Establishing Rate of Conversion from Full Code to Do Not Resuscitate Status for Nursing Home Residents

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GSA 2018 Annual Scientific Meeting

November 14, 2018

Acknowledgements

- PROVEN: PRagmatic trial Of Video Education in Nursing homes
  - NIA 4UH3AG049619-02
  - Principal Investigators
    - Vincent Mor, PhD, Brown University
    - Susan Mitchell, MD, Harvard University
    - Angelo Volandes, MD, Harvard University

- We would like to acknowledge our nursing home partners which make this work possible.

Nursing home residents often receive futile and burdensome care at the end of life

- 19 percent of nursing home residents with advanced dementia or advanced cardiopulmonary disease experience multiple hospitalizations in the last 90 days of life

- 30 percent of nursing home residents with advanced disease receive artificial feeding in the last 90 days of life

- This care does not extend life and decreases the quality of remaining life.

Gozalo P, Teno JM, Mitchell SL, Skinner J, Bynum J, Tyler D, Mor V. End-of-life transitions among nursing home residents with cognitive issues. New England Journal of Medicine. 2011 Sep 29;365(13):1212-21.

Mitchell SL, Teno JM, Kiely DK, Shaffer ML, Jones RN, Prigerson HG, Volicer L, Givens JL, Hamel MB. The clinical course of advanced dementia. New England Journal of Medicine. 2009 Oct 15;361(16):1529-38.

Sampson EL, Candy B, Jones L. Enternal tube feeding for people with advanced dementia. Cochrane Database Syst Rev. 2009 Apr 15;(2):CD007209.

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Why are some nursing home residents receiving burdensome end-of-life care?

- Residents prefer to receive every possible treatment

- Residents have difficulty imagining the trajectory of their disease and the likely outcomes of various end-of-life treatment choices

- Preferences for end-of-life care are often not known and / or not documented

- Unless preferences for less aggressive end-of-life care are documented, residents are treated as "full code" (do everything)

Wetle T, Shield R, Teno J, Miller SC, Welch L. Family perspectives on end-of-life care experiences in nursing homes. The Gerontologist. 2005 Oct 1;45(5):642-50

Butler, M., Ratner, E., McCreedy, E., Shippee, N., & Kane, R. L. (2014). Decision Aids for Advance Care Planning: An Overview of the State of the ScienceDecision Aids for Advance Care Planning. Annals of Internal Medicine, 161(6), 408-418.

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PRagmatic trial **O**f **V**ideo **E**ducation in **N**ursing homes (PROVEN)

- Video intervention to help nursing home residents and their families better understand end-of-life treatment options (video-enhanced advance care planning) versus typical advance care planning

- Time spent as full code before converting to do-not-resuscitate status is a secondary outcome of interest for long-stay nursing home residents with advanced disease

- Advance directive status no longer collected as part of the nationally standardized assessment of nursing home residents (Minimum Data Set, version 3.0)

- Need to validate the use of electronic orders to identify advance directive status for nursing home residents

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Objectives

Using advance directive orders from electronic health records, establish the following:

1. The average time to conversion from full code to do-not-resuscitate status during a one-year follow-up period, accounting for competing risks of death and discharge from nursing home

2. Resident factors associated time to conversion from full code to do-not-resuscitate status during a one-year follow-up period, accounting for competing risks of death and discharge from nursing home

Methods: Data

- **Data**: Electronic advance directive orders

  - Full Code

  - Do Not Resuscitate

  - Do Not Intubate

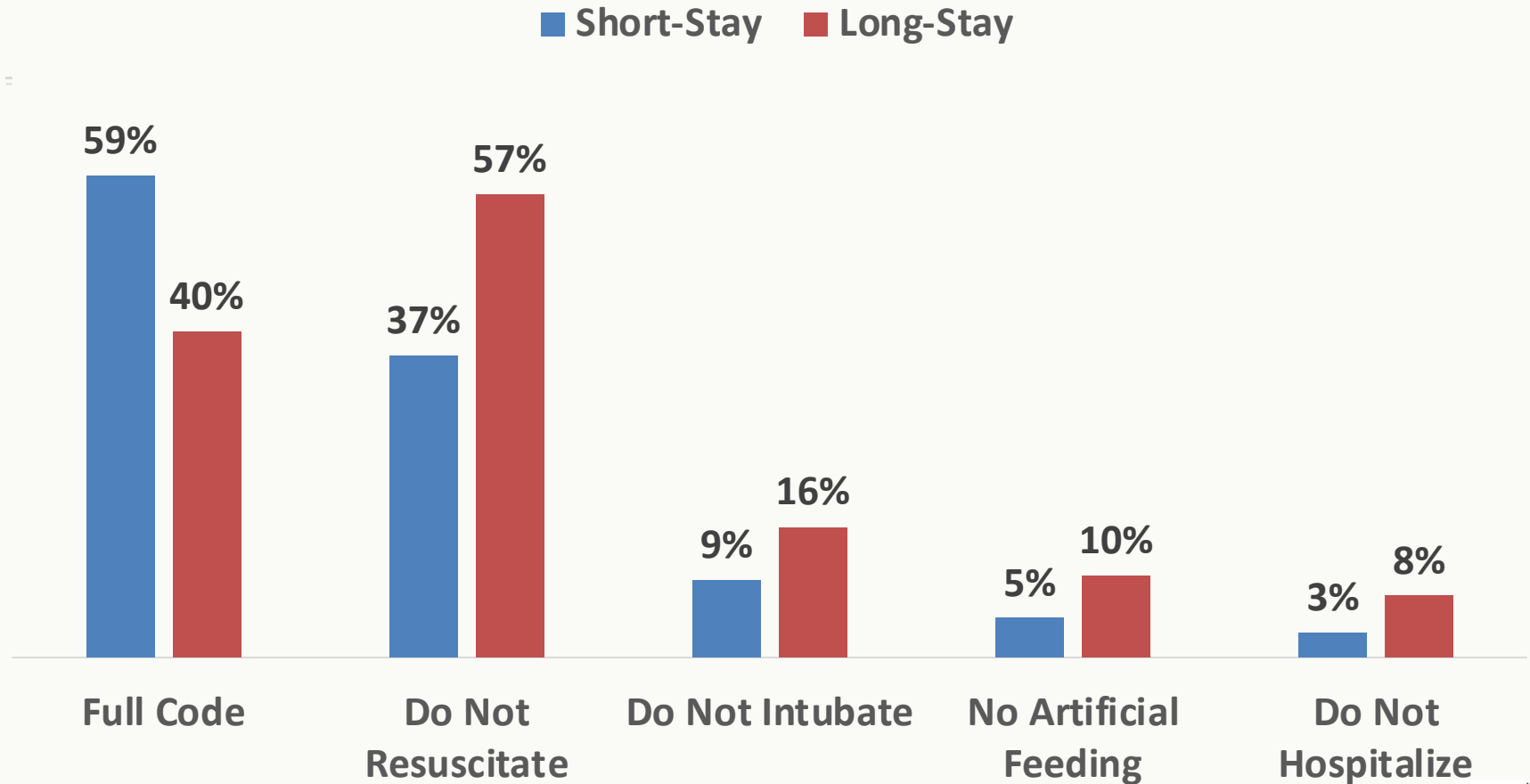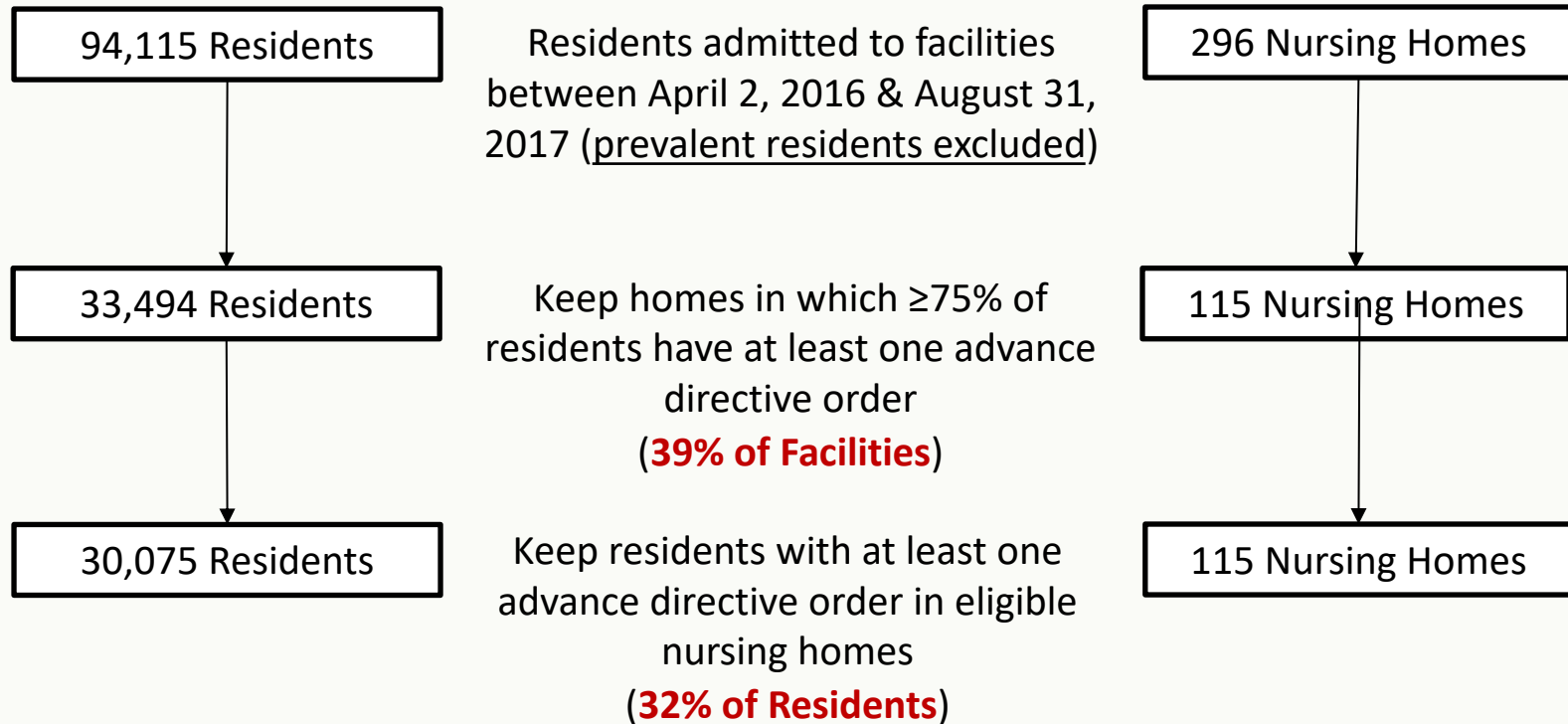 - No Artificial Feeding

  - Do Not Hospitalize

Methods: Data

Resident	Order Date	Order Description	Ordering Physician
1	16-Jun-16	Advance Directives: ( )Full Code (X)DNR ( )Comfort Measures Only	A
2	3-Oct-16	FULL CODE	B
2	10-Dec-16	FULL CODE	C
2	8-Aug-17	DO NOT RESUSCITATE (DNR). DO NOT HOSPITALIZE	B
3	2-Feb-17	FULL CODE	D
3	2-Feb-17	Advance Directives: Activated DPOA	D
3	13-Apr-17	Advance Directives: Guardianship in place.	E
4	18-Nov-16	FULL CODE	F
4	3-Jan-17	FULL CODE	F
4	16-Feb-17	FULL CODE	G
4	8-Jun-17	FULL CODE	H
4	30-Aug-17	FULL CODE	I
4	8-Sep-17	DO NOT RESUSCITATE (DNR)/DNH/Limited work-up/Antibiotics acceptable but not via IV/DNI/FT acceptable: No IV's: & No other life sustaining treatments.	F
5	16-Jun-15	Refer to state form ie.(MOLST), DNR, Comfort measures only, Do not transfers to hospital, No artificial hydration.	J

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Methods: Data

Methods: Sample

| 94,115 Residents	Residents admitted to facilities between April 2, 2016 & August 31, 2017 (prevalent residents excluded)	296 Nursing Homes
↓		↓
33,494 Residents	Keep homes in which ≥75% of residents have at least one advance directive order **(39% of Facilities)**	115 Nursing Homes
↓		↓
30,075 Residents	Keep residents with at least one advance directive order in eligible nursing homes **(32% of Residents)**	115 Nursing Homes

Methods: Analysis

- **Competing risk regression** (Fine & Gray, 1999) used to identify resident factors associated with the cumulative incidence of switching from full code to preference for less aggressive care over one year follow-up

- Competing risks include in-facility death or discharge

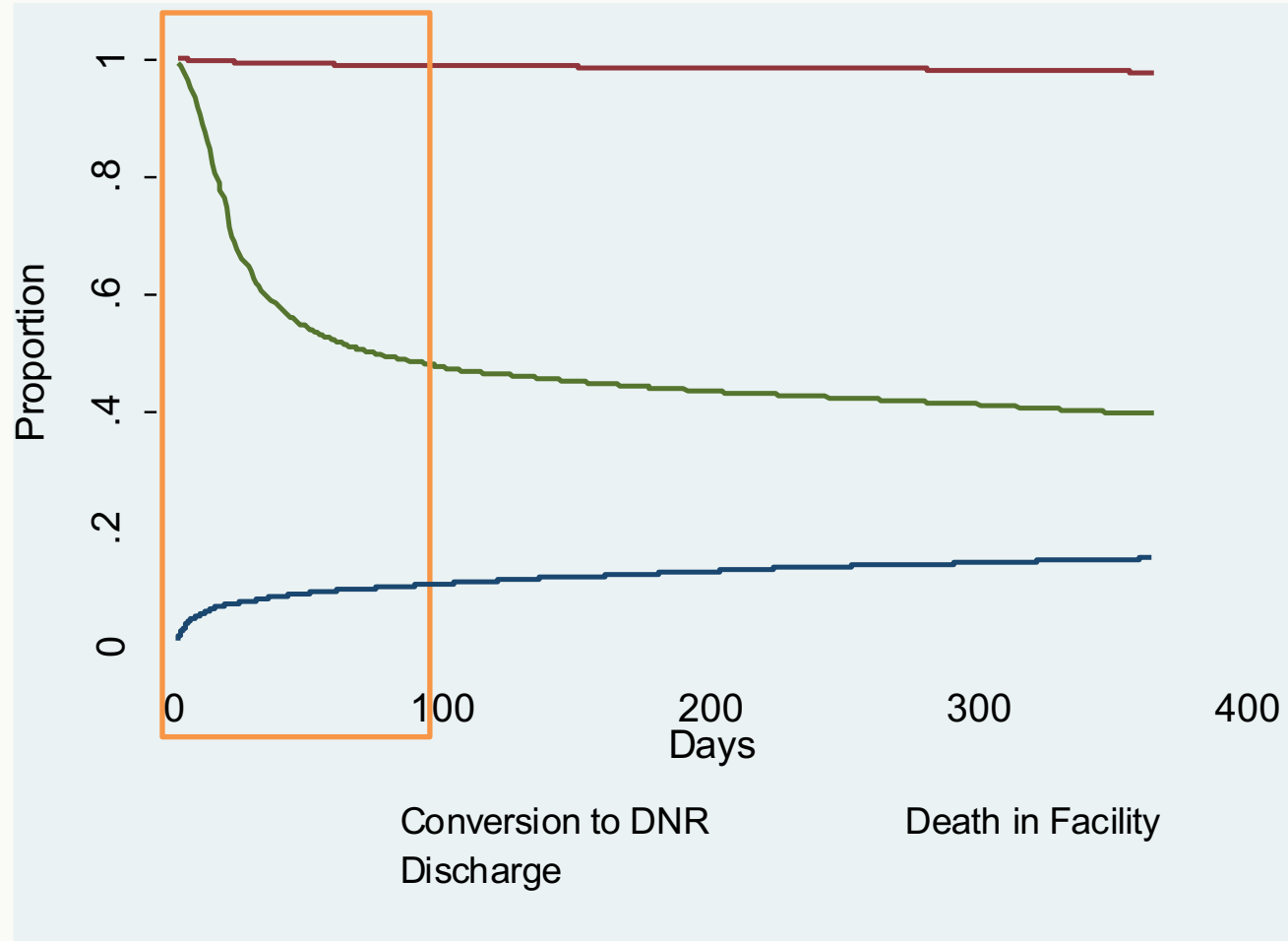- Time to first outcome (outcomes are mutually exclusive)

Results: Disposition of Cohort at end of Followup
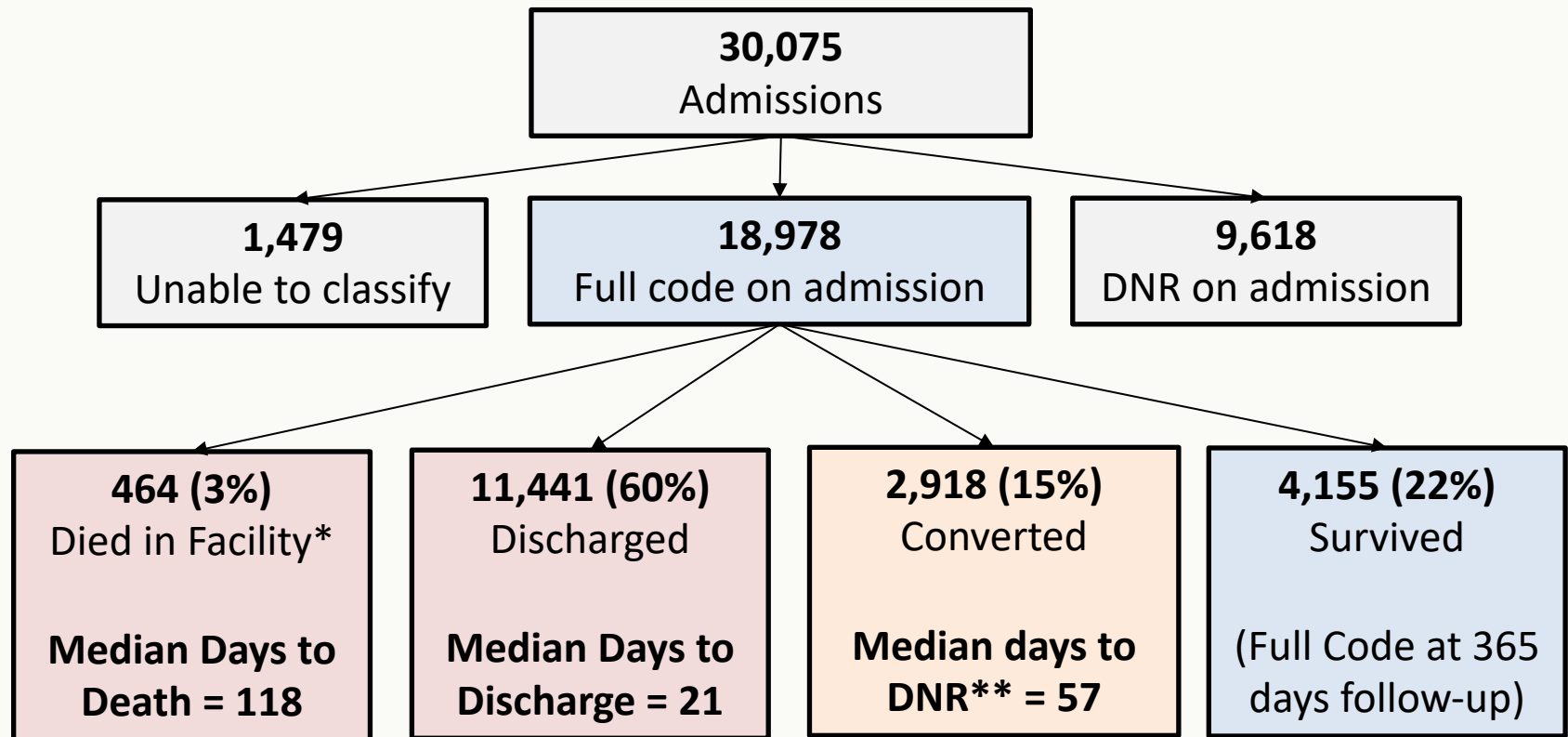
*only MDS death available, "true" Medicare death will be obtained
**excludes conversions to DNR during first five days after admission

Results: Discharges, DNR conversions, and in-facility deaths over time (follow-up = 365 days)

Results: Resident factors associated with conversion to DNR, after accounting for discharge and death

⬆ Increased risk of conversion

- Increased age (HR=1.04)
- Dementia (HR=1.21)
- Cancer (HR=1.62)
- Increased cognitive impairment from previous assessment (HR=1.05)
- Increased physical dependency from previous assessment (HR=1.02)
- Number of falls (HR=1.11)
- Number of pressure ulcers (HR=1.24)
- Number of hospitalizations (HR=1.04)
- **Number of assessments with a family member involved** (HR=1.06)
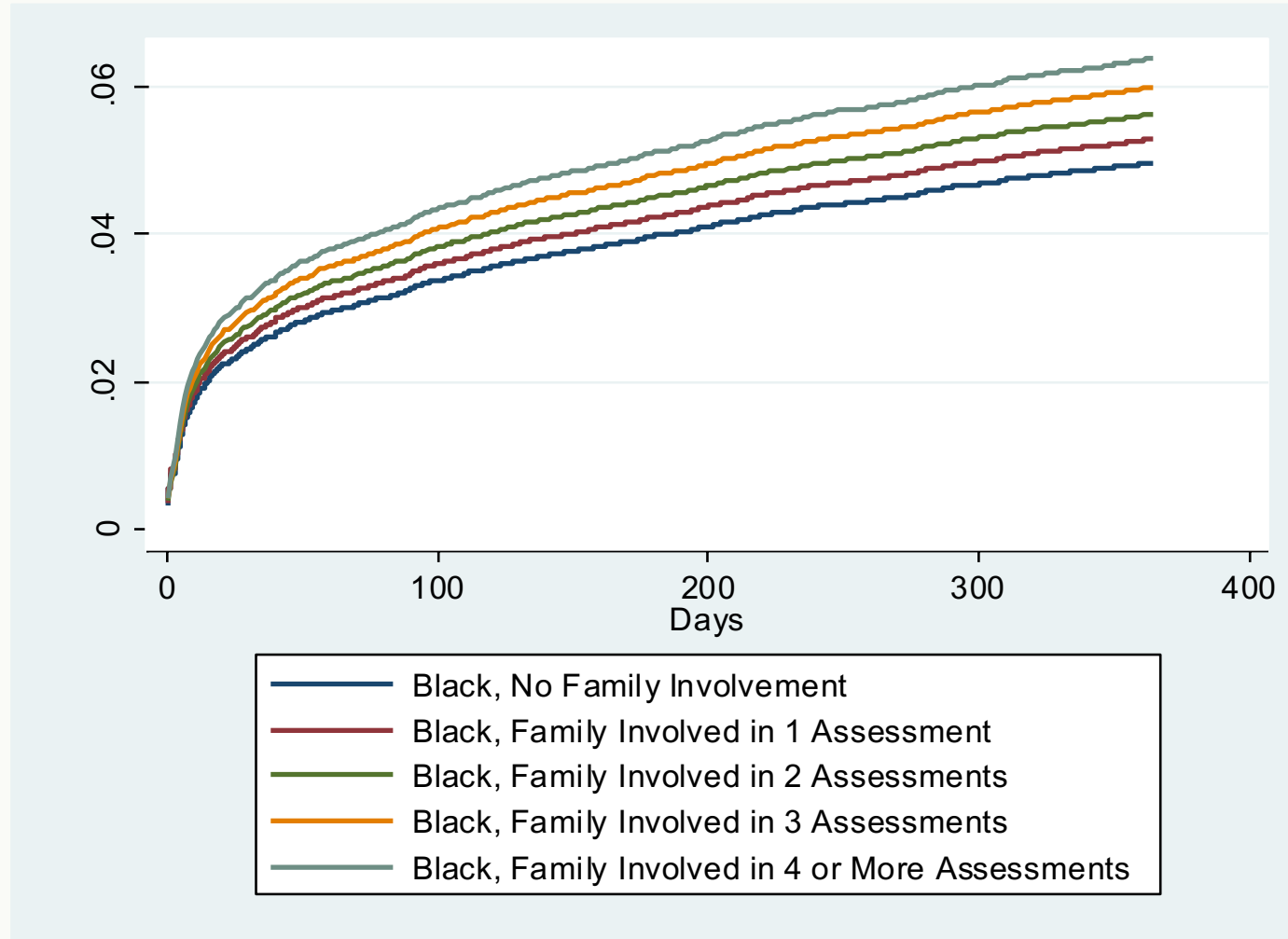
⬇ Decreased risk of conversion

- Black race (HR=.62)
- Hispanic ethnicity (HR=.56)
- Need interpreter (HR=.47)

Not significantly associated with conversion = stroke, weight loss, diabetes, hypertension, psychosis, depression, agitated behaviors, change in agitated behaviors

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Results: Adjusted association between family involvement in assessments and conversion to DNR for Black residents

Legend:
- Black, No Family Involvement
- Black, Family Involved in 1 Assessment
- Black, Family Involved in 2 Assessments
- Black, Family Involved in 3 Assessments
- Black, Family Involved in 4 or More Assessments

X-axis: Days (0, 100, 200, 300, 400)
Y-axis: 0, .02, .04, .06

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Key Findings

- Electronic orders can be used to establish advance directive status for nursing home residents

- 15% of nursing home residents who are full code at admission will convert to DNR over a one year period -- most will convert before their first quarterly assessment

- Consistent with existing literature, after controlling for cognitive decline and hospitalizations, Black and Hispanic residents were much less likely to convert to DNR during one year follow-up

- **Involving family members in routine care planning assessments may be a modifiable factor in the advance care planning process**

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Limitations

- Need Medicare death, will have soon

- Admissions are currently a mix of new and readmissions

- Ignores conversion from DNR to full code (<2%)

- Unclear how to interpret "early" conversions (before day 5)

- Current national estimates of advance directive use not available for comparison (not available in MDS 3.0)

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Discussion

- We need to develop interventions to improve advance care planning and the quality of death for nursing home residents with advanced disease

- Timing is everything! Involving family members in care planning from the beginning may help.

- Time-to-switch from full code to DNR may be a valuable outcome measure for other intervention studies, if the competing risks of death and discharge are properly addressed

- Next steps – Markov model to look at transitions between DNR, DNH, DNI over time for advanced disease cohort

Questions / Contact Information

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EXTRA SLIDES

Cumulative Probability of Switching
(Prevalent Sample)

Month, Year	Full Code (beginning of month)	Switched (During Month)	Censored* (During Month)	At risk**	Proportion Switching	Proportion Not Switching	Cumulative Probability of Not Switching	Cumulative Probability of Switching
Oct, 2016	1658	25	59	1628.50	0.015	0.985	1.000	0.000
Nov, 2016	1574	15	29	1559.50	0.010	0.990	0.990	0.010
Dec, 2016	1530	25	47	1506.50	0.017	0.983	0.974	0.026
Jan, 2017	1458	27	37	1439.50	0.019	0.981	0.956	0.044
Feb, 2017	1394	21	41	1373.50	0.015	0.985	0.941	0.059

*Based on followup_end variable in JAO data
**Mid-month censoring

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Sample: Facility Characteristics by Percent of Residents with Electronic Advance Directive Orders at Baseline

Facility Characteristics	<5% Residents with Advance Directive Orders (N=99)	5%-74% Residents with Advance Directive Orders (N=82)	≥75% Residents with Advance Directive Orders (N=115)
	Mean	**Mean**	**Mean**
Percent of residents whose primary payer is Medicaid	67.62	71.40	69.34
Percent of residents whose primary payer is Medicare	15.61	15.37	13.98
Total direct nursing care hours / resident / day**	**3.53**	**3.37**	**3.24**
Number of admissions per bed	2.72	2.62	2.39
Total beds	128.26	116.46	121.38
Average resident age (years)	79.13	79.53	78.50
Average ADL score of residents in facility**	**17.06**	**17.08**	**16.10**
Percent of residents who are African American	14.26	7.61	9.72
Percent of residents who are Hispanic	2.61	1.16	4.07
Percent of residents with severe cognitive impairment	12.20	14.02	11.84
Average overall star rating	2.94	2.70	2.67
Average quality star rating	2.94	3.08	2.8

Results: Participation in MDS Assessment Item

Q0100. Participation in Assessment

Enter Code

A. Resident participated in assessment
   0. **No**
   1. **Yes**

Enter Code

B. Family or significant other participated in assessment
   0. **No**
   1. **Yes**
   9. **No family or significant other**

Enter Code

C. Guardian or legally authorized representative participated in assessment
   0. **No**
   1. **Yes**
   9. **No guardian or legally authorized representative**

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