The Impact of a Skilled Nursing Facility on the Cost of Surgical Treatment of Major Head and Neck Tumors

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Background: The finite resources available for health care and the proliferation of managed care in the United States have forced the head and neck surgeon to critically evaluate the cost of tumor treatment.

Objective: To determine whether the cost of treating patients with head and neck tumors would be reduced if the patients were to spend a portion of what would otherwise be acute care hospital days in a hospital-based skilled nursing facility (HB/SNF).

Design: Retrospective cost-benefit analysis.

Setting: Tertiary referral center.

Patients: Twenty-four consecutive hospital admissions for definitive surgical treatment of head and neck tumors were retrospectively reviewed. The postoperative day on which the patient theoretically could have been transferred to the HB/SNF was determined. The charges and cost of each patient's actual hospital stay were compared with the theoretical counterparts had the patient been transferred to the HB/SNF on the determined day.

Main Outcome Measure: Cost savings.

Results: The total hospital stay for the 24 patients was 524 days. One hundred eighty-two of those days could have been spent in the HB/SNF. The total charge and cost savings with the use of an HB/SNF were $201045 and $84238, respectively (15% of the total charge and cost). This represents an average charge and cost savings of $8377 and $3510, respectively, per patient. The difference was statistically significant (P<.005).

Conclusion: An HB/SNF could reduce the cost of head and neck tumor treatment without compromising patient care.

PATIENTS AND METHODS

Twenty-four consecutive admissions for surgical treatment of head and neck tumors at UTMB were retrospectively reviewed and analyzed. Patients undergoing thyroid and salivary gland resections not requiring neck dissections or major reconstruction were not included.

The criteria for transfer of the postoperative patients with head and neck tumors to the HB/SNF were established in conjunction with the nursing director. The patient must (1) be hemodynamically stable, (2) be afebrile, (3) require minimal tracheotomy care, (4) have no more than 2 intravenous medications, (5) require no more than 2 daily dressing changes, and (6) have a drain output of less than 24 mL/24 h. Minimal tracheotomy care was defined as care that required the attention of nursing or respiratory therapy staff no more than twice daily. The dates of potential transfer of the 24 patients to the HB/SNF were determined. Each patient’s bill was itemized and reviewed by the Department of Healthcare Financial Management at UTMB to determine the actual hospital charges for the entire stay. A theoretical charge was then calculated by subtracting from the total charge the charges covered by the HB/SNF (bed, nursing, physical therapy, speech therapy, radiology, laboratory, hospital supplies, and pharmacy charges) that were accrued during the days that the patient could potentially have been transferred to the HB/SNF, and then adding the HB/SNF per diem charge ($425 at UTMB) for those days. The actual cost to the hospital was estimated by the Department of Healthcare Financial Management to be 41.9% of the charges. Finally, the charge and the cost of the patient’s hospital stay was compared with the calculated theoretical counterparts had the patient been transferred to the HB/SNF on the determined day. The t test was used to analyze the data, with P < .05 considered statistically significant.

Cost control and the efficient use of available resources are becoming increasingly important in modern medicine, but it is imperative that none of these measures adversely affect the quality of patient care. Hospital-based SNFs are relatively new and offer many advantages. The usual proximity to the active care units allows the responsible physician to observe the progress of the patient, with qualified nursing staff and easy access to resuscitation teams and diagnostic services. The patients are more comfortable with the familiar surroundings, and they notice a clear shift in emphasis from acute illness to recovery and rehabilitation. Most HB/SNF’s charge per diem rates ($425 at UTMB), which include charges for

## RESULTS

Twenty of the patients were male, and 4 were female. Nineteen patients had upper aerodigestive tract squamous cell carcinoma, 2 had undifferentiated maxillary sinus carcinoma, and the remaining 3 had juvenile angiofibroma, metastatic papillary thyroid carcinoma, and metastatic parotid adenocarcinoma (1 patient each). Of the 23 patients with malignancy, 18 had stage IV disease, 4 had stage III, and 1 had stage II.

The hospital length of stay, the theoretical HB/SNF length of stay, the total charges, the charges adjusted for the HB/SNF, and the savings for each patient are shown in the Table. The total hospital stay for the 24 patients was 524 days; 182 of those days (35% of the total stay) could have theoretically been spent in the HB/SNF. The total charge and cost savings with the use of the HB/SNF were $201,045 and $84,238, respectively (15% of the total charge and cost). This represents an average charge and cost saving of $8377 and $3510, respectively per patient. The difference is statistically significant (P < .005).

## COMMENT

The design of a clear programmatic focus also minimizes the use of laboratory, radiology, and other services normally associated with acute hospitalization, resulting in a more cost-efficient setting for these patients.

The University of Texas Medical Branch (UTMB), Galveston, is an institution with a demographic profile that lends itself to long hospital stays. Several factors lead to this problem: (1) Many patients are referred from long distances (as much as 10 hours by automobile). (2) Many patients have no transportation. (3) Many patients have limited financial resources for medical care or are completely uninsured. (4) Many of the counties that the patients come from have no head and neck cancer care services and do not provide financial aid to their citizens. The cost of caring for these patients in a subacute setting is estimated to be as much as 40% to 60% less than comparable care provided in an acute care facility. We, therefore, hypothesized that the cost of treating patients with head and neck tumors could be reduced without compromising the standard of care if the patients were to spend a portion of what would otherwise be acute care hospital time in an HB/SNF.

<table>
<thead>
<tr>
<th>Table</th>
<th>Results</th>
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<tbody>
<tr>
<td>Total hospital stay</td>
<td>524 days</td>
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<tr>
<td>Theoretical HB/SNF stay</td>
<td>182 days</td>
</tr>
<tr>
<td>Total charges</td>
<td>$201,045</td>
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<tr>
<td>Charges adjusted for HB/SNF</td>
<td>$84,238</td>
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<tr>
<td>Savings</td>
<td>$8377</td>
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<tr>
<td>Savings per patient</td>
<td>$3510</td>
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Cost control and the efficient use of available resources are becoming increasingly important in modern medicine, but it is imperative that none of these measures adversely affect the quality of patient care. Hospital-based SNFs are relatively new and offer many advantages. The usual proximity to the active care units allows the responsible physician to observe the progress of the patient, with qualified nursing staff and easy access to resuscitation teams and diagnostic services. The patients are more comfortable with the familiar surroundings, and they notice a clear shift in emphasis from acute illness to recovery and rehabilitation. Most HB/SNF’s charge per diem rates ($425 at UTMB), which include charges for
the bed and nursing, hospital supplies, pharmacy, and ancillary services (speech pathology, laboratory, and radiology), therefore reducing the cost to the patient. The average hospital stay was 21.8 days (range, 7-58 days), which is a reflection of our patient population. Most patients with head and neck tumors at UTMB are indigent, and have advanced disease requiring complex surgery. They are also unable to access outpatient services because of the distance they would have to travel, their lack of financial resources, and the lack of outpatient services in their communities. The postoperative teaching and rehabilitation, which is usually supplied on an outpatient basis, has to be performed in the hospital, extending their hospital length of stay.

The HB/SNF transfer criteria we established seem to be accurate at determining the appropriate time for transfer. The total savings in charges and costs for the 24 patients were $201,045 and $84,238, respectively, per year (15% of the total charges and costs). These savings are considerable, especially since there would have been no apparent negative impact on the quality of care and on patient outcome.

**CONCLUSIONS**

Use of HB/SNFs could reduce the cost of head and neck tumor treatment without diminishing the quality of care. An actual study in institutions that share demographic features with UTMB would confirm the data from this theoretical study and should be undertaken.

Accepted for publication March 27, 2001.

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**REFERENCES**