

# Impact of Publicly Reported Center Specific Analysis (CSA) on Patient Selection for Hematopoietic Stem Cell Transplantation

SC21-01

Center Specific Analysis Forum

October 18<sup>th</sup>, 2023

# Objective

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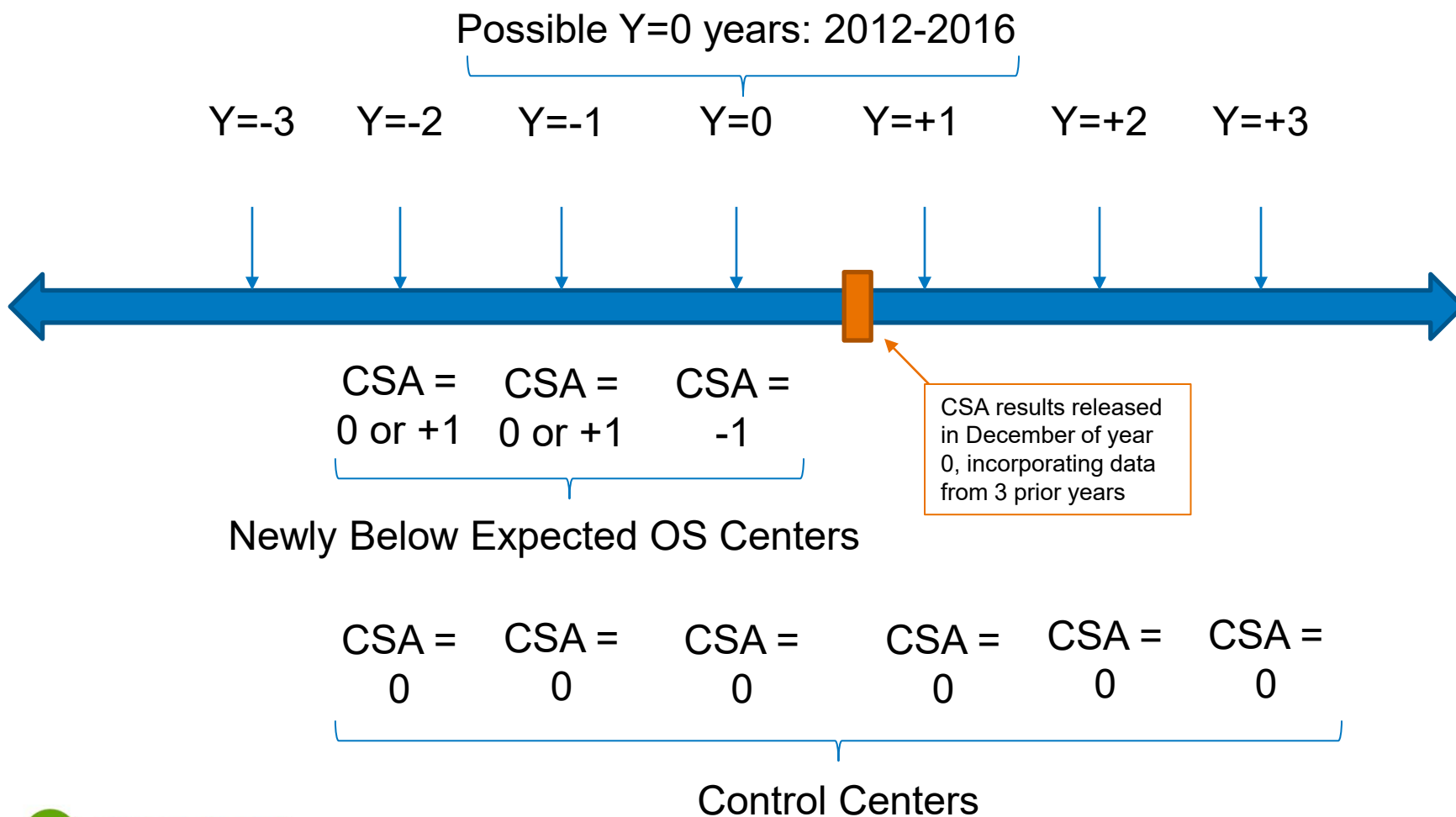
- Describe changes in patient selection behavior
  - “Changes to patient selection criteria” is most common corrective action (LeMaister et al.)
- Hypothesis: Centers will systematically transplant fewer patients with high risk of death at 1 year during the time period following a -1 report

# Definitions

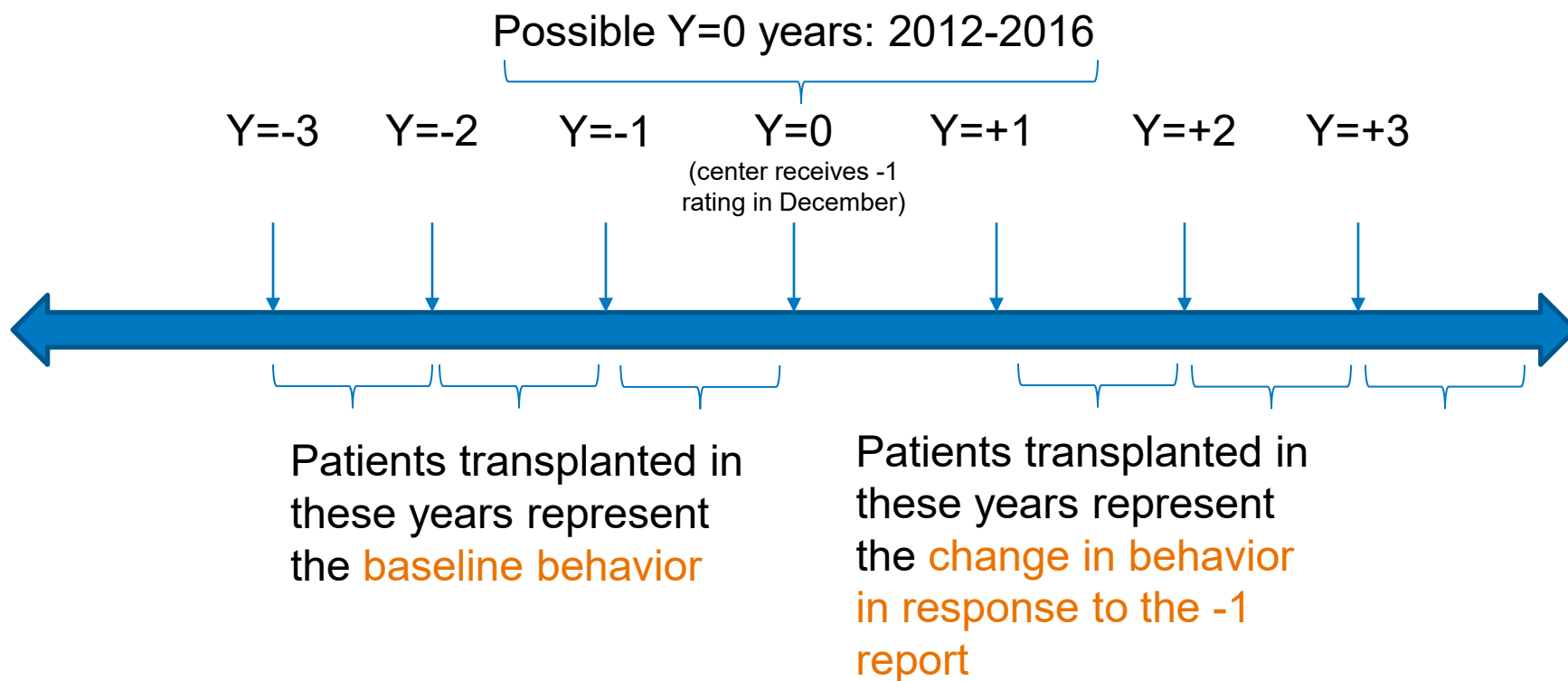
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- **Newly Below Expected OS Center (NBC)**
  - A center receiving a -1 report while having 0 or +1 reports in the 2 years preceding the -1 report
- **Control Center**
  - A center performing “as predicted” (0) for each 6 year window

# NBCs and Control Centers



# Measuring Change in Behavior



# Hypothesis

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- NBCs change their patient selection behavior to exclude patients at high risk of death @ 1 year during the 3 years following -1 report.
  - Higher predicted 1 year OS by CSA model
  - Lower proportion > 60 years
  - Lower proportion non-white race
  - Lower proportion HCT-CI > 3
  - Lower proportion with advanced disease
  - Lower proportion with myeloablative conditioning
  - Lower proportion with mismatched graft
  - Lower proportion with high comorbidity / low KPS

# Methods

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- Unit of analysis is at center level
- Post exposure changes were modeled, adjusting for center size and baseline proportions
- Due to multiple comparisons, we set threshold for significance at  $p=0.01$

# Number of Centers

	NBC: Pre-exposure	NBC: Post-exposure	Control: Pre exposure	Control: Post-exposure
Year of CSA report	Center (# of patients)	Center (# of patients)	Center (# of patients)	Center (# of patients)
2012	4 (375)	4 (430)	35 (3931)	35 (4530)
2013	4 (264)	4 (288)	37 (4023)	37 (4492)
2014	5 (935)	5 (843)	43 (5011)	43 (5492)
2015	9 (2907)	9 (2500)	39 (4751)	39 (4939)
2016	2 (86)	2 (89)	41 (5264)	41 (5560)

All adult and combined adult/pediatric centers were included.

Centers that closed in the 3 years after -1 report were excluded (11 centers)



# Difference in Change of Behavior

(postNBC – preNBC) – (postControl – preControl)

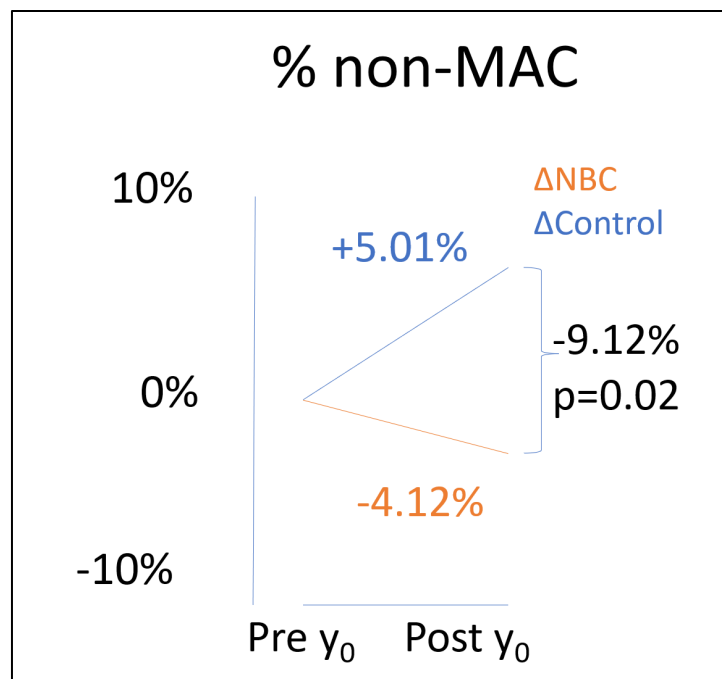
**Table 1:**

		Pre y0 proportion estimate (95% CI)	Change (Post-Pre) (95% CI)	Difference in Change ( $\Delta$ NBC – $\Delta$ Control) (95% CI)	P value
Observed OS	NBCs	62.31% (60.73 - 63.90)	0.87% (-1.56 - 3.31)	-3.64% (-6.69 - -0.72)	0.02
	Controls	67.49% (66.56 - 68.43)	4.52% (2.94 - 6.09)		
Predicted OS	NBCs	65.87% (64.42 - 67.31)	3.08% (2.08 - 4.08)	-0.23% (-1.38 - 0.93)	0.70
	Controls	67.00% (65.98 - 68.02)	3.30% (2.73 - 3.88)		
Non-white	NBCs	20.16% (15.14 - 25.19)	0.51% (-1.73 - 2.75)	-1.61% (-4.14 - 0.91)	0.21
	Controls	22.97% (19.28 - 26.66)	2.12% (0.96 - 3.28)		
HCT-CI >3	NBCs	50.99% (45.78 - 56.20)	8.03% (4.04 - 12.02)	+2.07% (-2.78 - 6.92)	0.40
	Controls	46.43% (42.68 - 50.19)	5.96% (3.22 - 8.70)		
60+ years	NBCs	33.12% (30.50 - 35.97)	5.83% (3.09 - 8.58)	-2.60% (-5.94 - 0.74)	0.12
	Controls	32.53% (30.64 - 34.42)	8.43% (6.45 - 10.42)		
Advanced Disease	NBCs	42.65% (39.95 - 45.35)	13.25% (9.94-16.57)	+4.12% (0.11 - 8.12)	0.04
	Controls	40.76% (38.99 - 42.53)	9.14% (6.87 - 11.40)		
PB Graft	NBCs	77.15% (72.15 - 82.15)	-4.97% (-9.90 - -0.05)	-3.11% (-9.19 - 2.97)	0.31
	Controls	84.80% (81.24 - 88.35)	-1.87% (-5.29 - 1.56)		
Non-MSD/MUD	NBCs	22.38% (19.02 - 25.74)	2.78% (0.80 - 6.35)	+1.12% (-3.25 - 5.50)	0.61
	Controls	23.87% (21.51 - 26.24)	1.65% (0.89 - 4.19)		
non-MAC	NBCs	38.15% (32.01 - 44.28)	-4.11% (-10.30 - 2.07)	-9.12% (-16.69 - -1.55)	0.02
	Controls	46.24% (41.80 - 50.69)	5.01% (0.77 - 9.24)		
KPS $\geq$ 90	NBCs	66.03% (58.64 - 73.41)	7.17 (-11.81 - 2.53)	2.44% (-7.84 - 2.97)	0.37
	Controls	60.85% (55.59 - 66.11)	-4.74 (-7.36 - -2.12)		

# Graphical Representation

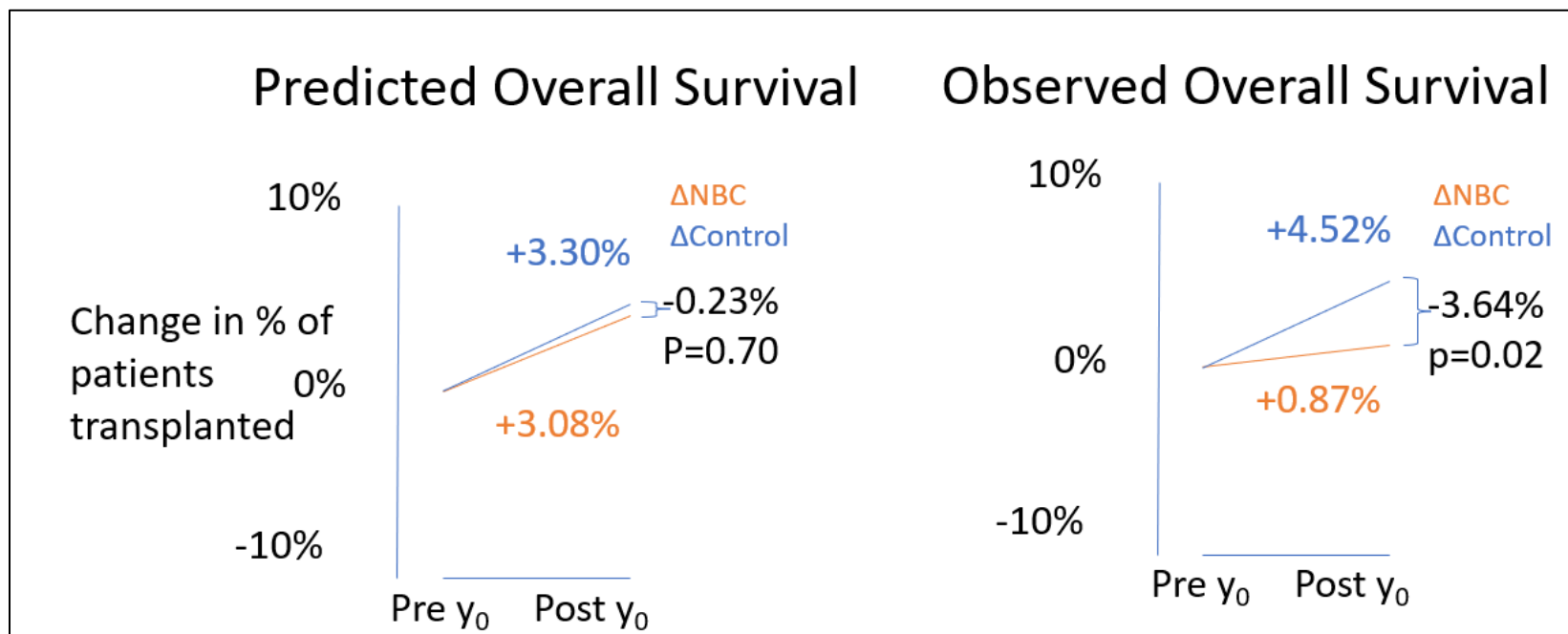
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Change in % of patients transplanted



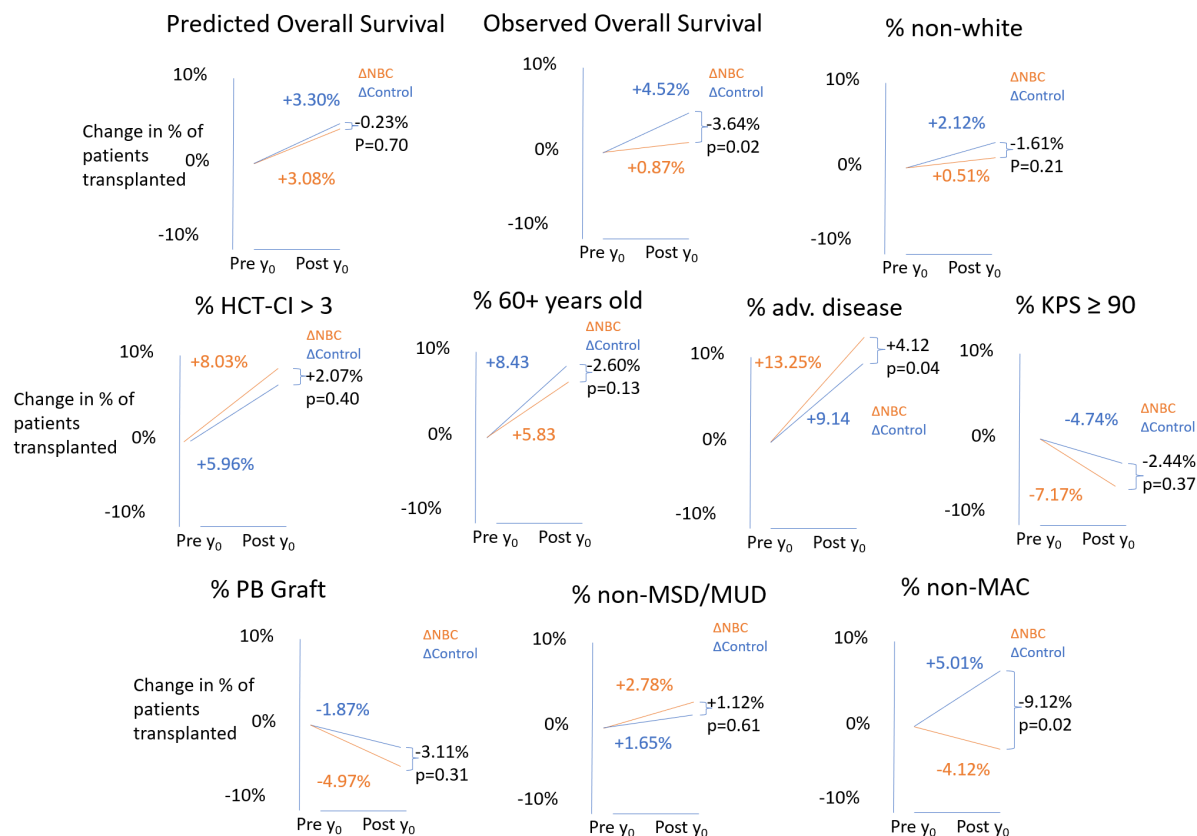
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# Graphical Representations

Figure 1:



Difference in differences =  $\Delta NBC - \Delta Control$

# Interpretation

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- After accounting for changes over time in the transplant field, we find no notable differences in patient selection behavior in centers immediately following a -1 CSA report
- The predicted survival did not significantly change, suggesting a similar patient population in the post -1 report time period vs pre -1 report time period
- Observed overall survival did increase at NBCs, though less than at controls