COMPASS
COMPREHENSIVE POST-ACUTE STROKE SERVICES

Patient-level factors associated with attendance at the comprehensive post-acute stroke services (COMPASS) care visit, data from the vanguard site

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DISCLAIMER: All statements are solely those of the presenters and do not necessarily represent the views of PCORI or its Board of Governors or Methodology Committee.

NCT Number for ClinicalTrials.gov: NCT02588664

OUTLINE

- Who
- Why
- What

- Todays focus: Vanguard Analysis
  - Patient influenced factors associated with attendance at the COMPASS 7-14 day visit.

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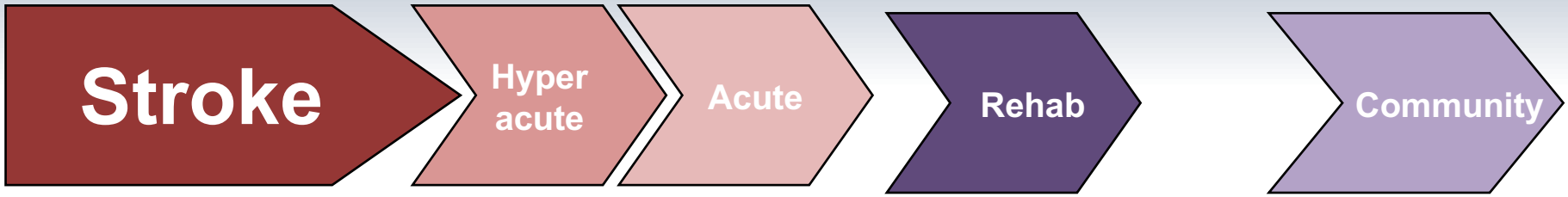
Why

Stroke Care: Where are the gaps?



- 42% of stroke patients discharged to home were not referred to any post-acute care
- 65% of patients under age 65 discharged without post-acute services
- No performance indicators for processes of care after discharge

Gage, et al. U.S. DHHS 2009
Bettger, et al. J Am Heart Assoc 2015

What

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Project Objectives

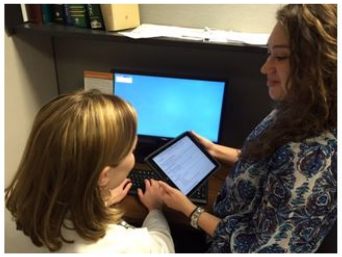
- Address the needs of stroke survivors and their caregivers
- Connect hospitals, community providers, and agencies
- Develop e-care plan for each patient

COMPASS Care Model

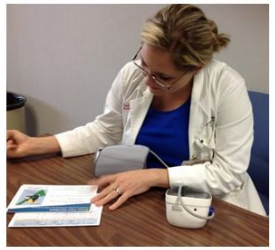
2-day Phone call	7-14 day Clinic Visit	30-day Phone call	60-day Phone call

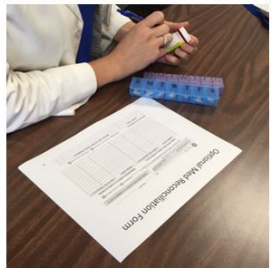
Model: Early support at discharge

- **Identify needs** - ADL's, strength & balance, nutrition, others using the I-Pad application
- **Process referrals** OT/PT/Speech, home health, mental health experts, others.



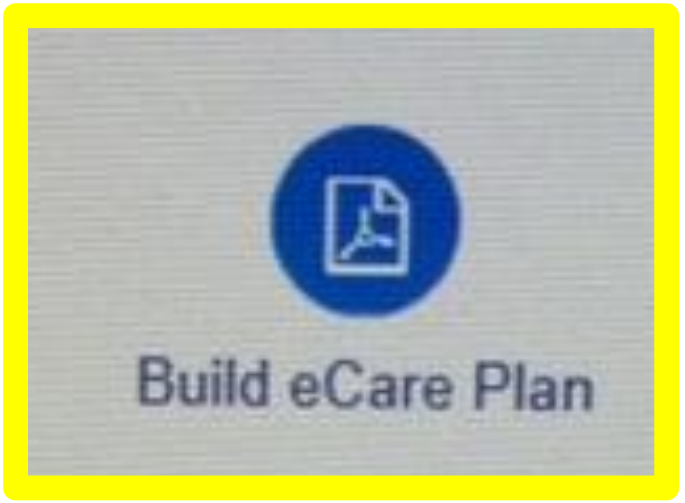
- Type of stroke
- Deficits
- Complications
- Risk factors
- Secondary prevention





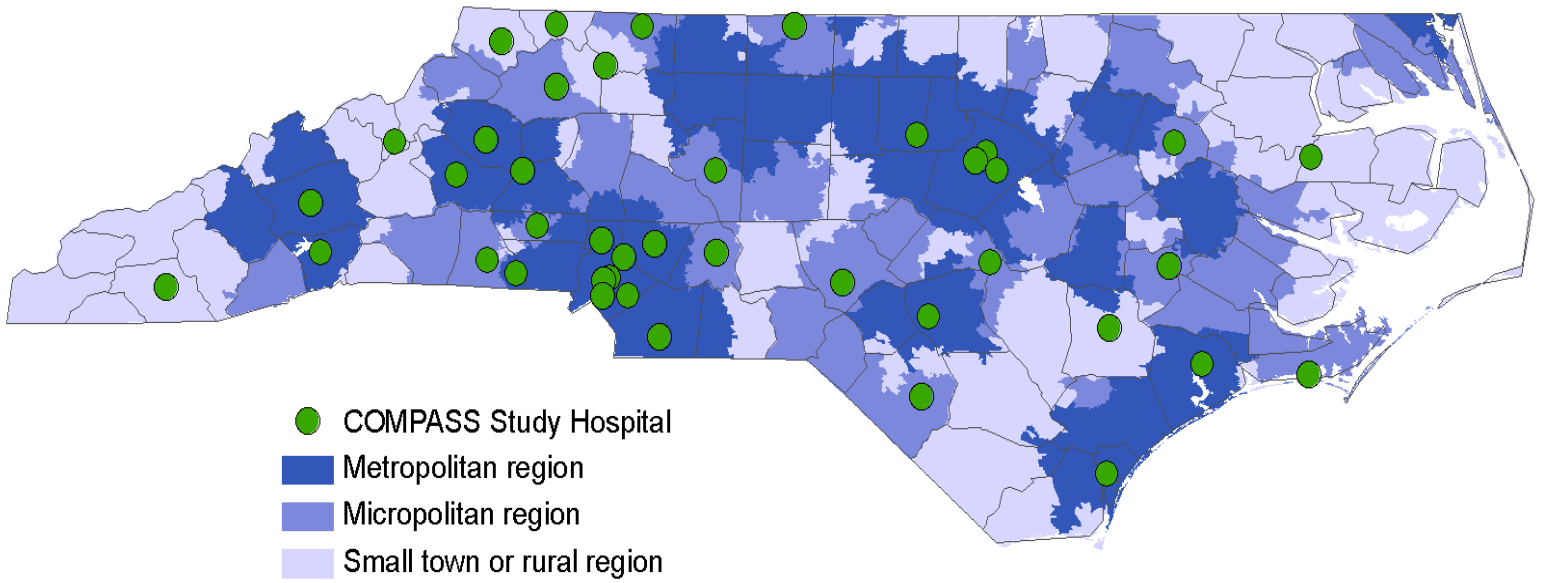
APP visit – review, assess, “e care” plan

- Generate e CARE Plan



A Pragmatic Trial in North Carolina

Diverse health systems **all patients discharged home**



6,033 patients enrolled

Focus for Today:

Patient-level factors associated with attendance at the COMPASS care visit Analysis from the vanguard (pilot) site

Wake Forest® Baptist Health

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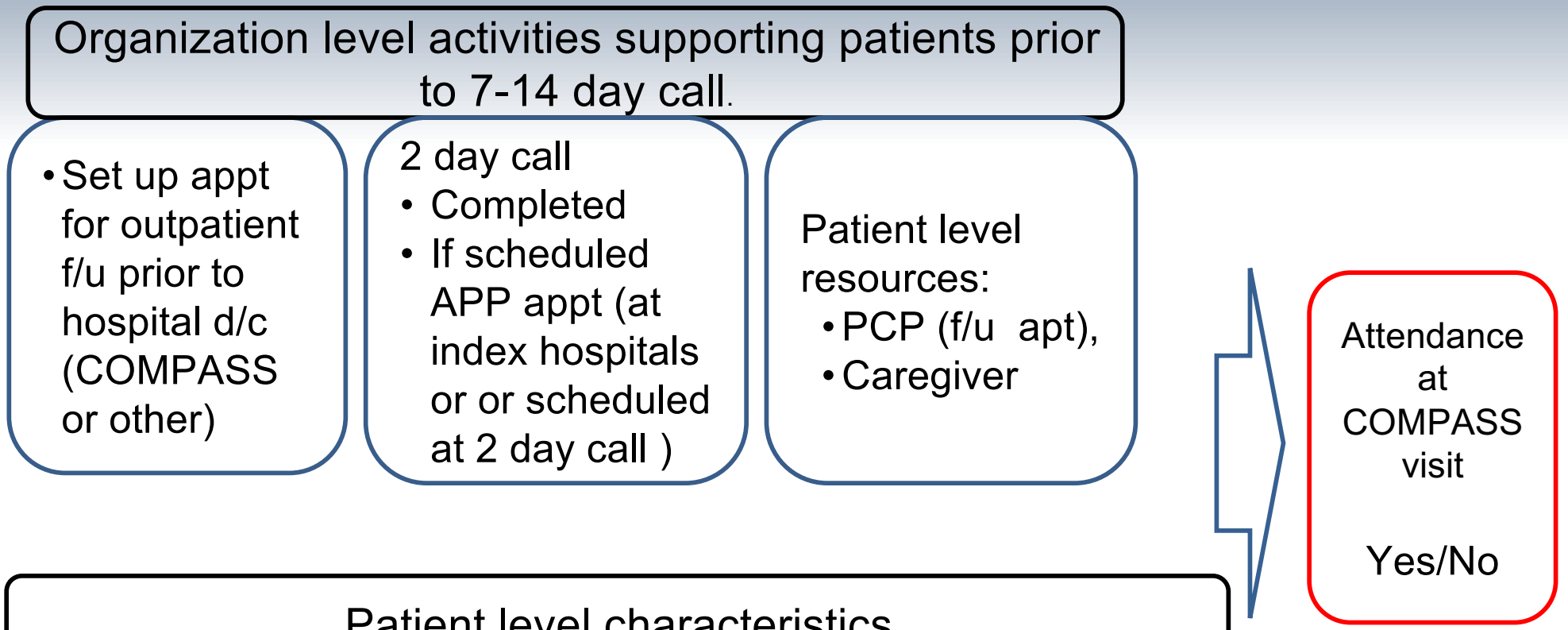
Methods

Data: 813 hospitalizations, enrollment visits, 2-day call

Dates: 6/2016-11/2017

Measure	Scale/ details
Stroke Severity	NIH Stroke Scale
Scheduling of post acute visit	If completed prior to hospital d/c
2 day phone call	If completed (yes/no)
Services scheduled at d/c	Home health, OT, PT, etc.
Patient Characteristics	Age, gender, payer type, race, co morbidities, body mass index, ambulatory status prior to admission, presence of aphasia at initial exam, ambulatory status at discharge, others
Distance to COMPASS site	In miles
Primary care provider	Yes/no
Presence of a caregiver	Yes/no

Conceptual Model :



Analytical Method

- Univariable logistic regression to identify variables associated with the odds of attending the COMPASS visit.
- Variables with a $p \leq .05$ or literature support were included in the multivariable logistic regression model.
- Multivariable logistic regression to identify variables associated with COMPASS clinic visit attendance

Table 1. Descriptive Statistics n = 813

Characteristic	Mean or %
Age at enrollment (yrs)	64.7
Male gender	54.5 %
Completed 2 day phone call	61%
Had f/u visit scheduled prior to hospital d/c	93.6%
Received home health referral at hospital d/c	23.4%
Median Driving Distance	24.6 miles (IQR 8-54)
Private health insurance	32.3%
Have Primary Care Provider	76.3%
Attended COMPASS visit within 14 days	40.4%
Attended COMPASS visit overall	69.4%
Median # days between d/c and COMPASS visit	17 (IQR 11-23)

Multivariable logistic regression

Parameter	Adjusted Odds Ratio	95% Confidence Limits		P-Value
Follow Up Visit Scheduled Before d/c = Yes	2.88	1.58	5.24	0.0006
2-Day Follow-up Call Completed = Yes	2.03	1.46	2.80	<0.0001
Private Insurance or Medicare = Yes (ref: Neither)	1.55	1.01	2.40	0.047
# Therapy Referrals at d/c (OT, PT, speech) = 1 (vs. 0,2,3)	2.31	1.25	4.28	0.008
Transient Ischemic Attack (ref: Stroke)	0.62	0.40	0.96	0.030
Discharge Referrals for Home Health = Yes	0.59	0.32	1.07	0.080
Driving Distance ≥= 60 miles (ref: 0-30 miles)	0.64	0.42	0.97	0.037
Increases likelihood of clinic visit attendance				
Decreases likelihood of clinic visit attendance				

Results

Multivariable logistic regression demonstrated statistically significant odds ratios for greater attendance of the COMPASS visit with independent effects for:

- Having the post-acute visit scheduled at discharge
- Completing the 2-day call
- Less severe impairment (“minor impairment”)
- Private Insurance or Medicare
- Living within 60 miles of the COMPASS site
- Not being referred for home health at discharge

Conclusions

- This analysis highlights important processes and factors that increase attendance at the COMPASS clinic visit for post-acute stroke care coordination.
- Patients after stroke and TIA have residual deficits that should be evaluated and managed in a coordinated and ongoing manner after hospitalization.

Thank you!

https://www.nccompass-study.org/

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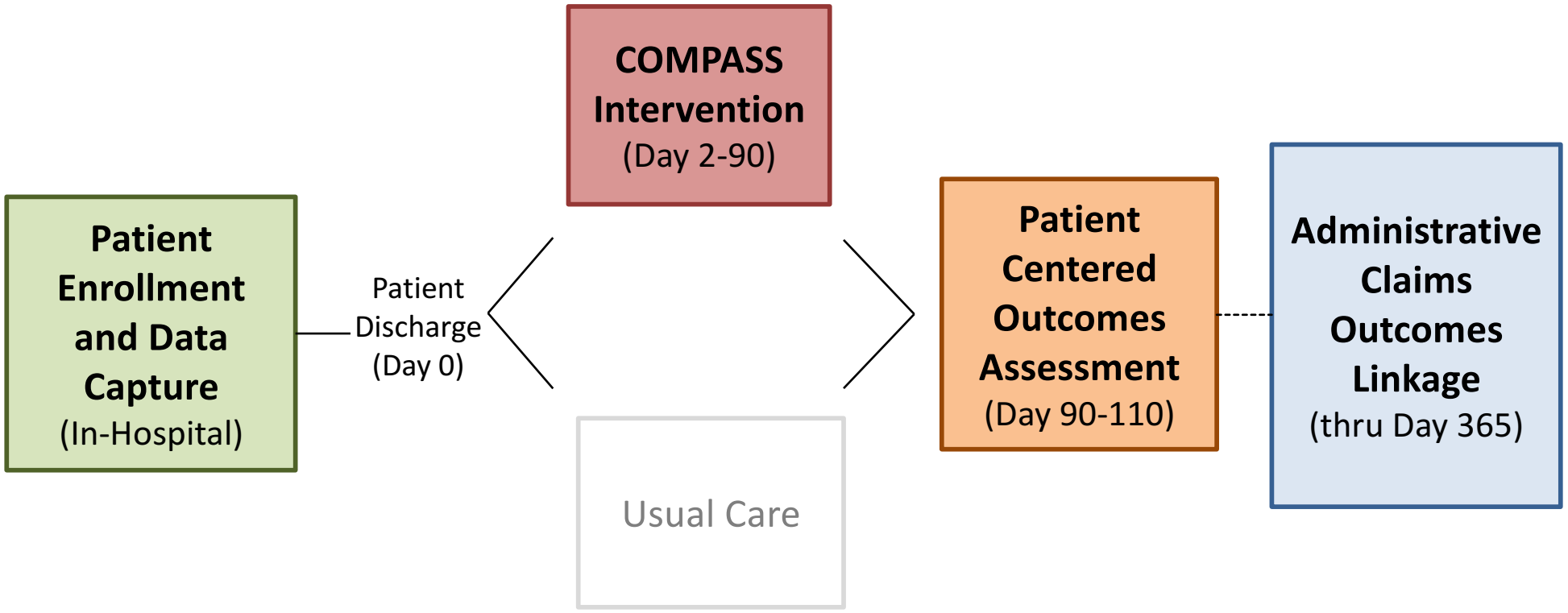
COMPASS Study Patient (and Data) Flow



Outcomes

- **Functional status** at 90 days
- **Caregiver strain** at 90 days
- All-cause readmissions at 30 and 90 days
- others

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What It Takes To Be Successful

- A champion
- Vision
- Organizational buy-in
- Consistency in staff
- Backups
- Inclusion in discharge orders
- Clinic location/specialty
- Education and inclusion of other medical providers
- Engagement of community resource network
- Considered standard of care

Finding The Way Forward

Numbers

Know your numbers -blood pressure, blood sugar, cholesterol, etc.

Engage

Be active - engage your mind and body

Support

Ask for help - for yourself and your caregivers from community resources

Willingness

Be willing – manage your medicines and lifestyle choices

41 Health Systems in NC

Carteret County General Hospital

First Health Moore Regional

Hugh Chatham Memorial

UNC Lenoir Healthcare

CHS NorthEast

CHS Union

CHS University

Mission Hospital

Novant Health Huntersville

Wilkes Regional

CHS Carolina's Medical Center/CHS Mercy

Frye Medical Center

Ashe Memorial

CHS Stanly

Morehead Memorial Hospital

UNC Rex healthcare

Vidant Duplin

Washington County Hospital

Angel Medical Center

UNC Caldwell

Cape Fear Valley Medical Center

Onslow Memorial Hospital

Pardee Health

WFBH Lexington Medical Center

CHS Blue Ridge

CHS Cleveland

CHS Kings Mountain

New Hanover Regional Medical Center

Novant Health Mathews

Novant Presbyterian

Northern Hospital of Surry County

WakeMed Raleigh Hospital

Duke Raleigh

Alleghany Memorial

Betsy Johnston Hospital

UNC Hospitals (Med Center)

CHS Lincoln

Vidant Edgecombe

Blue Ridge Regional

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Manuscripts

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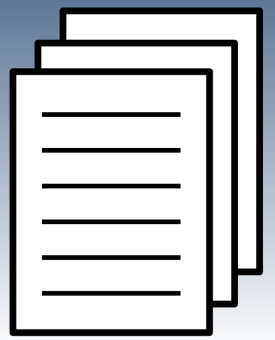
2. Gesell SB; Klein KP; Halladay J; et al. COMPASS Study Investigators. Methods Guiding Stakeholder Engagement in Planning a Pragmatic Study on Changing Stroke Systems of Care. *Journal of Clinical and Translational Science*. February 27, 2017.
3. Duncan PW; Bushnell CD; Rosamond W; et al. The Comprehensive Post-Acute Stroke Services (COMPASS) Study: Design and methods for a cluster-randomized pragmatic trial. *BMC Neurology*. 2017. 17(133).
4. Johnson AM; Jones SA; Duncan PW; et al. Hospital Recruitment for a Pragmatic Cluster-Randomized Clinical Trial: Lessons Learned from the COMPASS Study. *Trials*. 2018. (19)74.
5. Bushnell CD; Duncan PW; Lycan S; et al. A Person-Centered Approach to Post-Acute Stroke Care: The COMprehensive Post-Acute Stroke Services Model. Journal American Geriatrics Society. 2018.
6. Andrews J; Moore B; Weinberg R; et al. Low Risk – High Stakes: Ensuring respect for persons in the COMPASS Study, a large, cluster-randomized pragmatic clinical trial. Journal of Medical Ethics. **In Press**
7. Duncan PW; Abbott RM; Rushing S; et al. COMPASS-CP: An electronic application to capture patient-reported outcome measures to develop actionable stroke care plans. Circ Cardiovasc Qual. **(submitted; awaiting decision)**
8. Prvu Bettger, Jones SB, Kucharska-Newton A, et al. Association of external factors with hospital's implementation of transitional care for stroke **(submitted to Neurology, under review)**

Last updated: April 2018

Abstracts



1. Bushnell C; Condon C, Lycan S. **ISC 2016**. Feb 2016.
2. Bushnell C. **ISC 2016**. Feb 2016.
3. Pastva, A. **2016 NCPTA Fall Conference**. Greensboro, NC. October 2016.
4. Pastva, A, Freburger, J, Duncan, PW. **CSM 2017.** Educational Session, 2 Hours. San Antonio, TX. February 16, 2017.
5. Condon, C.. **ISC 2017**. Houston, TX. Feb 21-24, 2017.
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7. Duncan PW; Bushnell C; Rosamond W; et al. **ISC 2017**. Houston, TX. Feb 21-24, 2017.
8. Bushnell C. **ISC 2017**. Houston, TX. Feb 21-24, 2017.
9. Duncan PW, Rushing S, Abbott R. **NC HIMSS**. Raleigh, NC. May 3-4, 2017.
10. Duncan PW. **ICTMC and SCT Combined Meeting**. Liverpool, England. May 7-10, 2017.
11. Duncan PW. Moleac Singapore Pte. Ltd., Dinner Symposium, **European Stroke Organisation Conference**. May 16-18, 2017.
12. Bushnell C. eCOMPASS © Care Plan. **European Stroke Organisation Conference**. Prague, Czech Republic. May 16-18, 2017.
13. Lutz B; Duncan PW. **IAGG World Congress of Gerontology and Geriatrics**. San Francisco, CA. July 23-27, 2017.
14. Guo J; Cummings D; Halladay J; et al. **Wake Forest Medical Student Research Day**, Oct 4, 2017.
15. Duncan PW; Bushnell C; Rushing S; et al. Chicago, IL. **Health Measures User Conference**. September 27-28, 2017.
16. Duncan P; Bushnell C; Condon C; et al. Nursing Symposium, **ISC 2018**.
17. Lutz B; Gesell S; Duncan PW; et al. **ISC 2018**.
18. Guo J; Cummings DM; Halladay J; et al. **ISC 2018**.
19. Duncan; Abbott; Rushing; et al. Clinician-user Satisfaction with COMPASS-CP for Stroke. **ISC 2018**.
20. Penland K; Bushnell C; Pastva A; et al. Preliminary findings from the COMprehensive Post-Acute Stroke Services Study. **ISC 2018**.
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22. Duncan PW, Panel: **Mid-Atlantic Heart & Stroke Quality Summit**. April 26, 2018.

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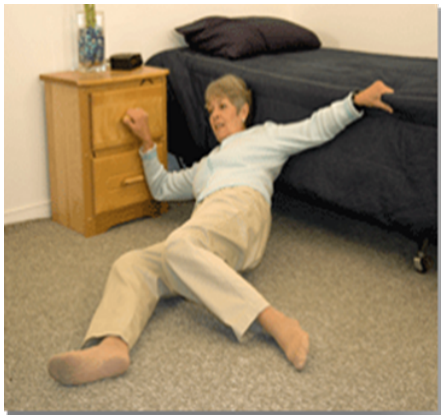
Why POST-acute?

Patients discharged home:

- 25% readmitted within 90 days
- 66% readmitted within 1 year



Good NEWS: WFBMC study
Patients who receive an intervention like COMPASS had a 48% relative risk reduction in readmission rates

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Limitations – Varying NIHSS categories defining mild/mod/severe.

- Compass vanguard/pilot analysis: categories of stroke severity:

  0, 1-4, 5-42 (to balance categories/deal with sample size)

- Vs. Toast et al. (JAMA 1998) categories:

  mild 0-6, moderate 7-15, and severe 16-40? (listed in CB emails including NINDS t PA trials).

- Vs. ECASS:

  0-5, 6-10. 11-15, 16-20, 21-40. (no nominal descriptors)

- And another ECASS analysis, this time supporting our end point, NIHSS, categorized as:

  0 (no measurable deficit), 1 to 4, 5 to 8, 9 to 12, 13 to 16, 17 to 20, 21 to 24, ≥25 (most severe neurological deficit), or dead

- Vs. Reynolds et al. testing Wake Forest Stroke Severity Scale: mild = 0-10, moderate 4-14, and severe 6-42 (note overlap!)

Results

Parameter Estimates Averaged over 50 Imputed Datasets				
Parameter	**Odds Ratio**	**95% Confidence Limits**		**P-Value**
Visit Scheduled at Discharge = Yes	2.88	1.58	5.24	**0.0006**
Two-Day Follow-up Call Completed = Yes	2.03	1.46	2.80	**<0.0001**
Diagnosis = Transient Ischemic Attack	0.62	0.40	0.96	**0.0301**
NIH Stroke Scale Score = 1-4	0.96	0.62	1.48	0.8385
NIH Stroke Scale Score = 5-42	0.58	0.34	0.98	**0.0408**
Has Primary Care Provider = Yes	1.36	0.93	1.20	0.1139
Has Private Insurance or Medicare = Yes	1.55	1.01	2.40	**0.0468**
# of Discharge Therapy Referrals = 1	2.31	1.25	4.28	**0.0075**
# of Discharge Therapy Referrals = 2	1.37	0.71	2.61	0.3451
# of Discharge Therapy Referrals = 3	1.06	0.49	2.31	0.8820
Discharge Referrals for Home Health = Yes	0.59	0.32	1.07	**0.0798**
Estimated Driving Distance = 30-60 miles	0.93	0.62	1.39	0.7089
Estimated Driving Distance = > 60 miles	0.64	0.42	0.97	**0.0368**

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