Reducing Readmissions After Stroke With a Structured Nurse Practitioner/Registered Nurse Transitional Stroke Program

Christina Condon, MSN, NP; Sarah Lycan, MSN, NP; Pamela Duncan, PhD, PT; Cheryl Bushnell, MD, MHS

Background and Purpose—Our aim was to determine whether a standardized Transitional Stroke Clinic (TSC) led by nurse practitioners could reduce 30-day and 90-day readmissions for stroke or transient ischemic attack patients discharged home.

Methods—Phase I consisted of nurse practitioners calling only high-risk patients discharged home within 7 days and performing an office visit within 2 to 4 weeks of discharge. Phase II consisted of all patients discharged home receiving both a 2-day follow-up phone call by a registered nurse and a follow-up visit with a nurse practitioner within 7 to 14 days. Differences in process metrics and readmissions across the 2 phases and overall were assessed. Increasing complexity with multiple chronic conditions (diabetes mellitus, coronary artery disease, and congestive heart failure) was represented in a continuous variable from 0 to 3. Multivariable logistic regression models for 30-day and 90-day readmissions were performed with adjustment for National Institutes of Health Stroke Scale (NIHSS) and previous hospitalizations.

Results—From October 2012 through September 2015, 510 patients were enrolled. From phase I to II, a higher proportion of follow-up calls were made and days from discharge to TSC decreased. Patients readmitted within 30 days were less likely to show for TSC visits (60.85% versus 76.3%; P=0.021). Multivariable modeling showed that TSC visit was associated with a 48% reduction in 30-day readmission (odds ratio, 0.518; 95% confidence interval, 0.272–0.986), whereas multiple chronic conditions and previous stroke/transient ischemic attack increased the risk. TSC visit did not impact 90-day readmissions.

Conclusions—Evaluation in a nurse practitioner–led structured clinic is a model that may reduce readmissions at 30 days for stroke patients discharged home. (Stroke. 2016;47:1599-1604. DOI: 10.1161/STROKEAHA.115.012524.)

Key Words: nurse practitioners • patient discharge • patient outcome assessment • patient readmission • quality improvement • risk factors • secondary prevention • stroke • transitional care

In the past 20 years, there have been meaningful advances in acute and inpatient stroke care. However, there are still significant gaps in the quality of postacute care, especially for those patients discharged directly home. The needs of patients discharged after stroke are often multifactorial and complex. Patients are faced with physical and cognitive limitations, complex medication regimens, new diagnoses of chronic conditions, and lack of social support. These barriers challenge independence and stroke recovery and leave patients at high risk for readmissions. Preventing 30-day readmissions is now a priority for hospitals and health systems because Centers for Medicaid and Medicare (CMS) will begin penalizing hospitals that exceed the national 30-day risk-adjusted all-cause readmission rate for patients discharged with stroke.

Patients who are at risk for readmission after discharge have been evaluated via the concept of cumulative complexity, which is a summation of the patient’s workload (life demands and burden of treatment) and capacity (influenced by resource scarcity and burden of illness). With cumulative complexity in mind, a systematic review found that the most effective interventions for reducing 30-day readmissions in nonstroke populations were the ones that comprehensively increased patient capacity for self-care, had a higher number of intervention activities and interactions, and had ≥2 individuals involved in its delivery (relative risk, 0.63; 95% confidence interval, 0.43–0.91; P=0.02). In stroke patients, a recent systematic review reported that less than half of transitional care models were successful at improving outcomes, and none actually reduced emergency department or hospital readmissions. Because of the variability of stroke transitional care model interventions, Prvu Bettger et al have called for a clear definition of transitional
care components that significantly improve quality of care and patient outcomes. It is evident that a transitional care model that addresses cumulative complexity and includes standardized structure and processes is needed to decrease avoidable readmissions in stroke patients.

Through a hospital quality improvement initiative, we developed a nurse practitioner (NP)–led Transitional Stroke Clinic (TSC), which includes follow-up phone calls performed by a registered nurse (RN) and a standardized and comprehensive assessment in our TSC visit early after discharge. Our aim was to determine whether this model, refined over the course of 2 different phases, reduced 30-day and 90-day readmission rates for patients discharged home from the acute stroke hospitalization with ischemic or hemorrhagic stroke or transient ischemic attack (TIA).

**Methods**

This is a single-center prospective pre- and postmodification quality improvement study performed at Wake Forest Baptist Medical Center (WFBMC). The WFBMC Stroke Center is a Joint Commission–certified comprehensive stroke center, with an average of 850 to 900 stroke discharges per year. Transitional Coaching for Stroke (TRACS) is a quality improvement program supported by the hospital and neuroscience service-line, which is focused on education and coaching after discharge to assess the immediate needs of patients who have been recently discharged home. Patients discharged to other facilities were excluded.10 When CMS created a reimbursement model of Transitional Care Management codes, we expanded our TSC by incorporating a structured follow-up program focusing on challenges unique to patients with stroke and TIA. Transitional Care Management codes are designed for patients with moderate-to-high complexity based on psychosocial and medical needs after discharge: patients with stroke/TIA are ideal patients to benefit from these services.11 To meet CMS requirements, we implemented, over 2 phases, a transitional care model that included structured follow-up phone calls and office visits. Before the initiation of our transitional care model, stroke/TIA patients discharged home did not receive phone calls and had a clinic visit with an NP within 4 to 12 weeks, and these NP visits were not structured.

Phase I (Table 1) began in October 2012 when we implemented the structured follow-up phone call by the NP for patients at high risk of readmission12 within 7 days of discharge. If the patient was aphasic or had cognitive limitations, the caller asked the caregiver to provide information. The phone call included medication reconciliation, oral anticoagulation monitoring (if relevant), reminders of scheduled therapies, and signs/symptoms to seek medical attention (see Table in the online-only Data Supplement for script). To determine which patients were at high risk for readmission, an internal retrospective review of our hospital identified risk factors that included acute renal failure during index hospitalization, history of congestive heart failure, and ≥2 visits to emergency department or hospitalizations within the past year.12 We also included patients who were on anticoagulation, those with multiple barriers to care, or poor social support. These factors were identified during the acute hospitalization by the NP. In phase I, the patients received a clinic visit within 2 to 4 weeks of discharge.

Phase II (Table 1) began in September 2014 when we updated our transitional care model to capture the new Transitional Care Management codes. We continued the structured follow-up phone calls as detailed above, but they were performed by an RN within 2 business days of discharge. Every patient who was discharged home was called by the RN compared with phase I when the NP called only high-risk patients. In addition, during phase II, the NP initiated structured TSC visits, which included stroke education, secondary prevention, functional recovery, medication adherence, and evaluation for poststroke complications.

The major difference between phase I and phase II of the intervention was that in phase II we hired an RN to make calls, which allowed the NPs more time to perform clinic visits and decrease the time to follow-up. With this NP/RN effort, we were able to bill the Transitional Care Management codes. During phase II, our goal was to schedule all patients for follow-up within 7 to 14 days.

**Data Collection and Statistical Analysis**

Study data were collected and managed using Research Electronic Data Capture (REDCap) electronic data capture tools hosted at WFBMC.13 REDCap is a secure, web-based application designed to support data capture for research studies. The TRACS program collected data for each of the following encounters: medical history at discharge, telephone follow-up, TSC visit, and 3-month outcomes. The primary outcomes for this analysis were 30-day and 90-day readmissions, which were collected by telephone interview, medical record review, or mailed questionnaire by the TRACS personnel (Table 1). Important covariates for the outcomes included demographics, medical history, and stroke severity using the initial National Institutes of Health Stroke Scale (NIHSS). Where the NIHSS was missing, scores were entered retrospectively by deriving the score from the admission neurological examination, a validated method of scoring.14 In our Comprehensive Stroke Center, scores are likely to be missing at the time of admission for TIA or hemorrhagic stroke patients (≥20% of our cohort) although the exact proportion of retrospectively derived scores is unknown. We created a study variable that represented multiple concurrent chronic conditions, which increase the risk of poor outcomes after stroke, including readmission.15 This variable was assigned 0, 1, 2, or 3, depending on the presence of diabetes mellitus, coronary artery disease, and congestive heart failure (in various combinations or all 3) as a continuous variable. Processes of care were collected, including when patients were scheduled for a TSC appointment, whether they received a call, and patient show rates to the clinic appointments. Univariate comparisons of these variables between the 2 phases of the TSC were assessed using χ² test for proportions or

<table>
<thead>
<tr>
<th>Table 1. Comparison of the Transitional Care Model Processes in Phase I and Phase II of the Transitional Stroke Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transitional Care Model Process</strong></td>
</tr>
<tr>
<td>Postdischarge phone call timing</td>
</tr>
<tr>
<td>Targeted patients for 7–14 d clinic visit</td>
</tr>
<tr>
<td>Who performed the 2-d call</td>
</tr>
<tr>
<td>TCM coding requirements targeted</td>
</tr>
<tr>
<td>Targeted time from discharge to clinic appointment</td>
</tr>
<tr>
<td>Clinic visit template</td>
</tr>
<tr>
<td>Readmission ascertainment</td>
</tr>
</tbody>
</table>

NP indicates nurse practitioner; RN, registered nurse; TCM, Transitional Care Management; and TRACS, Transitional Coaching for Stroke.
Wilcoxon rank tests for continuous but non-normally distributed variables. Multivariate logistic regression models for 30-day and 90-day readmissions were performed using the stepwise selection method and adding NIHSS, history of previous stroke or TIA, and presence of hospitalizations before the index stroke as prespecified covariates likely to influence readmission.

Informed consent for this study was waived because it was part of a quality improvement initiative and patients received standard-of-care treatment throughout both phases. The Wake Forest School of Medicine Institutional Review Board approved this waiver.

### Results

From October 2012 through September 2015, there were 2904 patients discharged with ischemic or hemorrhagic stroke or TIA, and of these 1421 (48.9%) were discharged home. Of those discharged home, 510 (35.9%) were enrolled in TRACS, and all had complete data for the analysis. The demographic characteristics of this cohort are shown in Table 2. The mean age of patients was 65.1 years of age (±13.2 years); 51% were women; the median NIHSS was 2 (interquartile range, 1–5).

The proportion of patients discharged home and enrolled in TRACS increased from 19.2% in phase I to 42.6% in phase II (data not shown). The only other difference between phases was a decrease in hypertension and hyperlipidemia from phase I to phase II.

With respect to the process metrics (Table 3), more patients received follow-up calls in phase II (88.9%) than in phase I (85.7%; \( P=0.0001 \)), and the days from discharge to TSC decreased from 19 to 17 days (\( P=0.02 \)). There was no difference in 30- or 90-day readmissions by phase. Patients who did not show for the TSC visit were more likely to have...
The results for 46 patients with 30-day readmissions include 14 (30.4%) new stroke or stroke symptoms, 7 (15.2%) cardiac (congestive heart failure flares or arrhythmias), 6 (13.0%) infection, 3 (6.5%) carotid or aneurysm procedures, 4.3% bleeding, 2 (4.3%) renal failure, 2 (4.3%) electrolyte or metabolic disturbance, and 10 (21.7%) other reasons.

Because the phase of the clinic was not associated with readmissions, we combined the data. The patients who received the follow-up phone call were more likely to show for the TSC visit at our TSC for calling at 2 days and being seen in clinic within 7 to 14 days of discharge (as required by CMS for Transitional Care Management [TCM] billing), coupled with standardized and comprehensive stroke assessments performed by trained NPs, can reduce readmissions for this high-risk population. The factors associated with 90-day readmissions were primarily clinical characteristics, such as multiple chronic conditions, previous stroke, and previous hospitalizations, as well as male sex. These findings show that the TSC visit primarily affected the shorter-term risk for readmission, whereas other comorbid factors were drivers of readmission ≥90 days after discharge.

Our data indicate that early evaluation in an NP-led structured visit at our TSC reduced readmissions at 30 days by ≈50%. Although the posthospital call did not influence readmission independent of the clinic visit, patients who were called had a higher show rate. Therefore, the transitional care model for calling at 2 days and being seen in clinic within 7 to 14 days of discharge (as required by CMS for Transitional Care Management [TCM] billing), coupled with standardized and comprehensive stroke assessments performed by trained NPs, can reduce readmissions for this high-risk population. The factors associated with 90-day readmissions were primarily clinical characteristics, such as multiple chronic conditions, previous stroke, and previous hospitalizations, as well as male sex. These findings show that the TSC visit primarily affected the shorter-term risk for readmission, whereas other comorbid factors were drivers of readmission ≥90 days after discharge.

The use of Master’s prepared advance practice nurses has been the basis of the Naylor et al.16 Transitional Care Model, which effectively reduced readmission in the geriatric and congestive heart failure population. The NPs are trained to assess and manage stroke patient needs that occur within and outside the clinic. The incorporation of a well-trained nurse to perform the phone calls and triage relevant information to the NPs provided the most efficient structure for our transitional care model.

Our model and the team structure address the same components of successful interventions, which addressed cumulative complexity. Our care team includes 3 trained health professionals (2 NPs and an RN), and we use comprehensive assessments during multiple interactions with patients post-discharge. Beyond the initial assessment, a substantial portion of the calls and clinic visits are spent educating, coordinating

### Table 4. Factors Associated With 30-Day Readmission Across Both Phases of the TSC

<table>
<thead>
<tr>
<th>Variable</th>
<th>30-Day Readmission (n=46)</th>
<th>No 30-Day Readmission (n=464)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIH Stroke Scale, median (IQR)</td>
<td>3 (1–7)</td>
<td>2 (1–5)</td>
<td>0.235</td>
</tr>
<tr>
<td>Prior hospitalization, n (%)</td>
<td>16 (34.8)</td>
<td>90 (19.5)</td>
<td>0.015</td>
</tr>
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<td>TSC visit, n (%)</td>
<td>28 (60.8)</td>
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<td>0.021</td>
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<td>Multiple risk factors (DM, CAD, or CHF)</td>
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<td>0.042</td>
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<td>None</td>
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<td>150 (32.3)</td>
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<td>56 (12.1)</td>
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<td>2 (4.4)</td>
<td>14 (3.0)</td>
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<tr>
<td>Previous stroke or TIA, n (%)</td>
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<td>Sex</td>
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</tr>
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<td>Female</td>
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<tr>
<td>Male</td>
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<td>251 (54.1)</td>
<td></td>
</tr>
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<td>Follow-up call completed</td>
<td>34 (73.9)</td>
<td>364 (78.4)</td>
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CAD indicates coronary artery disease; CHF, congestive heart failure; DM, diabetes mellitus; IQR, interquartile range; NIH, National Institutes of Health; TIA, transient ischemic attack; and TSC, Transitional Stroke Clinic.

#### Discussion

To date, there have been no successful interventions that have reduced readmission rates in stroke patients discharged home.8 Our data indicate that early evaluation in an NP-led structured visit at our TSC reduced readmissions at 30 days by ≈50%. Although the posthospital call did not influence readmission independent of the clinic visit, patients who were called had a higher show rate. Therefore, the transitional care model for calling at 2 days and being seen in clinic within 7 to 14 days of discharge (as required by CMS for Transitional Care Management [TCM] billing), coupled with standardized and comprehensive stroke assessments performed by trained NPs, can reduce readmissions for this high-risk population. The factors associated with 90-day readmissions were primarily clinical characteristics, such as multiple chronic conditions, previous stroke, and previous hospitalizations, as well as male sex. These findings show that the TSC visit primarily affected the shorter-term risk for readmission, whereas other comorbid factors were drivers of readmission ≥90 days after discharge.

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care with referrals to therapy and community services, assuring that the services are actually received, addressing social needs, and handing off the care to the primary care provider. Altogether, this model can help patients gain the ability to self-manage their stroke recovery and secondary prevention. In addition, modification in phase II to add an RN increased the proportion of follow-up phone calls made, reduced the time from discharge to being seen in the clinic, and increased the show rate for this clinic.

There are some limitations to this study. The setting was a single academic, tertiary referral center with a wide referral region. It was designed as an observational quality improvement study to reduce readmissions rather than a randomized controlled study. The patient population was limited to those discharged home and not to outside inpatient rehabilitation or skilled nursing facilities, which make up \(\approx 50\%\) of the total patients discharged from our facility. The analysis cohort represents a small sample of our overall population, especially in phase 1. The number of patients readmitted was relatively small, and as such, detecting differences between phases with unplanned analyses limited the power. The ascertainment of readmissions included direct contact with patients by phone (occurred more frequently in phase I) or questionnaires completed by patients or proxies (initiated in phase II), both of which allowed documentation for patients admitted to other facilities. In the case of missing data, there was a manual review of medical records to determine readmission back to WFBMC. We were therefore unable to track readmissions to other hospitals for every patient in our cohort. Based on readmission reports from CMS for Medicare beneficiaries discharged to any location, \(\approx 30\%\) of our patients were readmitted to facilities other than WFBMC. Although the cohort in our analysis is quite different (all ages and payer source, and only those discharged home), the readmission rates are likely to be higher than those reported in this analysis. Lastly, although our target in phase II was to have patients seen in the TSC within 14 days, our median time from discharge to clinic visit was 17 days.

### Table 5. Factors Associated With 90-Day Readmission Across Both Phases of the TSC

<table>
<thead>
<tr>
<th>Variable</th>
<th>90-Day Readmission (N=83)</th>
<th>No 90-Day Readmission (n=427)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIH Stroke Scale, median (IQR)</td>
<td>3 (1–7)</td>
<td>2 (1–5)</td>
<td>0.258</td>
</tr>
<tr>
<td>Prior hospitalization, n (%)</td>
<td>33 (40.2)</td>
<td>73 (17.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>TSC visit, n (%)</td>
<td>56 (67.5)</td>
<td>326 (76.4)</td>
<td>0.088</td>
</tr>
<tr>
<td>Multiple risk factors (DM, CAD, or CHF)</td>
<td></td>
<td></td>
<td>0.004</td>
</tr>
<tr>
<td>None</td>
<td>28 (33.7)</td>
<td>230 (523.9)</td>
<td></td>
</tr>
<tr>
<td>1 of 3</td>
<td>34 (41.0)</td>
<td>138 (32.3)</td>
<td></td>
</tr>
<tr>
<td>2 of 3</td>
<td>16 (19.3)</td>
<td>48 (11.4)</td>
<td></td>
</tr>
<tr>
<td>3 of 3</td>
<td>5 (6.0)</td>
<td>11 (2.6)</td>
<td></td>
</tr>
<tr>
<td>Previous stroke or TIA</td>
<td>41 (49.4)</td>
<td>116 (27.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td>0.096</td>
</tr>
<tr>
<td>Female</td>
<td>38 (45.8)</td>
<td>189 (44.6)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45 (54.2)</td>
<td>238 (55.7)</td>
<td></td>
</tr>
<tr>
<td>Follow-up call completed</td>
<td>62 (74.7)</td>
<td>336 (78.7)</td>
<td>0.422</td>
</tr>
</tbody>
</table>

*CAD indicates coronary artery disease; CHF, congestive heart failure; DM, diabetes mellitus; IQR, interquartile range; NIH, National Institutes of Health; TIA, transient ischemic attack; and TSC, Transitional Stroke Clinic.*

### Table 6. Multivariable Model of Factors Associated With Readmission at 30 and 90 Days

<table>
<thead>
<tr>
<th>Variable</th>
<th>30-Day Readmission OR (95% CI)*</th>
<th>P Value</th>
<th>90-Day Readmission OR (95% CI)†‡</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSC visit</td>
<td>0.518 (0.272–0.986)</td>
<td>0.045</td>
<td>n/a</td>
<td>NS</td>
</tr>
<tr>
<td>Multiple risk factors (odds ratio per additional risk factor)*</td>
<td>1.462 (1.029–2.076)</td>
<td>0.034</td>
<td>1.638 (1.234–2.175)</td>
<td>0.002</td>
</tr>
<tr>
<td>Previous stroke/TIA</td>
<td>2.233 (1.188–4.199)</td>
<td>0.004</td>
<td>2.151 (1.297–3.568)</td>
<td>0.002</td>
</tr>
<tr>
<td>Previous hospitalization</td>
<td>1.824 (0.933–3.568)</td>
<td>0.079</td>
<td>2.732 (1.612–4.632)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Initial NIHSS (per 1 point increase)</td>
<td>1.044 (0.994–1.098)</td>
<td>0.088</td>
<td>n/a</td>
<td>NS</td>
</tr>
<tr>
<td>Male sex</td>
<td>n/a</td>
<td>NS</td>
<td>1.670 (1.009–2.762)</td>
<td>0.046</td>
</tr>
</tbody>
</table>

*C-index=0.710.

†Variable includes increasing combinations of diabetes mellitus, coronary artery disease, and congestive heart failure.

‡C-index=0.722.
We also examined the relationship between the TSC show rate and the timing of readmission. We found that 56.5% of patients readmitted within 30 days were seen in the clinic with 15 days of discharge, but it is possible that the other 43.5% could have missed their appointments because of being in the hospital, illness, or the inability to come to clinic because of social circumstances. To examine the relationship between the timing of readmission and the clinic show rate, we noted that 18 of the 46 patients readmitted within 30 days did not show to the TSC, 13 of whom were readmitted before the follow-up appointment. Of these 13, only 3 of them were within 5 days of the appointment, suggesting these could have been in the hospital as a reason for the no-show. In summary, our data show these readmitted patients were complex and that there could be other unmeasured risks for readmission, such as lack of a primary care provider, access to care, or social support.

There are several strengths to this study. With minimal resources, we have built a model of transitional care that is patient-centered, longitudinal, and designed to monitor and analyze the effectiveness of processes of care pre- and postmodifications to our model. It is important to note that our model is consistent with the concept of cumulative complexity because patients who have had multiple strokes or TIA, and multiple comorbidities (diabetes mellitus, coronary artery disease, and congestive heart failure) clearly increase risk of readmission. These characteristics are now included in our discharge screening for patients at high risk of readmission, and we will make concerted efforts to work with primary care and cardiology after discharge for patients with these high-risk conditions.

In summary, we showed that an NP/nurse team and a standardized, comprehensive approach to transitional care for stroke patients discharged home can effectively reduce 30-day readmissions. This model should be tested for effectiveness in different settings from this single academic center. In fact, it is now the basis for a pragmatic clinical trial being implemented across the state of North Carolina, funded by the Patient-Centered Outcomes Research Institute. This funding is for a cluster-randomized trial of 50 hospitals designed to evaluate whether implementation of this model of care will improve stroke patients’ functional status and reduce caregiver burden 90 days poststroke (ClinicalTrials.gov; NCT02588664). If positive, the results would support wider dissemination and implementation.

Acknowledgments
We thank Paula Riddle, RN, for her hard work and dedication to enrolling patients in Transition Coaching for Stroke (TRACS), patient education, telephone follow-ups, and data entry.

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Disclosures
None.

References
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Hi ____________________. My name is ____________________, and I am calling on behalf of the stroke team at Wake Forest Baptist Medical Center. May I speak to (patient name)? You were discharged from the hospital approximately two days ago, and I would like to follow-up with you to see how you have been doing.

1. If patient is unable to come to phone, may I ask who I am speaking to. Are you (patient name) caregiver, the person who is helping (Patient name). If no, may I speak to the caregiver?

How have you or (patient name) been doing since discharge from the hospital?

Medication reconciliation: The RN reads the list of medications prescribed at discharge and compares this to the home medications (bottles) with the patient or caregiver.

Are there any concerns about your medications?
What is your INR: (if on warfarin)
Have you had any new stroke symptoms?
Do you have a follow-up appointment with your primary care provider scheduled?
Have you had any falls?
Has Home Health nursing, physical or occupational therapy been set up if needed?
Your Transitional Stroke Clinic follow up appointment is scheduled for: __________

I would like to go over some stroke information with you:

When referring to the signs and symptoms of stroke, you want to think of the acronym F.A.S.T face drooping, arm weakness, speech difficulty, and time to call 9-1-1.

You want to ask yourself these certain questions when looking for any signs of a stroke. Does one side of the face droop? Is one arm weak or numb? You can answer this by having him raise his arms and hands. Is he unable to speak or hard to understand?

When you spot any of these signs, call 911 immediately and get the (patient name) to the hospital right away, even if these symptoms start to go away. And always check the time to make sure when the symptoms first appeared. Do you have any questions regarding these symptoms and when to call 911?

Thank you for taking the time to answer these follow-up questions.