

Treatment delays of >90 days associated with poor outcomes in localized breast cancer: a National Cancer DataBase (NCDB) analysis

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INTRODUCTION

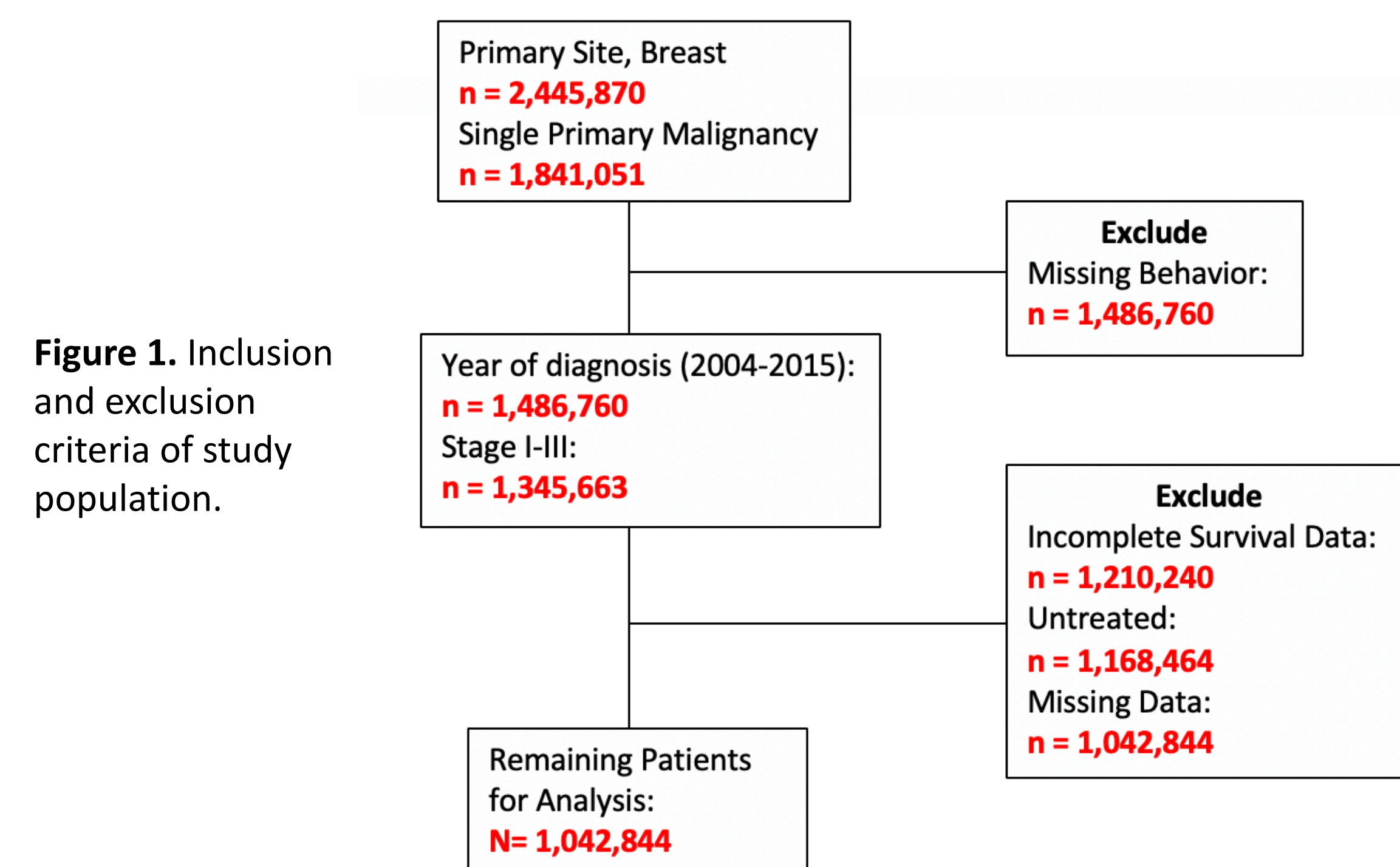
- Breast cancer remains a leading cause of cancer death, despite continued advances in therapy.
- Timely treatment is imperative for increasing survival and reducing risk of recurrence.
- Delayed treatment is associated with poor outcomes, irrespective of stage or pathologic subtype.

OBJECTIVE

- To describe the impact of treatment timing on outcomes of patients with localized breast cancer.

METHODS

- Stage I-III breast cancer patients diagnosed between 2004 and 2014 were identified through the NCDB.
- Those with multiple primary malignancies or incomplete data in study variables of interest were excluded.



- Demographic, geographic and clinical variables were analyzed.
- Analysis grouped patients according to treatment time: ≤30 days, 31-60 days, 61-90 days, >90 days.
- Treatment delay was defined as >90 days post-diagnosis.
- Multivariate analysis revealed covariates associated with delayed treatment and overall survival (OS).
- Descriptive statistics, multivariate analysis, survival analysis and *p* values were computed in SAS.

RESULTS

Table 1. Demographic characteristics of study population by time to treatment.

	≤30 Days (N=530,391) (50.1%)	31-60 Days (N=374,411) (35.9%)	61-90 Days (N=90,800) (8.7%)	>90 Days (N=47,242) (4.5%)	<i>p</i> Value
Sex					<0.001
Male	64.3%	27.6%	4.8%	3.2%	
Female	50.7%	36.0%	8.7%	4.5%	
Race					<0.001
White	52.3%	35.6%	8.1%	4.0%	
Black	41.1%	37.8%	12.6%	8.4%	
Other	46.0%	37.1%	10.6%	6.3%	
Age					<0.001
40-50 years	47.9%	37.3%	9.8%	4.9%	
50-65 years	50.2%	36.5%	8.9%	4.4%	
>65 years	53.4%	34.4%	7.8%	4.4%	
Insurance Status					<0.001
Uninsured	42.5%	35.4%	12.7%	9.4%	
Private	50.9%	36.7%	8.5%	3.9%	
Medicaid	39.0%	38.1%	13.7%	9.2%	
Medicare + other gov't	53.0%	34.5%	8.0%	4.5%	

Table 2. Clinical and treatment features of study population by time to treatment.

	≤30 Days (N=530,391) (50.1%)	31-60 Days (N=374,411) (35.9%)	61-90 Days (N=90,800) (8.7%)	>90 Days (N=47,242) (4.5%)	<i>p</i> Value
Charlson-Deyo Score					<0.001
0	51.2%	35.8%	8.6%	4.4%	
1	49.2%	36.3%	9.3%	5.2%	
2	47.5%	36.5%	10.0%	6.0%	
≥3	43.8%	35.7%	12.0%	8.4%	
Stage					<0.001
1	51.1%	36.1%	8.7%	4.1%	
2	50.1%	36.1%	8.9%	4.8%	
3	51.8%	34.1%	8.3%	5.9%	
Facility Type					<0.001
CCP	59.4%	30.2%	6.8%	3.6%	
CCCP	54.4%	34.4%	7.5%	3.7%	
ARP	43.3%	39.5%	11.0%	6.2%	
ICN	46.8%	38.7%	9.6%	4.9%	

FACILITY KEY
 ARP: Academic Research Program
 CCP: Community Cancer Program
 CCCP: Comprehensive Community Cancer Program
 ICN: Integrated Care Network

Table 3. Multivariate analysis of factors associated with treatment delay (>90 days).

PREDICTORS	MULTIVARIATE		
	OR	95% CI	<i>p</i> Value
Age			
40-50 years			
50-65 years	0.96	(0.94,0.99)	<.0001
>65 years	0.83	(0.80,0.85)	<.0001
Race			
White			
Black	2.15	(2.10,2.20)	<.0001
Other	1.27	(1.22,1.32)	<.0001
Insurance			
Medicare + Other			
Private	0.82	(0.79,0.84)	<.0001
Uninsured	2.02	(1.92,2.14)	<.0001
Medicaid	1.77	(1.70,1.84)	<.0001
Charlson-Deyo Score			
0			
1	1.09	(1.06,1.12)	<.0001
2	1.19	(1.12,1.26)	<.0001
≥3	1.51	(1.37,1.67)	<.0001
Stage			
1			
2	1.29	(1.26,1.32)	<.0001
3	1.55	(1.50,1.60)	<.0001
Facility Type			
ARP			
CCP	0.64	(0.62,0.66)	<.0001
CCCP	0.64	(0.63,0.65)	<.0001
ICN	0.86	(0.83,0.89)	<.0001

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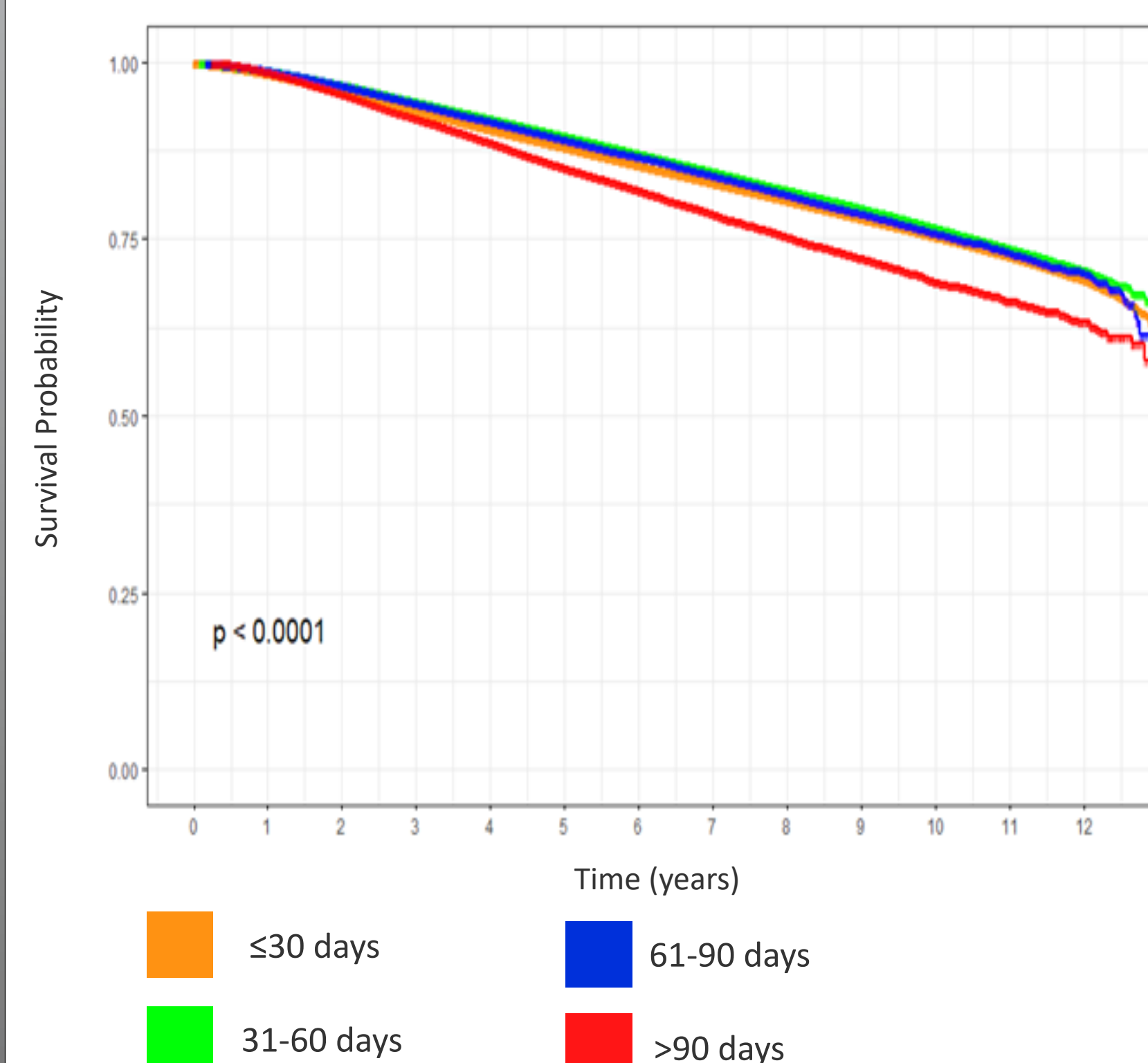


Figure 1. Adjusted regression model of OS corrected for race, stage, insurance status, Charlson-Deyo score, surgical procedure, order of therapy, facility type and facility location.

RESULTS

- Time to treatment was ≤30d in 50.9%, 31 - 60d in 35.9%, 61 - 90d in 8.7% and > 90d in 4.5% of patients.
- Median time to treatment was 25 days.
- Overall, delays in treatment increased from 2004-2014 (61 - 90d: 6% to 10.6% and > 90d: 3.3% to 5.1%).
- Those of younger age, Black race, without insurance or with Medicaid, higher comorbidity score and later-stage disease demonstrated significantly increased odds of treatment delay.
- Treatment delay was associated with significantly worse OS (HR 1.11, 95% CI 1.08-1.13, *p*<0.001).
- Adjusting for covariates, treatment >90 d post-diagnosis was associated with decreased survival (*p*<0.0001).
- Treatment at an academic institution was associated with treatment delay; however, OS improved compared to community facilities (HR 0.81, 95% CI 0.79-0.82, *p*<0.001).

CONCLUSIONS

- This study identified factors associated with treatment delay—many historic risk factors to disparate care.
- Although delayed treatment composed a small subset of the data, those treated >90 days post-diagnosis had poorer OS.
- Despite this limitation, delays in treatment increased overall over the last ten years.
- Notably, academic institutions were associated with treatment delays; yet, OS improved compared to other facilities. Thus, delays in treatment may not fully explain outcomes and may be intervenable.
- Further analysis is needed to examine the clinical impact of these findings and to improve practice patterns to minimize delays in treatment.

GRANT SUPPORT

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