of Gastroenterology
Army Hospital, Research and Referral
New Delhi

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—Editor