



Changing Patterns in Care Settings for Surgical Management of Ovarian and Uterine Malignancies

Joanne Sheu, MD; Yi-Chun Lee, MD

Division of Gynecologic Oncology, State University of New York Downstate Medical Center, Brooklyn, NY

INTRODUCTION

In recent years, outcome-based studies of treatment for gynecologic malignancy in the United States as well as Europe have demonstrated a pattern toward improved patient outcomes when surgical care is rendered at high volume institutions. To this effect, multiple articles in the literature suggest that one way to optimize care for gynecologic malignancies is to systematically centralize these cases. However, studies as recent as 2010 demonstrate that current patterns of care in the United States do not reflect these recommendations, with an analysis of cancer registries across four states showing 80% of late-stage ovarian cancer cases being managed in low-volume settings.

In this investigation, we seek to evaluate whether there has been a more recent change in care settings in surgical management, by comparing the number of ovarian and uterine surgical cases performed at small, medium, and large hospitals in the years 2007 and 2014.

METHODS

The National Inpatient Sample (NIS) years 2007 and 2014 database was queried to identify all admissions which were coded for uterine cancer with hysterectomy, and ovarian cancer with bilateral salpingo-oophorectomy, in order to identify cases representing primary surgical management of these malignancies. The observations were then subset by regional location of the hospital in the United States (Northeast, Midwest, South, West), and by hospital size. Size determination, per the NIS description of data elements, was based on bed number categories specific to each region.

Chi-square tests were used to evaluate the changes in admission distribution between these two periods of time. *P* value < 0.05 was considered to be statistically significant. All statistical analysis was performed using SAS Studio University Edition 3.7.

Table 1. Distribution of Procedures by Region and Hospital Bedsize

Region	Hospital Bedsize	2007 N (%)	2014 N (%)	p-value
Northeast	Small	388 (17.79)	128 (11.18)	<0.01
	Medium	331 (15.18)	278 (24.28)	<0.01
	Large	1,462 (67.03)	739 (64.54)	0.15
Midwest	Small	172 (10.22)	104 (8.85)	0.22
	Medium	284 (16.87)	242 (20.60)	0.01
	Large	1,227 (72.91)	829 (70.55)	0.17
South	Small	239 (8.67)	205 (11.77)	<0.01
	Medium	443 (16.07)	481 (27.61)	<0.01
	Large	2,075 (75.26)	1,056 (60.62)	<0.01
West	Small	61 (3.14)	144 (11.96)	<0.01
	Medium	402 (20.71)	189 (15.70)	<0.01
	Large	1,478 (76.15)	871 (72.34)	0.02

RESULTS

- A total of 13,828 admissions were included in the analysis; 8,562 in 2007 and 5,266 in 2014
- In the Northeast, there was a significant increase in cases at medium-sized hospitals ($p < 0.01$) and decrease at small hospitals ($p < 0.01$).
- The Midwest cases increased in medium-sized hospitals ($p = 0.01$).
- More surgeries in the South and West were performed in small (both $p < 0.01$) and medium-sized (both $p < 0.01$) hospitals, and fewer in large hospitals ($p < 0.01$ and $p = 0.02$).
- All other change in case distribution between 2007 and 2014 were not statistically significant (Table 1).

CONCLUSIONS

- Between the years 2007 and 2014, there is a generally increased proportion of cases being performed and small- and medium-sized hospitals
- The decrease in proportion of cases being performed in large hospitals is greatest in the southern United States
- These findings underscore the importance of adequate gynecologic oncology service in small and medium-sized hospitals.
- While evidence-based changes in outcome should continue to direct recommendations for centralization, other influences such as patient hospital preference and the effect of socioeconomic factors in health-care access play an important role in determining care setting

Figure 1. Distribution of Procedures by Region and Hospital Bedsize

