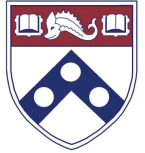
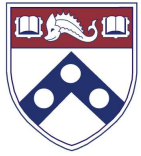


# Can Hospital System Type Accelerate the Journey to High-Value Breast Cancer Surgical Care?



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## Introduction

- Breast reconstruction after mastectomy for cancer has well established benefits
  - Significant psychosocial benefits<sup>1</sup>
  - No difference in disease-free or overall survival<sup>2</sup>
- Hospital mergers are increasing in the United States, such that hospitals increasingly belong to health systems<sup>3</sup>
- Consolidation has unclear clinical implications for both medical and surgical patients<sup>4,5</sup>
- Mastectomy for cancer is performed widely across the United States, with a wide range of rates of immediate reconstruction despite known benefits<sup>6</sup>
- The impact of health system structure on immediate reconstruction rates and cost remains unknown

The objective of this study was to determine if hospital system affiliation is associated with rate or cost of immediate reconstruction after mastectomy.

## Methods

- Cross-sectional study
- Healthcare Cost and Utilization Project State Inpatient Data, linked to American Hospital Association Annual Survey Data (2013-2016)
  - 9 geographically diverse states
- Female patients ≥18 years old who underwent **mastectomy alone (MxO)**, **mastectomy with immediate reconstruction (MxR)**, or **reconstruction alone (RO)** AND had a personal or family history of breast cancer
- Hospitals defined by system affiliation type: Non-system, local system, regional system, multi-regional system, and national system (See Table 1 for definitions)
- Patients and hospital characteristics were compared across hospitals by system affiliation type
- Wage-adjusted total cost of care was compared across hospital affiliation types using clustered regression

TABLE 1

Patient Characteristics	Total	Hospital Affiliation					p-value
		Non-system	Local Systems (Single Metropolitan Statistical Area)	Regional Systems (Single AHA Region)	Multi-Regional Systems (2-7 States)	National (8+ states)	
# Patients, n (%)	29,813 (100%)	8,391 (28.1%)	5,191 (17.4%)	8,282 (27.8%)	2,866 (9.6%)	5,083 (17.0%)	
Age, years, mean (SD)	55 (12.8)	54.6 (12.6)	54.8 (12.3)	53.1 (12.3)	55.1 (12.2)	58.9 (13.6)	<0.001
Race – Black, n (%)	3,163 (11.4%)	978 (12.2%)	597 (12.1%)	734 (10.0%)	179 (6.5%)	675 (14.3%)	<0.001
Hospital Characteristics							
# of Systems (n)	64	N/A	22	19	17	10	
Mean # of Hospitals per system, n (SD)	3.4 (3.9)	N/A	2.1 (1.0)	3.1 (2.0)	2.1 (1.7)	8.9 (7.4)	<0.001

FIGURE 1

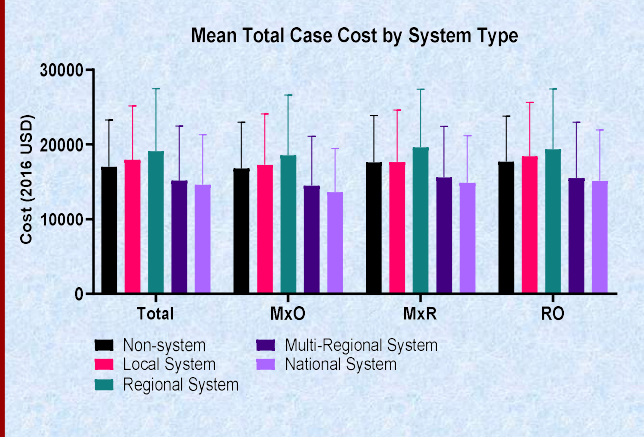


Figure 1: Mean total case cost varied significantly by hospital affiliation. Hospitals affiliated with national systems achieved the lowest case costs ( $p < 0.05$  for all).

FIGURE 2

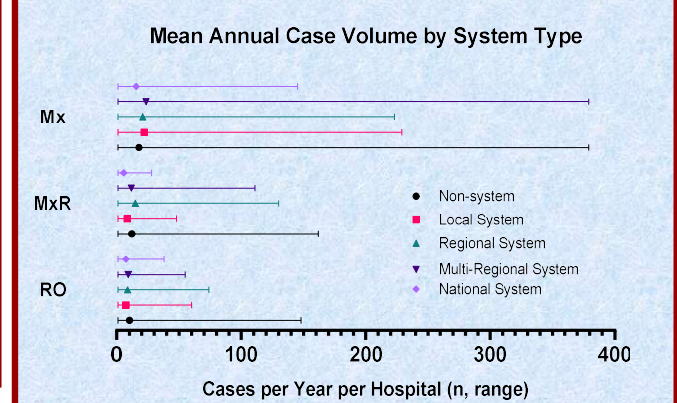


Figure 2: Annual case volume per hospital ranged widely for all operations studied. Immediate reconstruction rates varied significantly by hospital affiliation: national system hospitals performed the fewest mean cases per year ( $p = 0.004$ ). National system hospitals also performed the fewest reconstruction only cases per year ( $p = 0.001$ ).

## Conclusions

- Wide range of case volume per hospital is a clear target for improved efficiencies in surgical breast cancer care
- Disparate use of immediate reconstruction across hospital system affiliation types provides an opportunity for improved access to comprehensive care
- Differences in the cost of care across system types suggest an opportunity for improvement in cost-efficiency and value

## Limitations

- Costs estimated using cost-to-charge ratios, which may overestimate surgical costs<sup>7</sup>
- Geographic system classification in a 9-state database may not capture full extent of national and multi-regional systems

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