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Reducing Hospital Expenditures: Experience with Orthopaedic Implants

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Background: The costs of many orthopaedic implants purchased by the department had doubled over the last decade. In the year 1999, a committee from the orthopaedic department was formed to assess the different aspects of rising costs and to break the monopoly of implants' purchasing.

Objective: The aim of this paper is to address the practical steps to reduce the costs of many orthopaedic implants without jeopardising the quality of the procedures performed.

Methods: The usual suppliers and the potential competitors were called for a meeting in the presence of representatives from hospital administration and finance department. In that meeting the policy of future purchasing was revealed to the potential suppliers: 1. All orthopaedic items are for fair competition among all potential vendors. 2. The implants in common use are to be supplied by more than one source. 3. Purchasing will be based on quality, price, availability and technical support. 4. Evaluation feedback of the implant from members of the department will influence future purchasing process.

Results: The supplying process showed reduced prices, more speed in delivery and effective technical support. Comparing the prices of 1998/99 and 2002, many implants showed significant price reduction. The usual supplier reduced the prices of interlocking intramedullary (IM) femoral and tibial nails to 86% of the original costs, while new competitors offered prices equal to 61% and 24%. The usual supplier and the new competitor reduced the prices for total knee arthroplasty (TKA) implants to 86% and 61% respectively.

Conclusion: Conjoint effort from orthopaedic surgeons, hospital administrators and finance officers with respect to the purchasing process of orthopaedic implants can reduce the department expenditures without affecting the quality of treatment.

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Health care costs have been increasing yearly. It may continue to rise and endanger the quality of services provided for the average and low-income sectors of the community. Efforts should be made to guarantee acceptable standards of health services at reasonable costs.

Orthopaedic implants have advanced in the last few decades. The costs of modern orthopaedic implants are growing. Therefore, many operative procedures are costing orthopaedic departments a great deal of their budget[1,2]. There is a need to reduce the costs of the procedures otherwise departments may be forced by health authorities to reduce the number of procedures requiring expensive implants. Reduction of cost may include increasing the day-case surgeries, fewer days in hospital, less operating theatre time, requesting only the necessary and relative investigations, and regulations of drug use. However, the rising cost of implants of some procedures is one of the main reasons for increasing expenses.

Many hospitals in developed and developing countries are becoming seriously concerned with the increasing hospital expenses[3,4]. Several reports addressed strategies for cost containments in health care including that for orthopaedic implants[5-8].

The price of implants for joint replacement arthroplasties had doubled over a period of seven years. Therefore, it was important to assess the reasons of unexpected rising costs. It was also necessary to evaluate both purchasing method and the suppliers' policy.

As in many neighbouring countries, Bahrain hospitals are not purchasing directly from the principal producing companies, instead they have to deal with local agents. It is understood that companies' agents should make reasonable profits through commissioning. Some manufacturers and their local agents submit attractive introductory prices and supportive facilities to make surgeons familiar with the techniques. This system created a monopoly of some implants making the company and its agent the sole supplier of particular implants. Furthermore, domination of surgeon's preferences may facilitate the state of monopoly. It is not unfair to assume that a state of monopoly is one of the reasons for rising implants' cost.

The aim of this paper is to address the practical steps to reduce the costs of many orthopaedic implants without jeopardising the quality of the procedures performed.

METHODS

In the year 1999, a team from the orthopaedic department evaluated the rising costs of implants. All the available potential vendors for orthopaedic implants were called for a meeting in the presence of representatives from the hospital administration and the finance section. The following were explained:

- The implants for commonly performed procedures will be supplied by more than one source.

- Technical orientation and information on new implants is needed by the surgeons and the operating theatre staff. For orientation of as many members of the department as possible, the department expects manuals, audiovisuals and workshops on or near the hospital premises. Invitations of individuals for visits abroad are not priorities.

- Consideration may be given to surgeons' preferences of some implants provided competitive prices are not compromised.

- For the commonly performed procedures, the department is planning to purchase quantities of implants estimated to be sufficient for a year. The tender will be equally open for the usual suppliers and new competitors.

- The purchasing of implants following the one-year period will depend on the quality and cost of implants alongside the reliability of the suppliers. Evaluation feedback, on the reliabilities of the implants, from consultants, chief and senior residents, and operating theatre staff will be requested. The results of the feedback will influence future purchasing decisions.

RESULTS

1- Change of prices

We have selected neither to disclose the identities of the supplying companies nor the actual prices. Hence, we referred to companies as suppliers and competitors. The actual prices in 1998/99 were considered 100%. We compared the prices, for each item in the study, as percentage of the 100% (table1). The implants in

Table 1: **Price changes from 1998/99 to 2002**

Implants	1998/99	2000	2002
IM. Nails			
. Supplier	100%	92%	86%
. Competitor 1	NA	67%	61%
. Competitor 2	NA	29%	24%
TKA implants			
. Supplier	100%	92%	86%
. Competitor	NA	66%	61%
Hip implants			
. Supplier 1	100%	90%	85%
. Supplier 2	100%	90%	85%
UKA implants			
. Supplier	100%	100%	100%

NA: not applicable

common use showed striking reductions in their prices as we purchased from at least two suppliers.

IM nails of the femur and tibia; the supplier reduced the prices to 92 % and later to 86% of the original 1998/99 prices. One competitor provided prices as low as 24% of that of the original supplier, while another competitor provided prices equal to 61%.

TKA implants: The usual supplier reduced the prices to 92% and 86% during the following years. The competitor introduced prices equal to 66% and 61%.

Partial and total hip implants: There were already two designs in use. There is only one agent and he reduced the prices to 90% and later to 85%. In the year 2002 a new competitor is offered much lower prices.

Unicompartmental knee arthroplasties (UKA) implants: only 10 to 15 operations are performed in our department every year. Therefore, the company neither reduced nor increased the prices between 1999 and 2002.

Plates and screws are not included in the table as there are lot of variations in the cost related to the type, design and size. The suppliers introduced reductions of 25%.

Other cost reductions were observed in arthroscopy instrumentations, shavers, bone anchors, casting materials and other consumables.

Alongside the reductions in implants' costs, it was very satisfying and interesting to observe the following:

Instruments were supplied for new implants and the instruments in current use were upgraded free of charges. That applied in particular to instruments for knee, hip and fracture implants.

The supplying companies sponsored workshops to make surgeons and operating theatre staff familiar with the techniques of new implants.

The suppliers had invited and sponsored members of the department to scientific meetings and workshops abroad. This included consultants, chief and senior residents, and operating theatre staff. Fifteen invitations were sponsored over a period of two years. Hospital administration was informed about all invitations.

In the year 2002, the department received gifts in the form of laptop, multi-media system, books and CD's.

2- Evaluation Feedback

In the year 2002, nineteen doctors received the questionnaire. One did not respond and two did not follow the format. The feedback from the remaining 16 doctors is shown in table 2. The feedback in 2002 demonstrated that the usual suppliers maintained their standard. Most of the new competitors showed continuing improvement.

Table 2. **Feedback from 16 doctors in the orthopaedic department for the year 2002**

Implants	Satisfactory	Unsatisfactory	Not applicable
IM. Nails			
. Supplier	16	00	00
. Competitor 1	12	00	04
. Competitor 2	13	00	03
TKA implants			
. Supplier	11	00	05
. Competitor	13	00	03
Hip implants			
. Supplier 1	05	00	11
. Supplier 2	07	00	09
UKA implants			
. Supplier	10	00	06

The feedback from the operating theatre staff was equally important. They were not satisfied in the year 2000 with the IM nails from one of the competitor. The manufacturer arranged demonstration on the techniques and sponsored two of the staff for workshops abroad. The feedback in 2002 (Table3) showed improvement.

Table 3. **Feedback from 8 operating theatre staff for the year 2002**

Implants	Satisfactory	Unsatisfactory	Not applicable
IM. Nails			
. Supplier	08	00	00
. Competitor 1	08	00	00
. Competitor 2	07	00	01
TKA implants			
. Supplier	08	00	00
. Competitor	08	00	00
Hip implants			
. Supplier 1	06	00	02
. Supplier 2	06	00	02
UKA implants			
. Supplier	07	00	01

Most of the residents and operating theatre staff did not respond to the feedback on the companies' local agents. However, each consultant was satisfied with his own area of specialization.

DISCUSSION

The cost of modern health care is increasing. If action is not taken, the continuity of an acceptable quality and quantity of health care will be difficult to provide to the average and low-income sectors of the community. Such situation will disturb the community. A well-functioning community should recognise the essential needs of individuals and families from its different sectors.

The health care authorities are in a dilemma between the cost of the services and the standard of care required. Reduction of the cost became a necessity that requires cooperation between medical professionals, administrators and financial advisors[8]. Medical professionals will find it difficult to perform if they are not aware of, and concerned with the cost of health care. There are needs for every discipline to assess its own quality performance and cost. The necessary recommendations from the different disciplines should be evaluated and put into action.

In orthopaedic discipline, the cost of many orthopaedic procedures has increased in recent years. To reduce the cost of orthopaedic procedures, efforts were exerted to reduce hospital stay, less operating time and appropriate use of investigations, medications and other services. Reducing hospital stay for patients after major surgery help more turn over of patients and improve the admissions' waiting list. Expense reduction with these measures should not be exaggerated. The first few days in hospital are the most expensive as they include investigations, pre-operative preparations, operating theatre and anaesthesia costs, consumables, blood transfusion and early post-operative care[2,9].

Despite all the efforts to contain the increasing costs of orthopaedic procedures, the cost of implants continues to rise. This was noticed in the cost of implants for joint replacement arthroplasties.

Several reports addressed the issue of how the cost of implants can be reduced. Reports from Lahey Clinic in 1993 and 94 showed that the actual hospital costs for total hip implants increased by 117% and that for knee implants increased by 118% in less than 10 years[6,10]. The same clinic reported in the year 2000, a single price/case-purchasing programme that was successful in reducing the cost by 32% for hip and 23% for knee implants. It is interesting to observe that the cost of knee implants, arthroscopic shavers and bone suture anchors were reduced without changing the vendor. However, Lahey clinic obtained further cost reductions for hip and shoulder replacing implants by changing the vendor[11].

The hospital for Joint Disease in New York City implemented an integrated cost-containment programme. Within a year, it was possible to reduce the cost by 14% for hip and 24% for the knee implants[12].

Orthopaedic surgeons from 30 countries responded to a questionnaire on the cost of surgical procedures. Most surgeons indicated that they are under pressure to reduce the cost. It was interesting to observe that the reported cost for identical implants from the same manufacturer can vary between countries as much as 700%[13].

Favouring implants from a particular producer may not have a justified background. In UK, it was observed that 37 different knee implants are marketed in the country with more than half of them introduced over the last decade. Fifty-four percent (54%) of total knee replacement implants have no published results in peer-reviewed journals[14]. Therefore, it is important to know that many new implants are promoted without clinical evidences of their superiority over the available designs. We would like to refer to a booklet "good medical practice" published by the General Medical Council of UK. It focuses on financial interests, accepting gifts, obtaining grants and hospitalities for meetings from companies that sell or market drugs or appliances to health care establishment.

The paper demonstrates that the price reduction of orthopaedic implants is possible without compromising the quality. Cost awareness is necessary to achieve cost containments[15,16]. Changing the purchasing practice to reduce the cost needs effective communication with hospital administration, the finance department, suppliers and colleagues. Modified economic principles may be needed to narrow the gap between health care professionals on one side and economists on the other, in order to develop an applicable model for health care economy[17]. It is argued that the methods and principles underlying economic evaluation are unsuited to the evaluation of health promotion.

To be able to influence health care finance, motivated health care professionals need to develop abilities to negotiate with the policy makers and with all concerned parties. Skilfull transparent negotiation is the interaction that enables all parties to feel that each is achieving some of its goals. Furthermore, exchangeable information must be organised and presented in a concise understandable fashion, that will help different parties as future partners not as opponents[18,19].

CONCLUSION

Health care services are getting more expensive. The costs of many orthopaedic procedures requiring modern implants are dramatically increasing.

Reducing the cost of implants requires search for alternatives with similar qualities. Co-operation with hospital administrators and finance officers will facilitate the changes required for the process of purchasing. Involving

members of the department through consultation and feedback about the reliabilities of the implants will help in making more appropriate decisions and will act as a safeguard against individuals' bias.

This paper demonstrated the reduction of the cost of orthopaedic implants without jeopardising the quality of the services provided to the patients. Continuity of effective policy needs commitments, communications with other concerned parties, cost awareness and an open mind for potential alternatives.

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