POST-DISCHARGE COSTS IN ARTHROPLASTY SURGERY

+*Lavernia, CJ; *D'Apuzzo, MR; **Rossi, M; †Lee, DJ
*Orthopaedic Institute at Mercy Hospital, Miami, FL
info@orthomercy.com

INTRODUCTION

Total hip and knee replacement surgery substantially reduces pain and improves function in individuals with advanced osteoarthritis. The aging of the "baby boom" generation, combined with the desire to maintain active, pain-free lifestyles, will lead to dramatic increases in the annual number of joint replacement surgeries performed in the United States. The American Academy of Orthopedic Surgeons has projected that by the year 2030, primary total hip and knee replacements will increase to over 748,000/year.

With the continued increase in the number of replacement surgeries, it is essential to determine the most cost-effective strategies for the delivery of this surgery without diminishing quality patient care. Considering that the cost-containment pressures within the Medicare system will only intensify as the baby boom generation ages, it will be extremely important to justify services pertaining to joint replacement surgeries. Careful documentation of all surgical and associated rehabilitative costs is a necessary first step in this process. National hospital-based estimates of arthroplasty expenditures are available, unfortunately similar data on post- rehabilitative discharge costs are not.

After replacement surgery, patients will usually have some form of rehabilitation ranging from homecare services to outpatient rehabilitation, or a combination of both. There have been a limited number of studies examining the efficacy of rehabilitation before and following joint replacement surgery. However, these studies did not address cost issues within the construct of rehabilitation. These post-surgical costs can be considerable, yet are frequently ignored when discussing the cost of joint replacement surgery. This is an oversight not only in terms of cost-containment, but it is also germane to the cost-effectiveness of high quality patient care. For example, cost-containment strategies directed at the acute care phase of arthroplasty may actually lead to an increase in post-care service utilization

As indicated earlier, national estimates for post-discharge costs associated with arthroplasty are not available, yet Medicare has instituted changes to its reimbursement policies which could lead to changes in the funding available for post-discharge care. These reimbursement policy changes could have implications on patient long-term functional outcomes. Unfortunately, without a 'baseline' for expenditures, it will be difficult to even assess the financial implications of reimbursement policies as they are phased-in. Thus, our objective is to document the costs incurred following discharge within a single surgical practice and to apply these estimates to the number of arthroplasties completed on an annual basis in the United States.

METHODS

A total of 143 patients that underwent primary joint replacement (hip and knee) from 2004 that received post-discharge care, were identified in our joint replacement registry

A consecutive sample of 143 individuals (43 males and 100 females) from a single surgical practice, under the direction of the primary author, who underwent primary hip and knee arthroplasties were identified.

Patient characteristics were compared to nationally representative data from the 2003 National Hospital Discharge Survey (NHDS). Local financial data was obtained from three sources, including the Mercy Hospital clinical rehabilitation unit (CRU), home care costs obtained directly from the provider, and professional fees.

CRU expenditures included both direct and indirect costs. Direct costs included items such as devices used (i.e., continuous passive motion instrument), associated therapies (i.e., physical therapy), supplies, and medications. Indirect costs included all support staff (i.e., administration). Home care costs included all ancillary services such as physical and occupational therapies, nursing, supplies (i.e. assistive devices), and home heath aides. All professional fees were calculated based on the visit levels and the 2005 Medicare fee schedule.

All data from both sources were coded and matched to the patient's medical record number; however, before any analysis of the data, all subject identifiers were removed.

Total post-discharge costs included the sum of CRU, home care, and professional costs. These costs were applied to national estimates of the number of primary arthroplasties performed in 2003 obtained from the NHDS.

Results

The national frequency for primary arthroplasty (hips and knees) was 318, 309. The National Hospital Discharge Survey (NHDS) indicated that 38.5% of all primary arthroplasties were discharged to home and 34% were discharged to a rehabilitation unit. Thus, based on the national figures, the following equations defined national average total post-discharge cost (NTPDC) and national average home care cost (NHCC) of all primary arthroplasties:

The average cost per case on CRU was $10,751 ± SE $598, payments made to Home Health averaged $2,256 ± $104 and the average compensation in professional fees was $811 ± $37. The average total post discharge cost for primary arthroplasty was $13,897 ± $712.

Based on our models, the national average total post-discharge cost was $1,703,063,453 and the national average home care cost was $244,155,600.

NTPDC = 122, 549 (38.5% of 318, 309) x average total post-discharge cost (our study).

NHCC = 108, 225 (34% of 318, 309) x average home care cost (our study).

DISCUSSION

There have been a few randomized studies which have examined the cost-effectiveness of post-surgical rehabilitative strategies. It has been demonstrated that individuals starting rehabilitation on day three achieved functional goals quicker, walked farther, had a shorter hospitalizations, and less total cost compared to their counterparts who started rehabilitation seven days following surgery. Recently, the effectiveness of home care versus outpatient hospital rehabilitation services in individuals before and after unilateral knee joint replacement surgery has been compared and that similar outcomes were achieved in both rehabilitation strategies; however, rehabilitation costs were more expensive when given at home. This raises the possibility that the cost-effective delivery of such care should be undertaken in an outpatient rehabilitative setting.

Clearly, billions of dollars are being spent on post-discharge after hip and knee replacement surgery. Cost utility and effectiveness of post discharge interventions has not been adequately assessed. Future prospective randomized investigations must be completed in order to assess the effectiveness of post surgical interventions in primary arthroplasty cases and perhaps move some of these funds to pay for the acute care setting in which cost effectiveness and cost utilities of the interventions have been clearly demonstrated.

AFFILIATED INSTITUTION FOR CO-AUTHORS:
†University of Miami, Miami, FL
**Florida International University, Miami, FL