

MEDICAL ECONOMICS

Economics of Medical Care (How to get more for your money by really trying)**

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Throughout history, medicine has been linked with divine intervention. The ancient physicians of Egypt and Mesopotamia were priests, and it is no coincidence that the hospital of Aesculapius was situated within the precincts of the temple of Apollo in Epidaurus. The divine connection persisted in one way or another until medicine established its scientific foundations in the 18th and 19th centuries; but its legacy persists in the notion that medicine should be noble, selfless and priceless. It is the aim of this article to challenge the last of these dogmas.

Generations of physicians have been brought up to believe that no expense should be spared in reaching a diagnosis or providing a treatment, and that the physician is not accountable for this expenditure. Only in the past quarter century, with increasing demand and proliferating technological advances, has it become evident that no state, insurance company or individual can afford unlimited expenditure on health care, and strategies have been developed to contain costs. In a

recent article¹, Dr A. Ahmad has pointed out that, in a limited budget, health care may have lower priority than, say, defense, education or infrastructure capital spending. Unfortunately, physicians constitute the major resistance to cost containment schemes. Partly for this reason, this article will limit its scope to suggestions that do not require decisions by higher authorities or major capital expenditure on construction and equipment. Rather the approach suggested can be implemented through behaviour modification by individual physicians or at most by hospital departments. For obvious reasons ethical issues (whom or how long to treat) will not be addressed.

Table 1 shows basic cost information about the various services rendered by the Ministry of Health. While some pertinent questions are difficult to answer (does an empty hospital bed cost less than an occupied bed? do fewer clinic patients mean more cost per patient?), the information serves as a frame of reference for reorganising services.

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Table 1
Basic Cost Information, Ministry of Health

<i>Services</i>	<i>Cost BD</i>
SMC inpatient/day	59
SMC outpatient visit	14.9
Health Centre visit	2.8
Psychiatric hospital visit	7.0

Table 2 lists items the economic impact of which will be discussed in the rest of this article. Needless to say, cutting health care costs is not to be achieved by providing inferior care. All my suggestions are in keeping with up-to-date accepted practice.

Table 2
Items which commonly impact the economics of Medical Care

Unnecessary tests
Unnecessary admissions
Unnecessary length of stay
Alternate diagnostic approaches
Alternate therapeutic regimens
"Defensive" medicine
Primary vs referral care

Unnecessary Tests

a. *The preoperative chest radiograph*

In 1980, 1.5 billion dollars were spent in the USA on preoperative chest radiographs.⁵ Yet several studies by the Royal College of Radiologists,² the American College of Radiology³ and the World Health Organization⁴ have pointed out the low yield from such studies. In a careful study Tape and Mushlin⁵ found out that although many abnormalities are found in preoperative chest films, they rarely influence the decision to operate or the postoperative course. They argued that the need for chest x-rays was determined by history and physical examination, and that age alone was not an indication for chest x-rays.

b. *Electrolytes*

In 1990 over 40000 sets of serum electrolytes were performed at the Salmaniya Medical Centre (SMC).

A study is needed to determine how many of these were necessary or influenced clinical decision-making.

c. *Cardiac Enzymes*

The cost of performing the so-called cardiac enzymes tests at the Salmaniya Medical Centre in 1990 was BD. 68182. One of these 3 enzymes has not been used in cardiac diagnosis in decades, and another gives limited information in special circumstances. While awaiting a utilisation review to determine how many of these tests were necessary, the laboratory could safely announce that it will stop doing aspartate aminotransferase (SGOT) determination for cardiac diagnosis.

Unnecessary Hospitalisation

This comes in two forms, unnecessary admissions and unnecessary length of stay.

1. *Unnecessary admissions*

The establishment of an overnight observation ward is an essential part of any busy Emergency department, but will not be addressed here because it may involve construction. Improved screening and patient work-up in the outpatient and emergency departments is attainable and can prevent many unnecessary admissions. Changes in existing policies (or non-policies) is also essential. As an example, most pediatricians believe that children with repeated febrile convulsions do not need admission to hospital. Yet the practice persists in Salmaniya Medical Centre and contributes to overutilisation of scarce beds. Only a minority of patients with acute hepatitis need hospitalisation, usually because of vomiting and usually for only a few days. Yet many patients with hepatitis are admitted to the medical and paediatric wards and often are kept for weeks until their liver function has returned to normal or nearly normal, obviously an unnecessary and wasteful practice.

2. *Unnecessary length of stay*

There are several reasons for this. Only three will be discussed because they are capable of relatively easy and prompt remedy.

1. Laboratory delays can contribute to prolonged hospitalisation and excess costs.

2. Identification of medical conditions in patients scheduled for surgery prior to their admission to hospital can result in immense savings. The two commonest such conditions are diabetes and a high blood pressure. These can be identified by very simple testing at the time of booking. This process does not require higher policy decisions but can be initiated by the concerned departmental chairmen or even individual consultants.
3. Adequate management planning at the time of admission yields ample rewards in medical practice. It is based on a thorough initial work-up and thoughtful planning of investigations and treatment. The practice of waiting for today's tests to plan tomorrow's is inefficient. As a dictum one could say that a good physician should have a reasonable answer to the question: "Where will this patient be next week?"

Alternate Diagnostic Strategies

Many diseases can be diagnosed using different approaches that vary in sophistication, time and cost. Yet the results are equally satisfactory. Table 3 shows the example of iron-deficiency anaemia, the commonest of deficiency anaemias worldwide. This is suspected when the anaemia is microcytic and hypochromic and there is no reticulocytosis, and this information is obtained from a blood count or a peripheral smear examination. In the right clinical setting, like menorrhagia or multiple pregnancies without iron supplementation, this is probably all the information needed before a therapeutic trial is started.

Table 3
Alternate Diagnostic Strategies Iron
Deficiency Anaemia

<i>Investigation</i>	<i>Cost BD</i>	<i>Time in Hospital (waiting for result)</i>
1. Ferritin	High (BD. 2.5)	Long
2. Iron + Iron binding capacity	Moderate	Long
3. Bone Marrow examination for iron stores	Low	Short
4. Therapeutic trial with FeSO ₄	Low	Not necessary

The response is usually prompt, no other anaemia responds to treatment with iron, and the condition almost always can be treated in an outpatient setting. Very few patients require hospitalisation or more extensive and expensive tests.

Alternate therapeutic regimens

Typhoid fever is treated effectively with chloramphenicol or ampicillin. The course of treatment takes 14 days and it is customary to keep patients in hospital for the entire treatment period despite little or no proof that this is necessary. Recently patients with typhoid acquired in the Indian subcontinent have proved resistant to the usual antibiotics. Ongoing trials at the SMC of treatment with ceftriaxone or ciprofloxacin have proved them very effective, and both drugs need to be used for only 5-7 days for cure.

Table 4
Treatment of Enteric Fever
Cost of using 3 regimens

<i>Drug</i>	<i>Unit Cost BD/Day</i>	<i>Hospital- isation (days)</i>	<i>Total Cost BD Hospital at BD60/day + drug</i>
Chloramphenicol	1	14	854
Ampicillin	1	14	854
Ceftriaxone	20	7	560

Table 4 shows estimates of the total cost of treating a patient with typhoid with chloramphenicol, ampicillin or ceftriaxone. It is obvious that the main determinant of total hospitalisation cost is length of stay. Thus treatment with a very expensive antibiotic, by shortening the length of hospital stay, can significantly decrease total hospitalisation cost.

Why so much Investigation?

I intend to discuss briefly only two of the major reasons why excessive investigation is performed.

1. Defensive Medicine

This is the term used to describe, among other things, excessive testing to protect physicians and hospitals

against litigation. Some of this may be necessary, especially in certain societies. But it must also be remembered, that good defensive medicine includes taking time, being courteous, being thorough, documenting carefully actions and the reasons for them, establishing rapport, and telling patients and their families the truth.

2. *The pursuit of Diagnostic Certainty*

Another reason for extensive testing and prolonged hospitalisation is the pursuit of diagnostic certainty. This is a characteristic of modern medicine and is especially prevalent among young physicians and in teaching hospitals. Kassirer⁶ has argued convincingly against an exaggerated level of diagnostic certainty before treatment is begun. In general, when a therapy is specific, effective and low in risk, a significant level of diagnostic uncertainty is tolerable. A good example of such a situation is iron deficiency anaemia, referred to above. Reasons for extensive testing, in addition to the fear of litigation, include pressure by peers and family, interests and whims of the physician, and "irrational and ossified habits".⁶

Distinguishing Primary from Referral Care

For most patients and many conditions, primary care should be as good as referral care, and the cost (see table 1) should be much less. There can be little doubt that most stable diabetics, hypertensives and coronary disease patients (to give a few examples) can be cared for effectively in a well-run primary care setting. If this is achieved, referral clinics can be used more efficiently to accommodate patients who need referral urgently, and to solve problems that at present are tackled only in the hospital. The decision on what constitutes primary and referral care is a complex function of cost and quality. It is my argument that quality

care can and should be given in a primary care setting, and the cost should be much less.

CONCLUSION

Medicine costs money, and money is limited. Thus the more is wasted, the less is left to spend usefully. This message should be taught early. A good start, implemented in many schools, is to incorporate the teaching of medical economics in the medical school curriculum. The physician is a guardian, not only of the nation's health, but also of its wealth. Every physician should learn (and teach) continuously to weigh cost against benefit and to re-examine fixed patterns of behaviour in the hope of upgrading them. When the State provides free medical care to all, the least that physicians can do is to avoid waste and "give value for money". This is achieved, not by decree, but by personal dedication and continuing education.

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