

Breast Cancer is the most common form of cancer among women in the United States.

In 1999, 1,941 Georgia women were hospitalized for mastectomies.

The older a mastectomy patient is, the shorter the hospitalization.

Medicare patients had a significantly shorter length of stay than all other patients combined.

1999 Georgia Hospitalizations



Mastectomies and Related Lymph Node Dissections

*Georgia Department of Human Resources
Division of Public Health
Office of Health Information and Policy
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REVIEW OF TREATMENT AND LENGTH OF STAY MASTECTOMY PATIENTS AND RELATED LYMPH NODE DISSECTIONS

In 1999, in response to concerns that patients undergoing specific surgical procedures were being discharged prematurely from the hospital, the Georgia Legislature unanimously passed House Resolution number 522 (H.R. 522). This resolution directs the Director of the Division of Public Health, Department of Human Resources, to monitor length of stay and treatment of patients who have undergone mastectomies, prostatectomies, and related lymph node dissections. The purpose of H.R. 522 is to determine if patients undergoing these procedures have adequate access to care, and if a problem exists, to provide an informed data driven basis upon which to create policy. This report, based on analysis of discharges occurring in 1999 from Georgia hospitals, provides an in-depth review of mastectomies and related lymph node dissections. Analysis of prostatectomies will be presented in a separate document.

Descriptive Profile of the Data Set:

There were 1,941 inpatient hospitalizations for women undergoing a mastectomy in 1999:

- ▶ Seventy-four percent were among White women and 22% were among African-American Women.
- ▶ Five of every 100,000 White women and four of every 100,000 African-American women in Georgia had a mastectomy in 1999.
- ▶ The difference in age among African-Americans and Whites was significant with Whites being much older at the time of their mastectomy.
- ▶ Ninety-eight percent of women (1,910) had simple mastectomies.
- ▶ Two percent of women (31) women had radical mastectomies.
- ▶ Ninety-four women had lymph node dissections-all were simple mastectomies. Half of these were regional excisions of the lymph nodes.

Executive Summary

Findings:

- ◆ The length of stay for simple mastectomies in Georgia was significantly longer than that of the nation.
- ◆ The actual length of stay for all patients was longer than the severity-adjusted length of stay.
- ◆ There was no statistically differences in the length of stay by race for mastectomy patients.
- ◆ HMO patients had the longest length of stay at 3.2 days and self-pay had the shortest at 2.1 days.
- ◆ Surprisingly, as age increased, length of stay decreased. Excluding self-pay, Medicare patients experienced the shortest length of stay even though these patients were determined to be "sicker" than patients of other payors.
- ◆ Four hundred patients had a one-day length of stay; 46% of these patients were Medicare patients. All patients with a one-day length of stay had a severity-adjusted length of stay of over two days. Given that all patients should get at least two days in the hospital, it would appear these women were discharged too early and were potentially not provided the level of care they required. However, readmissions following a one-day length of stay for mastectomy did not



REVIEW OF TREATMENT AND LENGTH OF STAY
MASTECTOMY PATIENTS AND RELATED LYMPH NODE DISSECTIONS

Georgia 1999 Hospital Discharge Data Set
Georgia Division of Public Health
Office of Health Information and Policy

Introduction

In 1999, in response to concerns that patients undergoing specific surgical procedures were being discharged prematurely from the hospital, the Georgia Legislature unanimously passed House Resolution Number 522 (H.R. 522). This resolution directs the Director of the Division of Public Health, Department of Human Resources, to monitor the length of stay and treatment of patients who have undergone mastectomies, prostatectomies, and related lymph node dissections. The purpose of H.R. 522 is to determine if a problem exists in access to care among patients undergoing these procedures, and if so, to provide an informed data driven basis upon which to create policy.

The Division of Public Health carries out its functions in concert with 159 county health departments coordinated through 19 Public Health Districts (Table 1). This report utilizes the 19 health districts for analysis in order to take advantage of established geopolitical boundaries. In the event that additional assessment activities and/or assurance issues are identified, the public health network can serve as an appropriate management and coordination authority.

Georgia accesses discharge information obtained from the UB-92 (Uniform Billing Form, 1992) from all acute-stay hospitals excluding federal and psychiatric facilities. This data includes one record for every discharge from these facilities for each inpatient stay. Each record contains information on admission date, discharge date, length of stay, birth date, race, sex, county and zip code of residence, the name of the facility, charges, diagnoses, procedures and other information. This report, based on discharges occurring in 1999 from Georgia hospitals, provides an in-depth analysis of mastectomies and related lymph node dissections.

List of Georgia Counties by Public Health District

Table 1: Listing of Georgia Counties by Public Health District

Public Health District	Sub-District	County/Counties
1	Rome (1-1)	Bartow, Catoosa, Chattooga, Dade, Floyd, Gordon, Haralson, Paulding, Polk, Walker
	Dalton (1-2)	Cherokee, Fannin, Gilmer, Murray, Pickens, Whitfield
2	Gainesville (2)	Banks, Dawson, Forsyth, Franklin, Habersham, Hall, Hart, Lumpkin, Rabun, Stephens, Towns, Union, White
3	Cobb-Douglas (3-1)	Cobb, Douglas
	Fulton (3-2)	Fulton
	Clayton (3-3)	Clayton
	Gwinnett (3-4)	Gwinnett, Newton, Rockdale
	DeKalb (3-5)	DeKalb
4	LaGrange (4)	Butts, Carroll, Coweta, Fayette, Heard, Henry, Lamar, Meriwether, Pike, Spalding, Troup, Upson
5	Dublin (5-1)	Bleckley, Dodge, Johnson, Laurens, Montgomery, Pulaski, Telfair, Treutlen, Wheeler, Wilcox
	Macon (5-2)	Baldwin, Bibb, Crawford, Hancock, Houston, Jasper, Jones, Monroe, Peach, Putnam, Twiggs, Washington, Wilkinson
6	Augusta (6)	Burke, Columbia, Emanuel, Glascock, Jefferson, Jenkins, Lincoln, McDuffie, Richmond, Screven, Taliaferro, Warren, Wilkes
7	Columbus (7)	Chattahoochee, Clay, Crisp, Dooly, Harris, Macon, Marion, Muscogee, Quitman, Randolph, Schley, Stewart, Sumter, Talbot, Taylor, Webster
8	Valdosta (8-1)	Ben Hill, Berrien, Brooks, Cook, Echols, Irwin, Lanier, Lowndes, Tift, Turner
	Albany (8-2)	Baker, Calhoun, Colquitt, Decatur, Dougherty, Early, Grady, Lee, Miller, Mitchell, Seminole, Terrell, Thomas, Worth
9	Savannah (9-1)	Chatham, Effingham
	Waycross (9-2)	Appling, Atkinson, Bacon, Brantley, Bulloch, Candler, Charlton, Clinch, Coffee, Evans, Jeff Davis, Pierce, Tattnall, Toombs, Ware, Wayne
	Brunswick (9-3)	Bryan, Camden, Glynn, Liberty, Long, McIntosh
10	Athens (10)	Barrow, Clarke, Elbert, Greene, Jackson, Madison, Morgan, Oconee, Oglethorpe, Walton

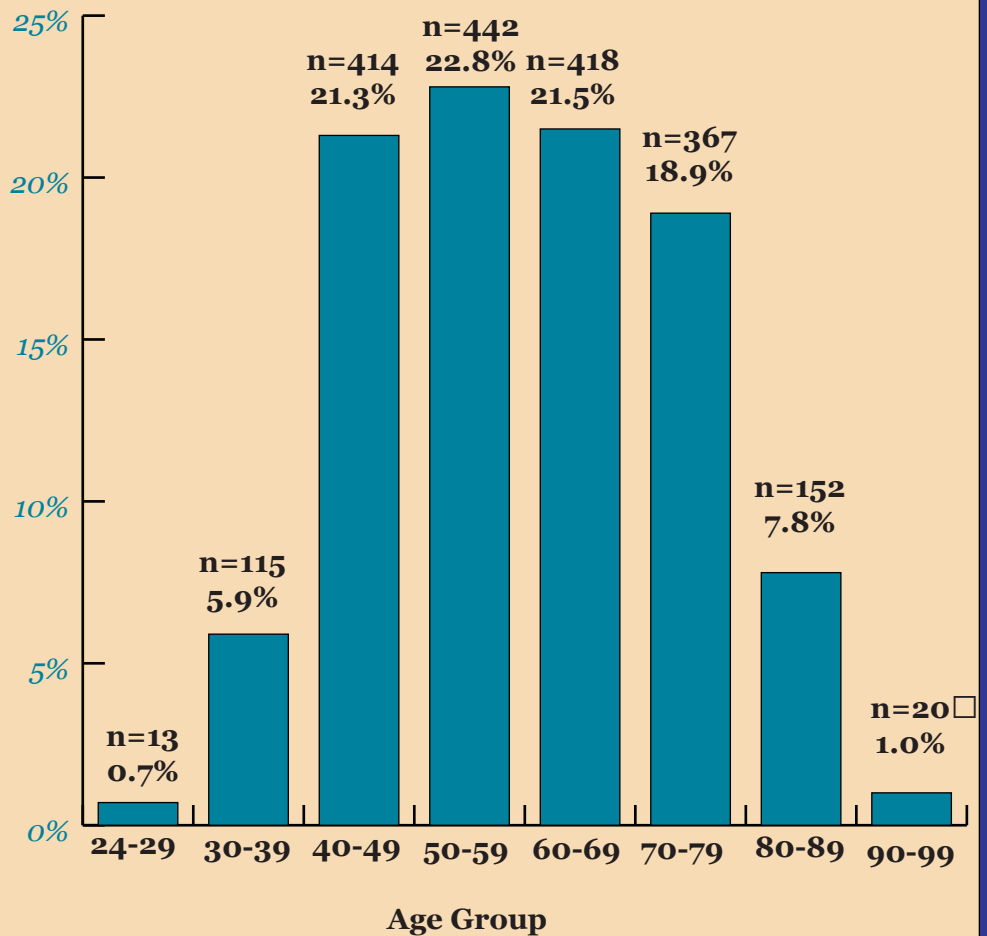
Breast Cancer

No one knows for sure what causes breast cancer; however, it is the most common form of cancer among women in the United States¹. Although there is medical evidence that the likelihood to develop breast cancer can be inherited, this accounts for only a small percentage of cases. Breast cancer has not been directly linked to cancer-causing substances in the environment and is relatively rare before the age of 40; however, the risk of breast cancer increases with age until it reaches one in nine by the age of 85². Many women with breast cancer have a mastectomy to surgically remove the cancer. The 1999 Georgia Hospital Discharge Data Set contained 1,941³ inpatient hospitalizations of women having a mastectomy for breast cancer.

Mastectomy and Age

In 1999, Georgia women undergoing a mastectomy ranged in age from 24 to 99 years with an average age of 59.7 years. The number of mastectomies jumped dramatically from the 30-39 to the 40-49 age groups, peaked for women between 50 and 59, and dropped dramatically after age 79 (figure 1). This graph does not imply that the risk or incidence of breast cancer decreases with age. Rather, mastectomies decrease because there are fewer women after age 79 due to mortality. In addition, an elderly woman may not have a mastectomy because the risks of surgery may outweigh the benefits.

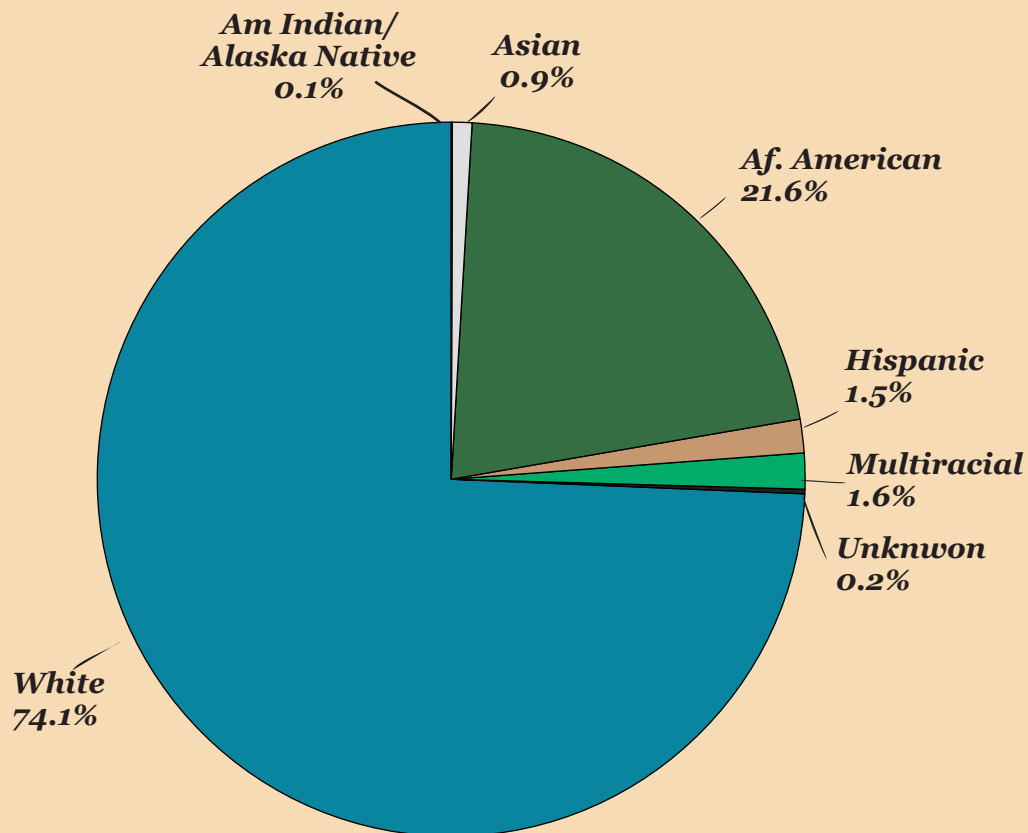
Figure 1: 1999 Georgia Hospital Discharge Data: Mastectomies by Age of Patient (N=1,941)



Mastectomy and Race

Seventy-four percent of women having an inpatient hospitalization in 1999 for a mastectomy were White (figure 2). Five of every 100,000 White women and four of every 100,000 African-American women living in Georgia had a mastectomy. The rate of African-American women having a mastectomy was significantly less than the rate of White women having a mastectomy. This is supported by national research that indicates African-American women are less likely than White women to develop breast cancer; however, they are more likely to develop it at an earlier age⁴.

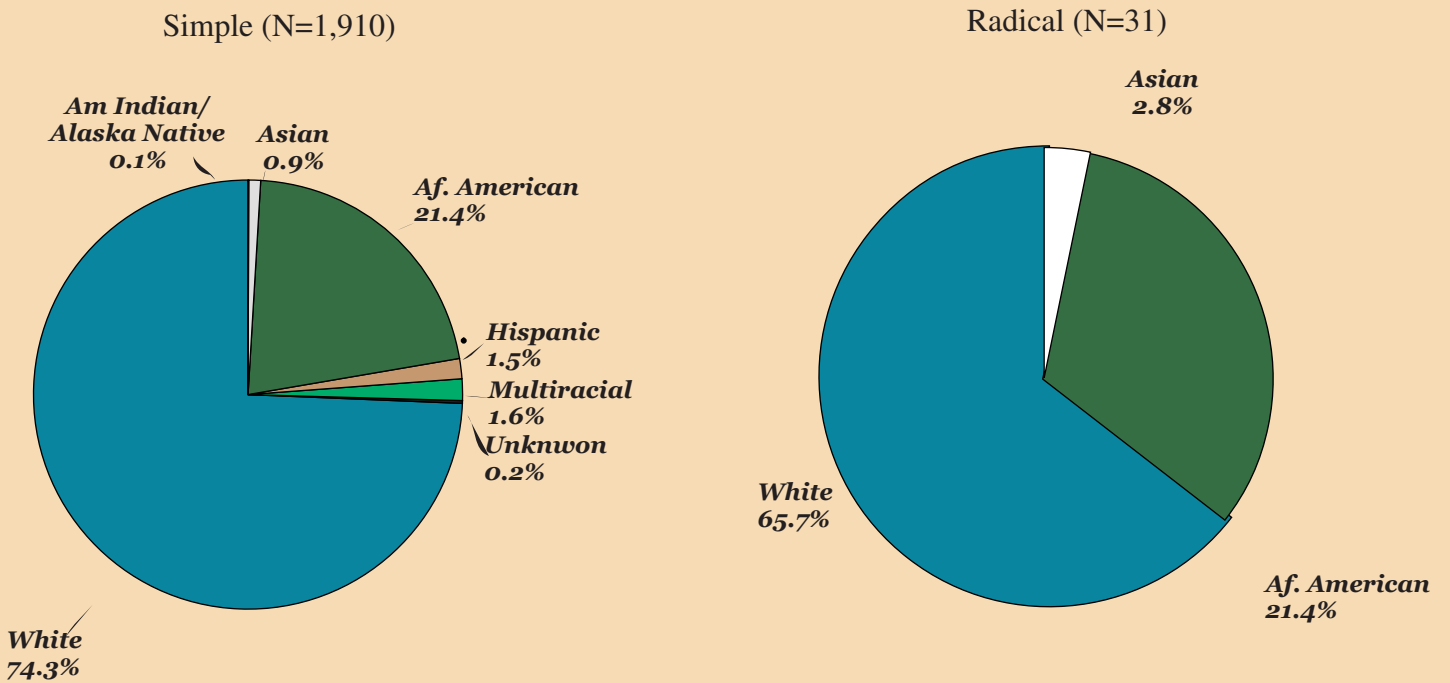
Figure 2: 1999 Georgia Hospital Discharge Data: Mastectomies by Race (N=1,941)



Types of Mastectomy (Simple and Radical) and Race

There are two types of mastectomy, *simple* and *radical*. In a simple mastectomy, only the breast tissue is removed. In a radical mastectomy, surrounding muscles and nearby lymph nodes are also removed. The great majority of women hospitalized in 1999 for a mastectomy had a simple mastectomy (1,910 or 98% - 1,420 for Whites and 408 for African-Americans). Thirty-one women (2%) had radical mastectomies with African-Americans having double the percentage of Whites (2.6% and 1.3% respectively). However, because there were so few radical mastectomies, this difference was not significant. Figure 3 presents a description of mastectomies by race and type.

Figure 3: 1999 Georgia Hospital Discharge Data: Mastectomies by Race and Type



Mastectomy & Number of Days in the Hospital

National Comparisons

In Georgia, the average number of days mastectomy patients stayed in the hospital was 2.6 days. The national average for all mastectomies was 2.5 days (6). Although this does not appear to be a large difference in the number of days women were hospitalized among Georgians and the Nation, the average length of stay for all mastectomies for Georgia was significantly higher than the national average.

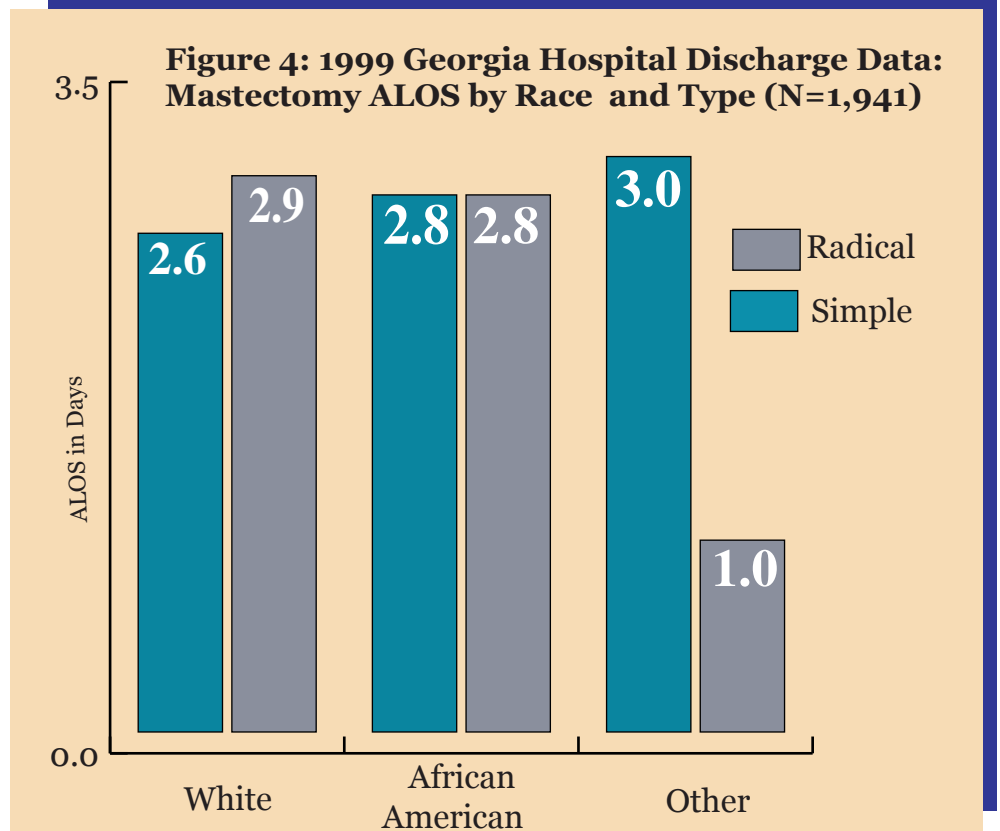
Simple mastectomies showed the same pattern. Simple mastectomies averaged 2.6 days in Georgia and 2.5 days for the Nation. Again, Georgia women experienced significantly longer stays as compared to the country as a whole.

In contrast, Georgia women having a *radical* mastectomy were hospitalized for a shorter period of time (2.8 days) than the National average (3.2 days). However, because there were so few radical mastectomies in Georgia during 1999 (31) the average number of days in the hospital was not significantly different than that of the Nation.

Race & Number of Days in the Hospital

Georgia Comparisons

In Georgia, for all mastectomies the average number of days African-American women stayed in the hospital was slightly longer than the number of days for White women (figure 4). However, African-American women having a radical mastectomy stayed a slightly shorter time in the hospital than White women. These differences in the length of stay for total and radical mastectomies by race were not statistically significant.



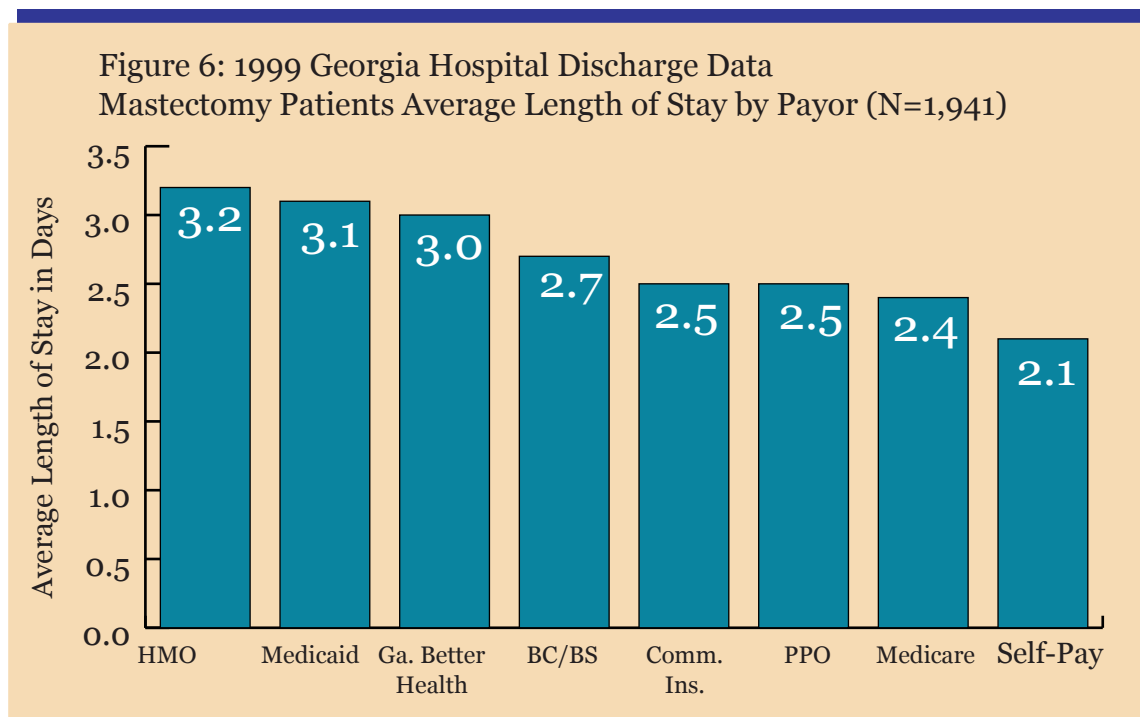
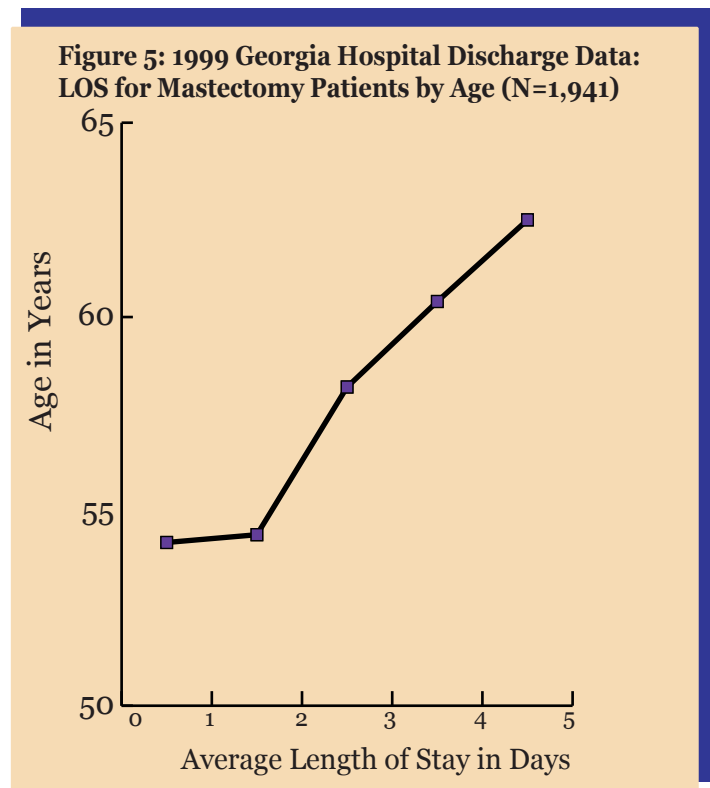
Length of Hospitalizations

Age

An examination of age by average length of stay (ALOS) in the hospital for women having mastectomies in Georgia shows that as age increases, length of stay decreases (figure 5).

Payor

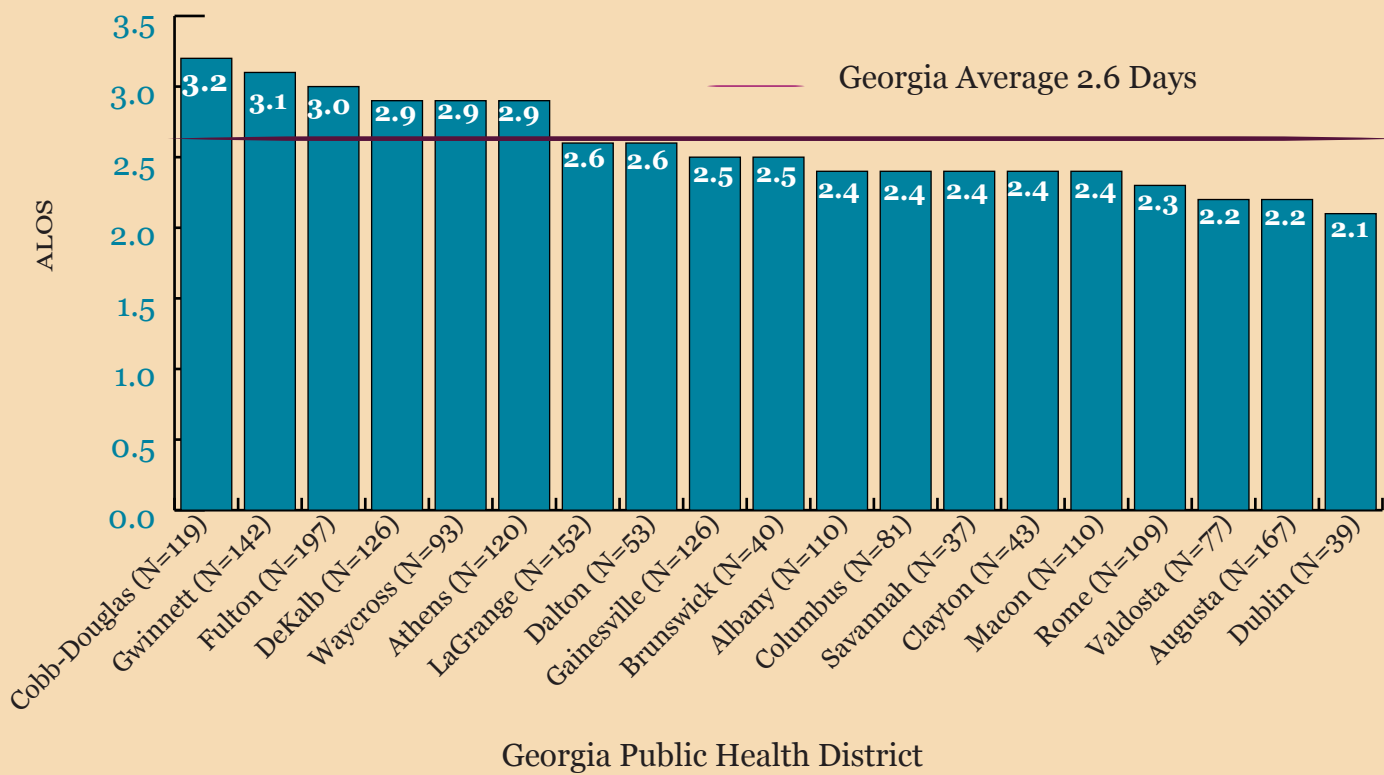
Average length of stay (ALOS) was also examined by payor (figure 6). Among payors with 30 or more patients, the longest length of stay was found for patients belonging to HMOs (3.2 days, 417 patients). The shortest length of stay was found for patients who were self-pay (2.1 days, 87 patients). Medicare patients had the lowest average length of stay next to self-pay (2.4 days, 737 patients). A comparison of length of stay by payor found a significantly shorter length of stay for Medicare patients when compared to all other payors. This was also true for self-pay patients when compared to all other payors. The difference in the ALOS between self-pay and Medicare patients was not significant.



Public Health District of Residence and Length of Hospitalization

To examine the possibility that the average length of stay (ALOS) for inpatient hospitalizations for mastectomy may be higher in areas with lower access to care, mastectomy rates, based on the woman's county of residence, were calculated for each of the 19 Public Health Districts. Women residing in the Cobb-Douglas health district had the longest ALOS followed by women in the Gwinnett and Fulton Health Districts (figure 7). The shortest ALOS was for women residing in the Dublin, Augusta and Valdosta Public Health Districts. Further analysis determined that 61% of the women residing in Dublin were Medicare patients, while only 15% of women in Cobb-Douglas were Medicare patients. This correlates with information presented previously that Medicare patients had the shortest length of stay among all payors excluding self-pay patients.

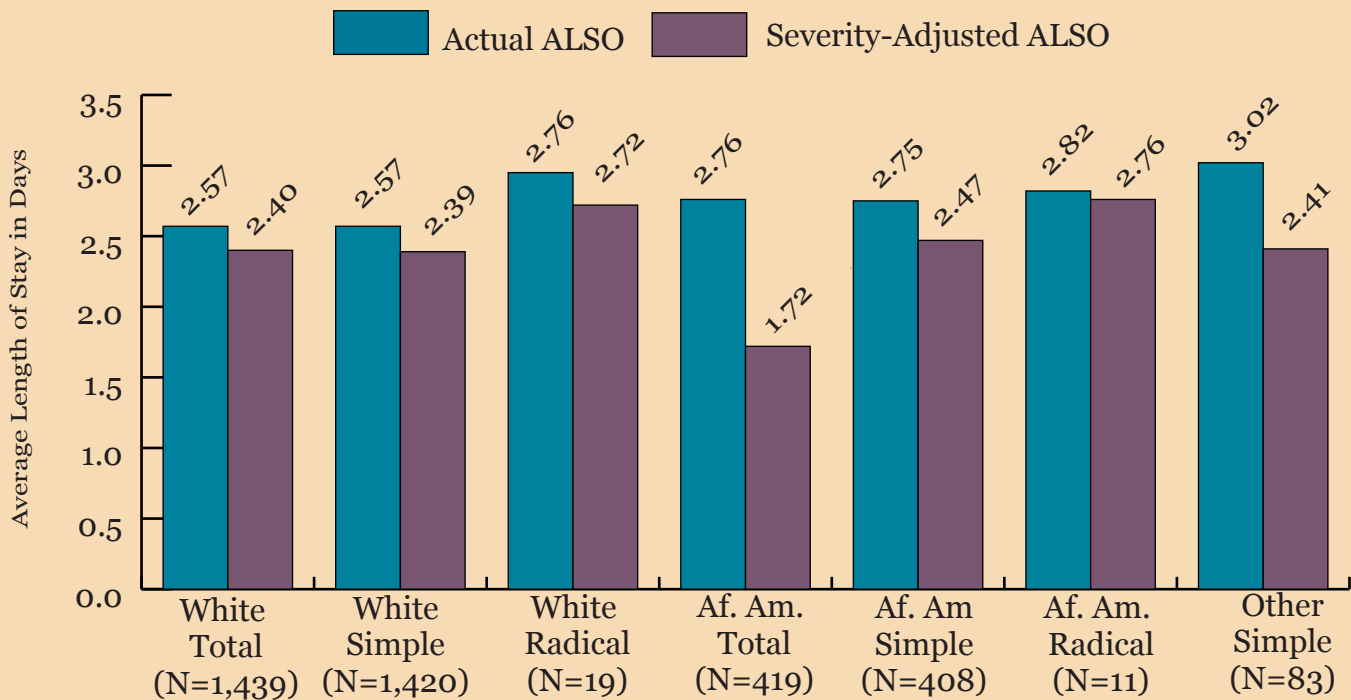
**Figure 7: 1999 Georgia Hospital Discharge Data:
ALOS for Mastectomy Patients by Public Health District (N=1,941)**



Actual and Severity-Adjusted Length of Stay

To review appropriateness of the length of stay among women having mastectomies, actual length of stay in the hospital was compared to the severity-adjusted length of stay. Severity-adjusted length of stay considers factors such as co-morbidities, age, other diagnoses, procedures, complications, and other factors in calculating how long a person should stay in the hospital for their diagnoses or procedures. Low values for severity-adjustment imply the patient is not very sick and higher values imply the patient is very sick. In other words, if the severity-adjusted length of stay is longer than the actual length of stay, the patient may have been prematurely discharged from the hospital. For all patients by race and type of mastectomy, the actual length of stay was longer than the severity-adjusted length of stay (figure 8).

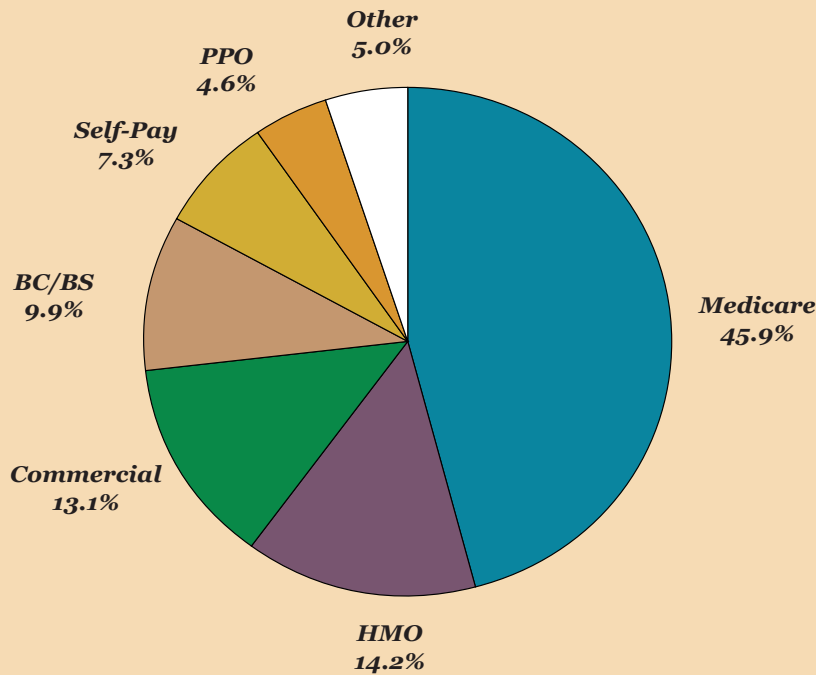
Figure 8: 1999 Georgia Hospital Discharge Data: Actual and Severity-Adjusted ALOS for Mastectomy Patients by Race and Type (N=1,941)



Examination of One-Day Length of Stays

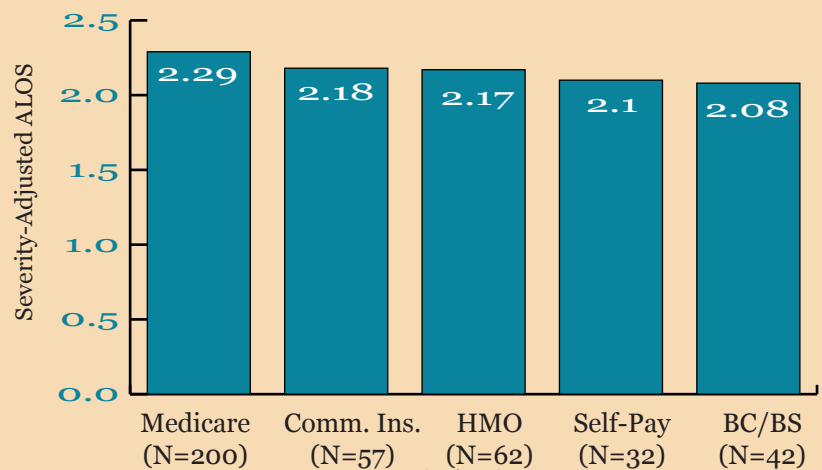
Mastectomy patients with a one-day length of stay were reviewed. Four hundred and thirty-six mastectomy patients (23%) had a one-day length of stay. The majority of these patients had simple mastectomies (98%). Medicare patients comprised 45% (200) of patients staying one day (figure 9, page 12). This fact further reinforces information presented earlier in which Medicare patients, although older, have a shorter length of stay than other commercial payors.

Figure 9: 1999 Georgia Hospital Discharge Data: Mastectomy Patients with a One-Day Length of Stay by Payor (N=436)



To examine if these patients were discharged from the hospital too quickly, the actual length of stay for these one-day stays was compared to their severity-adjusted length of stay. For all payors, the severity-adjusted length of stay was over two days; therefore, based on the woman's medical condition, co-morbidities, age and other factors influencing the outcomes of medical care, these patients may have been discharged too quickly from the hospital. Medicare patients not only made up the greatest percentage of one-day stays, but also had the longest severity-adjusted length of stay (figure 10). This implies that some older and "sicker" patients may have been discharged too soon from the hospital following a mastectomy.

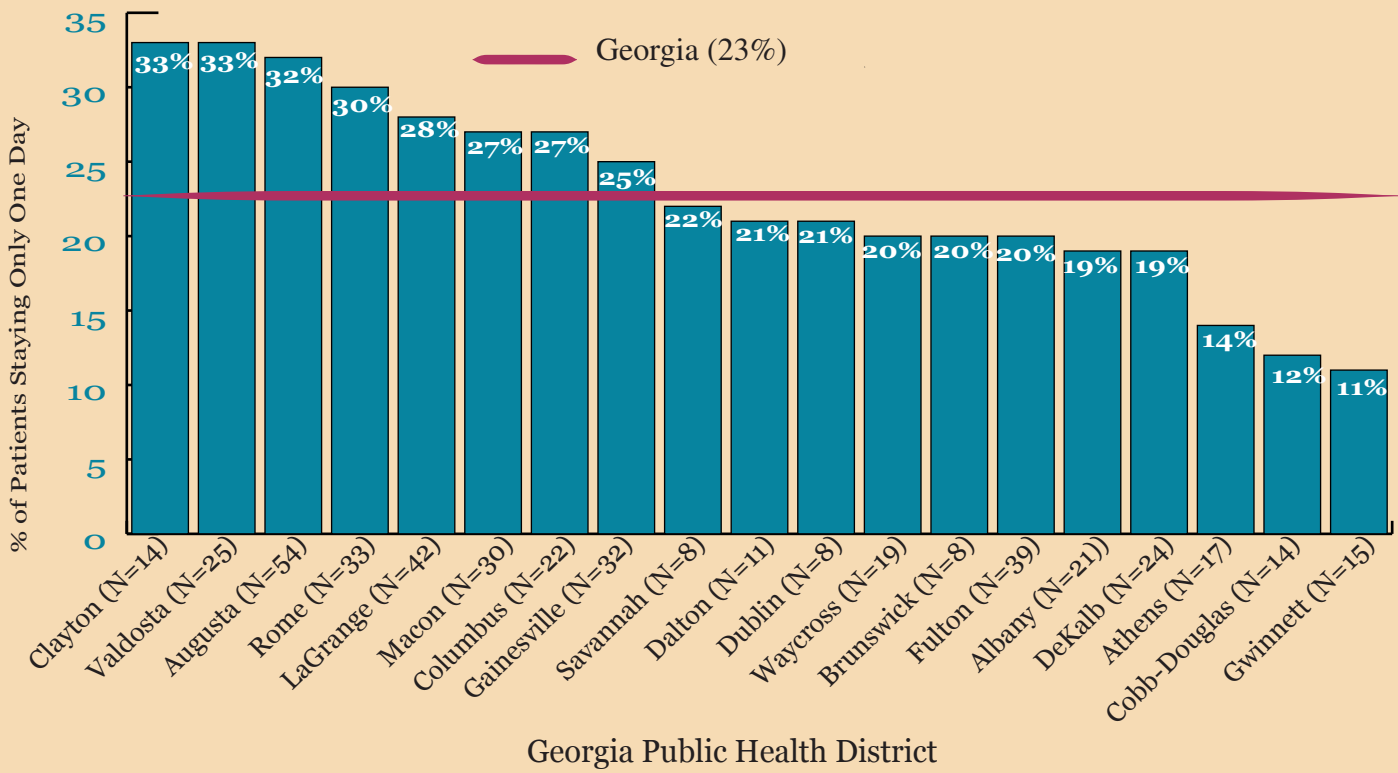
Figure 10: 1999 Georgia Hospital Discharge Data: Severity-Adjusted Length of Stay Mastectomy Patients Staying One-Day (N=436)



Comparison of One-Day Length of Stay by Public Health District

To ascertain whether there was any geographic variation in one-day length of stays, the discharge records were again reviewed by Public Health District based on a woman's county of residence. As stated previously, twenty-three percent of all mastectomies were one-day stays; however in the Clayton, Valdosta and Augusta Public Health Districts, approximately 33% of patients were hospitalized for only one day. The Rome, LaGrange, Macon, Columbus, and Gainesville Health Districts also exceeded the state average for one-day stays (figure 11). The primary reason for this pattern is that these Public Health Districts had a higher percentage of Medicare patients.

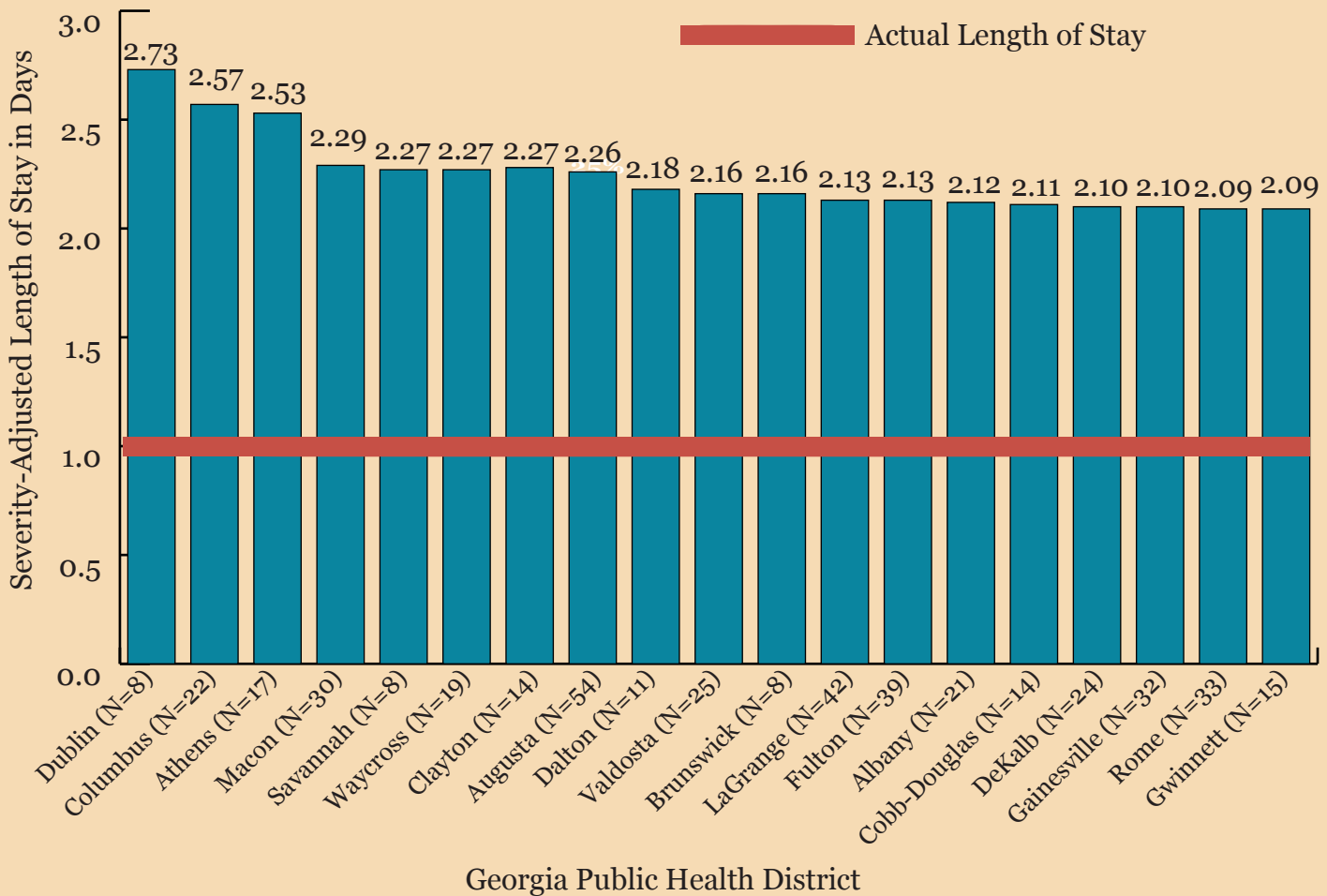
Figure 11: 1999 Georgia Hospital Discharge Data: Mastectomy Patients With One-Day Length of Stay by Public Health District (N=436)



Comparison of One-Day Length of Stay & Severity-Adjusted LOS

Patients with a one-day length of stay were compared to the severity-adjusted length of stay for each District. All patients with a one-day length of stay had a severity-adjusted length of stay of over two days. Dublin had the greatest difference in actual and severity-adjusted length of stay followed by Columbus (figure 12). This information agrees with information presented previously in that Dublin has a higher percentage of Medicare patients who have a longer severity-adjusted length of stay.

Figure 12: 1999 Georgia Hospital Discharge Data: Mastectomy Patients With One-Day Length of Stay Severity-Adjusted Length of Stay by Public Health District (N=1,436)

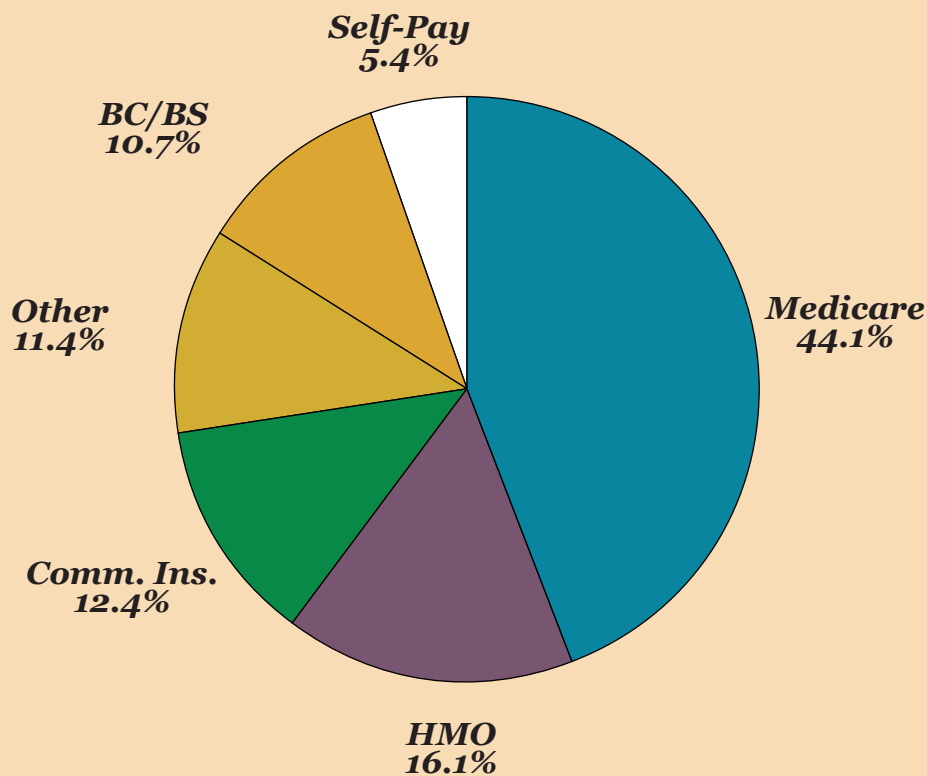


Readmissions

Two hundred and ninety-nine patients were readmitted during 1999 following an inpatient hospitalization for mastectomy. Seventy-three percent (219) of readmissions were among Whites; however, this is to be expected since Whites comprise 74% of the total mastectomy population. Twenty-four percent (73) were African-American. Nineteen percent (57/299) of those readmitted had a one-day stay during their initial hospitalization.

The leading diagnosis for the 299 patients was Agranulocytosis (28 patients or 9%). Agranulocytosis is a depletion of the "infection fighting" white blood cells and is often a side effect of chemotherapy. This was followed by infection (23 or 8%), cancer (10 or 3%), dehydration (9 or 3%), and plastic surgery (7 or 2%). Forty-four percent (132 patients) of the 299 readmissions were among Medicare patients (figure 13).

**Figure 13: 1999 Georgia Hospital Discharge Data:
Mastectomy Patients Readmitted by Payor (N=299)**



Mastectomies and Related Lymph Node Dissections

A review of women undergoing mastectomies and related lymph node dissections was conducted to determine if women were accessing health care in a timely manner. The premise is that the longer a woman waited to receive a mastectomy or cancer screenings, the more likely the cancer has spread to related lymph nodes. Because of the advanced stage of the disease, women receiving radical mastectomies will usually have some type of lymph node dissection, although these are not typically coded separately in the medical record. In addition to the 31 women having a radical mastectomy, 94 of the 1,941 women in the 1999 Georgia Hospital Discharge Data Set, having simple mastectomies also had a lymph node dissection. All of these women had a principal diagnosis of breast cancer. Sixty-four (68%) of these women were Whites and 27 (29%) were African-Americans. Forty-seven women (50%) had a regional excision of the lymph nodes. Of these 47, 33 (70%) had a simple excision of the axillary node 9 (5%) had a radical excision of the axillary node, and 5 (9%) had a lymph node dissection not specifically classified. No patterns in the rate of women receiving lymph node dissections by Public Health District were observed.

The average length of stay (ALOS) for women having a simple mastectomy with a lymph node dissection was 2.8 days and the ALOS for women having a simple mastectomy with no lymph node dissections was 2.6 days. This difference in length of stay between the two groups was not significant.

Limitations of This Research

This research was limited to the variables contained in the 1999 Georgia Hospital Discharge Data Set; therefore, the only outcome examined was readmission rates. Because this data does not contain a unique patient identifier, it could not be linked with other data sets to obtain a more comprehensive overview of the outcomes of these patients. Outcomes such as related outpatient ambulatory visits, physician office visits, mortality, patient satisfaction and functional outcomes cannot be tracked for these patients based on available data.

References

- (1) cancernet.nci.nih.gov/seer/Breast_Cancer.html. CancerNet. A service of the National Cancer Institute.
- (2) WebMDHealth<http://breastcare.webmd.com>
- (3) Of the 949,709 patient records contained in the 1999 Georgia Hospital Discharge Data Set, 2,099 were identified as having a principal or secondary procedure code of mastectomy (ICD-9 codes 85.41-85.48). One hundred and fifteen records of non-Georgia residents were eliminated from the analysis. Twenty records were deleted due to unknown or male gender and an additional 23 were deleted to remove Length of Stay outliers (lengths of stay > 3 standard deviations from the mean).
- (4) cancernet.nci.nih.gov/seer/Breast_Cancer.html. CancerNet. A service of the National Cancer Institute.
- (5) <http://www.surgery.missouri.edu/health/afromamerican.htm>
- (6) HCUPnet, Health Care Cost and Utilization Project. Agency for Healthcare Research and Quality, Rockville, MD. 1999 National Hospital Discharge Data Survey (female population only). <http://ahrq.gov/data/hcup/hcup.net>

Suggested Citation

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