Treatment Patterns for Female Breast Cancer Patients Enrolled in Medicare

Van Doren Hsu[1], Kathy Schneider[2], Jean O'Donnell[1], Geoffrey Chambers[3], Misha Segal[3]

[1]General Dynamics Health Solutions [2]Schneider Research Associates, LLC [3]Centers for Medicare & Medicaid Services

GENERAL DYNAMICS Health Solutions

INTRODUCTION

Breast cancer (BC) is the second most common cancer among US women. It is estimated that 292,130 new cases of invasive and carcinoma in situ BC will be diagnosed in women in 2015.[1] Various treatment options are available depending on the disease characteristics, patient factors and preferences.

The study objective was to examine the pattern of BC-related surgical, radiation and drug treatment up to two years post diagnosis among a cohort of Medicare females with incident BC derived from Medicare claims in 2011.

METHODS

Data Source from the Chronic Conditions Data Warehouse (CCW)

- 2010-2013 Master Beneficiary Summary
- 2011 Chronic Conditions
- 2010-2013 Medicare Part A and B claims
- 2011-2013 Prescription Drug Event (PDE)

Study Population

Aged and disabled female beneficiaries with incident BC diagnosis date in 2011 who met the study inclusion and exclusion criteria as listed in Figure 1.

- Look-back period = one year prior to the BC diagnosis date
- Observation period = from BC diagnosis date through the earlier of death or two years after diagnosis
- Baseline variables of interest were beneficiary age, sex, race, Medicare-Medicaid dual enrollment status, Hierarchical Condition Category (HCC) score in the month of the BC diagnosis, and concurrent cancer (lung, colorectal, endometrial, leukemia or lymphoma)

Analysis

- Receipt of BC-related surgery, radiation or drug treatments (see tables below) in the observation period in the BC cohort and by four age groups - <65, 65-74, 75-84 and 85+

Table 1. Definitions for BC-related surgery and radiation treatment

	ICD-9 procedure codes	CPT codes
SURGERY		
Breast conserving surgery (BCS)	85.21-85.23	19160, 19162, 19301, 19302
Mastectomy	85.33-85.36, 85.41-85.48	19180, 19182, 19200, 19220, 19240, 19303-19307
Breast reconstructive surgery	85, 85.2, 85.31-85.35, 85.5, 85.51-85.54, 85.6, 85.7, 85.71-85.76, 85.79, 85.82-85.87, 85.89, 85.93-85.96, 85.02, 86.6, 86.7, 86.71, 86.72, 86.74, 86.75	11920-11922, 11970, 19271, 19272, 19316, 19318, 19324, 19325, 19328, 19330, 19340, 19342, 19350, 19355, 19357, 19361, 19364, 19366-19371, 19380, 19396
RADIATION		
External beam radiation therapy (EBRT)	92.21, 92.22, 92.24, 92.25	77401-77404, 77406-77409, 77411-77414, 77416, G6003-G6014
Intensity modulated radiation therapy (IMRT)		77385, 77386, 77418, 0073T, G0174, G6015, G6016
Intraoperative radiation therapy	92.41	77424, 77425
Neutron/proton beam therapy	92.26	77422, 77423, 77520, 77522, 77523, 77525
Stereotactic radiation therapy	92.30-92.33, 92.39	77371-77373, G0173, G0251, G0339, G0340
Radioisotopic teleradiotherapy	92.23	
Brachytherapy	92.20, 92.27, 92.28	77750, 77761-77763, 77767, 77768, 77770-77771, 77776-77778, 77789, 0182T, 0394T, 0395T

Table 2. Definitions for BC-related drug treatment

Type	Drug
Hormonal therapy	Anastrozole, exemestane, letrozole, tamoxifen, toremifene citrate, fulvestrant, megestrol acetate, fluoxymesterone, testosterone enanthate, goserelin acetate, leuprolide acetate
Chemotherapy	BC-specific drugs (capecitabine, carboplatin, cisplatin, cyclophosphamide, docetaxel, doxorubicin, doxorubicin liposomal, epirubicin, eribulin, fluorouracil, gemcitabine, ixabepilone, methotrexate sodium injectable, paclitaxel, paclitaxel protein-bound particles, thiotepa, vinblastine sulfate, vinorelbine tartrate)* and other non-BC-specific chemotherapy
Targeted therapy	Ado-trastuzumab emtansine, bevacizumab, everolimus, lapatinib ditosylate, pertuzumab, trastuzumab

*BC-specific treatment include drugs that are approved by the Food and Drug Administration for the treatment of breast cancer or recommended for BC treatment by National Comprehensive Cancer Network[2].

RESULTS

Figure 1. Cohort size by inclusion and exclusion criteria

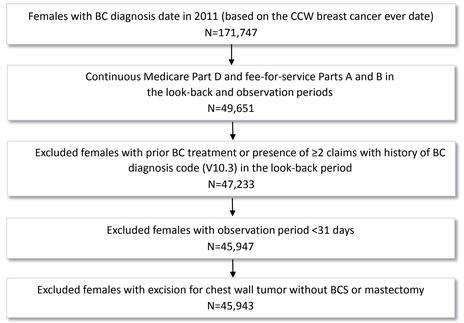
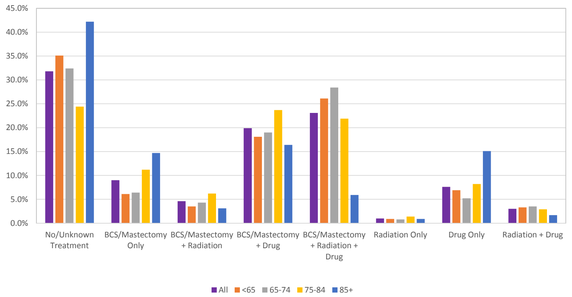


Table 3. Medicare females with incident breast cancer diagnosis in 2011

	All ages (N=45,943)	Age <65 (N=5,236)	Age=65-74 (N=20,814)	Age=75-84 (N=13,477)	Age=85+ (N=6,416)
Mean age ± SD (year)	73.4 ± 10.2	54.8 ± 7.5	69.4 ±2.6	79.2 ± 2.9	89.1 ± 3.6
Race					
Non-Hispanic White	37,941 (82.6%)	3,433 (65.6%)	17,585 (84.5%)	11,386 (84.5%)	5,537 (86.3%)
Black or AA	4,458 (9.7%)	1,267 (24.2%)	1,589 (7.6%)	1,100 (8.2%)	502 (7.8%)
Hispanic	2,195 (4.8%)	361 (6.9%)	969 (4.7%)	648 (4.8%)	217 (3.4%)
Other	1,349 (2.9%)	175 (3.3%)	671 (3.2%)	343 (2.5%)	160 (2.5%)
Dual status at diagnosis					
Full	10,363 (22.6%)	2,935 (56.1%)	3,186 (15.3%)	2,529 (18.8%)	1,713 (26.7%)
QMB*/Partial	3,294 (7.2%)	925 (17.7%)	1,152 (5.5%)	885 (6.6%)	332 (5.2%)
None	32,286 (70.3%)	1,376 (26.3%)	16,476 (79.2%)	10,063 (74.7%)	4,371 (68.1%)
HCC score **					
Mean ± SD	1.18 ± 1.27	1.60 ± 1.81	0.94 ± 1.18	1.25 ± 1.14	1.48 ± 1.08
Median ± IQR	0.81 ± 0.91	1.02 ± 1.08	0.56 ± 0.71	0.90 ± 0.94	1.18 ± 0.92
Length of observation (days)					
31-365	3,941 (8.6%)	350 (6.7%)	979 (4.7%)	1,212 (9.0%)	1,400 (21.8%)
366-730	42,002 (91.4%)	4,886 (93.3%)	19,835 (95.3%)	12,265 (91.0%)	5,016 (78.2%)
Concurrent lung, colorectal, or endometrial cancer, leukemia or lymphoma	5,208 (11.4%)	545 (10.4%)	1,976 (9.5%)	1,813 (13.5%)	884 (13.8%)
Died during observation	8,237 (17.9%)	788 (15.0%)	2,178 (10.5%)	2,563 (19.0%)	2,708 (42.2%)

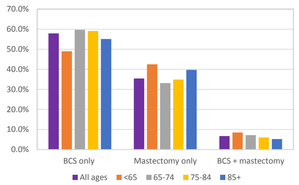
*QMB= qualified Medicare beneficiary
**HCC score greater than 1.0 indicate higher risk for Medicare spending compared to average beneficiary

Figure 2. BC-treatment patterns by age group



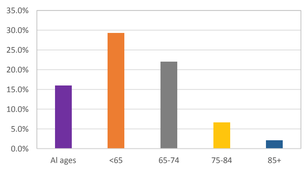
- Overall 31.8% of Medicare females with BC received no/unknown treatment, with the highest of 42.2% in the 85+ group.
- BC females were frequently treated with surgery, radiation and drug therapies (23.1%), ranging from 4.9% in the 85+ group to 28.4% in the 65-74 group.
- Surgery in combination with either radiation or drug therapy was used in 23.5% of the cohort. Radiation was rarely used by itself (1.0%) while drug and surgical treatment were more likely to be used individually (7.6%, 9.0%) especially in the 85+ age group (15.1%, 14.7%)

Figure 3. Type of surgery among females who received treatment surgery (N=25,985)



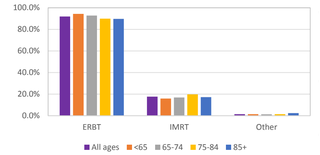
- A total of 56.6% of the BC cohort received BCS and/or mastectomy (40.1% in the 85+ group to 63.1% in the 75-84 group).
- Among those with surgical treatment,
  - BCS was the most common surgery in all age groups, ranging from 57.5% in the <65 group to 66.9 % in the 65-74 group.
  - A total of 7.5 % had both procedures indicating that BCS was initially attempted but it was followed by mastectomy.

Figure 4. Prevalence of reconstructive surgery among females with mastectomy (N=10,938)



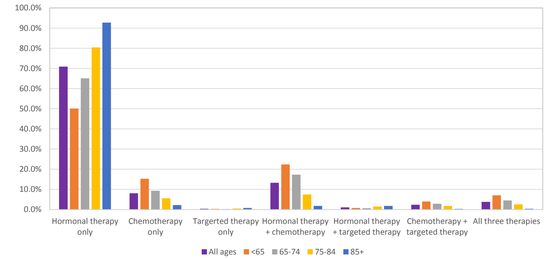
Only 16% of females with mastectomy underwent reconstruction surgery and the proportion decreased from 29.3% in the <65 group to 2.1% in the 85+ group.

Figure 5. Type of radiation among females who received radiation treatment (N=14,580)



- Overall, 31.7% of the BC females were treated with radiation, ranging from 11.6% in the 85+ group to 37.0% in the 65-74 group.
- At least 89% of the cohort in each age group received only one type of radiation treatment.
- ERBT was the predominant radiation type followed by IMRT.

Figure 6. Drug use among females who received drug treatment (N=24,675)



- A total of 53.7% of the cohort received drug therapies during the observation period, ranging from 39.1% in the 85+ group to 56.7% in the 75-84 group.
  - 47.8% received hormonal therapy (37.8% in <65 group to 52.3% in 75-84 group)
  - 14.8% received chemotherapy (1.9% in 85+ group to 26.6% in <65 group)
  - 4.1% received targeted therapy (1.3% in 85+ group to 6.6% in <65 group)
- Almost 71% of those on BC-related drug treatment received hormonal therapy only and the proportion increased with age to 92.7% in the 85+ group.
- Use of chemotherapy and targeted therapy decreased with age.

CONCLUSIONS

- Treatment patterns in breast cancer varied with age among Medicare BC females and are likely affected by staging, presence of other concurrent medical conditions, life expectancy, or clinical trial participation.
- Female beneficiaries with BC were most likely to receive all three treatment types (BCS/Mastectomy + Radiation + Drug), the exception being those 75-84 years who were more likely to receive (BCS/Mastectomy + Drug).
- BCS was preferred over mastectomy in our cohort who underwent surgical treatment.
- Even though hormonal therapy was most commonly used by BC females of all ages, chemotherapy and targeted therapies were used more often in the <65 group than the other groups.
- Use of Medicare data offers an opportunity to examine BC treatment in a large population.

REFERENCES

[1]American Cancer Society. *Cancer Facts & Figures 2015*. Atlanta: American Cancer Society; 2015.

[2]Referenced with permission from the **NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Breast Cancer V.2.2015**© National Comprehensive Cancer Network, Inc 2015. All rights reserved. Accessed June 1, 2015. To view the most recent and complete version of the guideline, go online to NCCN.org. NATIONAL COMPREHENSIVE CANCER NETWORK®, NCCN®, NCCN GUIDELINES®, and all other NCCN Content are trademarks owned by the National Comprehensive Cancer Network, Inc.

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Contact information: VanDoren.Hsu@gdit.com