

Promoting Stroke Education at Follow-up

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INTRODUCTION

Background

- The incidence of worldwide strokes is approximately 10 to 17 million new cases a year, with approximately 25 to 35 million stroke survivors (Lapchak & Zhang, 2017).
- Lack of knowledge regarding self-care, secondary prevention, and local resources beginning at discharge leaves survivors at risk of adverse events and hospital readmissions (up to 55% in the first year) (Nouh et al., 2017; White et al., 2014).
- The average stroke survivor will spend over \$20,000 dollars after their first stroke. These statistics are based on an isolated event and do not factor in readmission, secondary strokes, or the cost of caregiver self-health care needs (Pindus et al., 2018).
- One study found 100% of survivors and caregivers believed education at time of hospital discharge was too complex (Ing et al., 2015).
- Due to lack of mandated education at follow-up appointments, it is unknown if education is provided;
- Individuals who utilized psychoeducation and social support groups had 66% less hospital readmissions, than those in who did not ($p=.01$) (Cheng et al., 2014).
- Recurring themes regarding patient and caregivers' preferred educational style emphasized face-to-face education, simplified instructions, and provider communication as most beneficial to patient and caregiver learning (Alkureishi et al., 2016; Mohammed et al., 2016; Siddharthan et al., 2016).
- Mohammed et al. (2016) noted quality care is directly related to ease of communication, access to appointments, and shared decision making with a provider.

PURPOSE & OBJECTIVES

Purpose Statement

The purpose of this quality improvement (QI) project was to develop an educational intervention, with the creation of a stroke resource guide, to be implemented at the 30-day stroke follow-up appointment in a local Neurology clinic.

PICOT

In a Midwestern neurology clinic (**P**), does an educational intervention (**I**) compared to current practice (**C**) increase provider documentation of education and decrease 90-day hospital readmission rates (**O**) over a 3-month period (**T**)?

Objectives

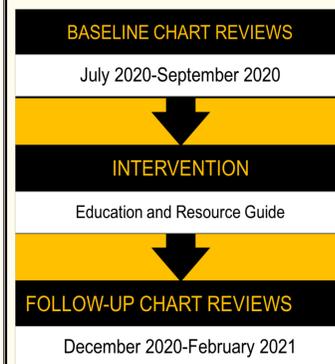
- 5% decrease in stroke survivor hospital readmission rates between the 30-day and 90-day follow-up appointments.
- 10% increase in stroke education documentation at 30-day follow-up appointments.
- 30% utilization rate of a stroke resource guide at 30-day follow-up appointments.

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MATERIALS AND METHODS

- This QI project utilized a pre and post-test design with two groups (baseline and intervention) to evaluate provider education documentation and the impact of a stroke resource guide at follow-up.
- The target population was a purposive, convenience sample of adult stroke survivors who discharged from the hospital after a stroke admission.
- G1, the baseline group, received no intervention, G2, the intervention group received verbal education and the stroke resource guide at follow-up. The resource guide was to be given to G2 patients who returned to the stroke clinic for 30-day follow-up, $n=26$.
- Patients meeting the inclusion criteria were those ≥ 18 years of age, English speaking, and ICD 10 diagnoses of ischemic or hemorrhagic stroke.
- Patients fitting the inclusion criteria were obtained from the stroke hospital discharge list for two selected months.



- Using a confidence interval of 95%, a maximum of 5% margin of error, a population size of 150, and a response distribution of 50%, a minimum of 109 charts were to be evaluated at baseline (G1) and follow-up (G2) (Raosoft, n.d.).
- All available charts were reviewed G1 ($n=75$) and G2 ($n=74$).
- Descriptive statistics were utilized to describe the project sample.
- Nominal level data were analyzed with the Chi-square Test of Independence and the ϕ coefficient was used as an index to describe the magnitude of the effect from the intervention with values .10, .30, .50 corresponding with small, medium, and large respectively
- Ratio level data was analyzed using Independent t -test.
- IBM SPSS Statistic version 24 (Chicago, IL) was used for statistical analysis.
- Statistical significance was defined as $p \leq .05$.

RESULTS

Sociodemographic Characteristics of Patients

Characteristics	Baseline (G1)		Intervention (G2)	
	n	%	n	%
Gender				
Female	39	52	33	45
Male	36	48	41	55
Race				
Caucasian	68	91	65	88
Unknown	2	3	6	8
African American	4	5	3	4
Indian	1	1	0	0
Insurance				
Private	18	24	19	26
Medicaid	11	15	12	16
Medicare	41	55	41	55
Self-Pay	5	7	2	3
Marital Status				
Single	16	21	16	22
Married	32	43	41	55
Widowed	11	15	6	8
Divorced	9	12	5	7
Unknown/Separated	7	9	6	8
Home Address				
Urban	27	36	38	51
Rural	48	64	36	49

Stroke Specific Demographics

- The NIH stroke scale mean was calculated for G1 and G2; results close to zero indicate less functional deficit. G1 had a mean score of 6.20 ($SD = 6.46$), while G2 had a mean score of 6.22 ($SD = 8.34$).
- Small to moderate statistically significant decrease in ischemic stroke diagnoses on hospital admission in G2, 55.3%, $n = 63$ ($\chi^2 = 4.71$, $df = 1$, $p = .03$, $\Phi = .2$).
- Increase in hemorrhagic stroke diagnoses in G2, 39.5%, $n = 15$ vs. 60.5%, $n = 23$, respectively ($p = .12$, $\Phi = .1$).
- Decreased number of patients in G1 (62.1%, $n = 16$) versus G2 (37.9%, $n = 11$) who received TPA ($\chi^2 = 1.98$, $df = 1$, $p = .16$, $\Phi = .1$), which was likely due to an increased rate of hemorrhagic stroke diagnoses in G2.
- Clot retrieval for ischemic stroke was the same in both groups (50%, $n = 7$).
- Prior to admission, 20.1% ($n = 30$) patients were taking anticoagulation, while 79.9% ($n=119$) were not, which was statistically insignificant between the groups ($p = .65$).

RESULTS

90-day hospital readmission rates

- There was a statistically significant decrease in 90-day hospital readmission rates between G1 (20%, $n = 15$) and G2 (8.1%, $n = 6$), $\chi^2 = 16.19$, $df = 2$, $p < .001$, $\Phi = .3$.

Stroke education documentation

- There was a statistically significant increase in provider documented education from G1 (0% $n = 31$) who returned for follow-up, to G2 (3.4%, $n = 5$), $\chi^2 = 16.43$, $df = 2$, $p < .001$, $\Phi = .3$. The increase in provider education was after an email was sent after requesting education be documented.

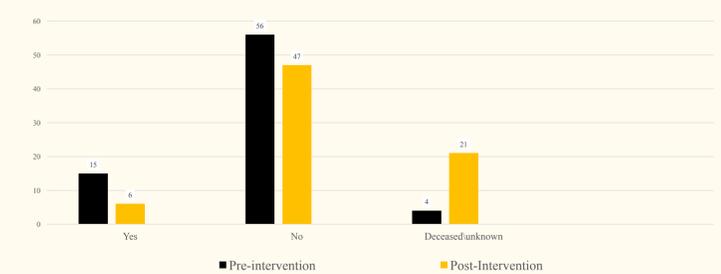
Utilization of the stroke resource guide

- Rate of follow-up appointment attendance in G2 was 35.1% ($n=26$).
- The resource guide was distributed to 73% of patients with follow-up appointments in the stroke clinic ($n = 11$).
- The resource guide was not distributed to patients who followed-up in the Neurosurgery clinic.

30-day follow-up appointments: Appointment made? Appointment attended?

- A small, statistically insignificant decrease was found between G1 and G2's follow-up appointment scheduling (65.3%, $n = 49$ vs. 63.5%, $n = 47$, $p = .20$, $\Phi = .1$). Decreased rates of follow-up appointments could be attributed to season of the year in which follow-up would take place (Winter) and rates of COVID-19 during this period as compared to G1 (Summer/Fall) and lower COVID-19 rates.
- A statistically significant decrease in the rate of follow-up appointments attended was seen between G1 and G2 (41.3%, $n = 31$ vs. 35.1%, $n = 26$), respectively, $\chi^2 = 13.03$, $df = 2$, $p < .001$, $\Phi = .3$. This was likely due to the season of year in which the appointments would occur, local COVID-19 rates, and patient desire to follow-up closer to home.

90-Day Hospital Readmissions



CONCLUSIONS

- The primary objective of a 5% decrease in stroke survivor hospital readmission rates between the 30-day and 90-day follow-up appointments **was met**, from 20% to 8%.
- The secondary objective of a 10% increase in stroke education documentation at 30-day follow-up appointments **was not met**. Low rates of follow up and poor physician buy-in likely contributed; however, a large statistically significant increase in documentation was seen.
- The third objective of achieving a 30% utilization of the stroke resource guide **was met**, which was exceeded at 73%.

REFERENCES

- Alkureishi, M.A., Lee, W.W., Lyons, M., Press, V.G., Inam, S., Nkansah-Amankra, A., Werner, D., & Arora, V.M. (2016). Impact of electronic medical record use on the patient-doctor relationship and communication: A systematic review. *Journal of General Internal Medicine*, 31, 548-560. <https://doi.org/10.1007/s11606-015-3582-1>
- AlShaiikh, S.A., Quinn, T., Dunn, W., Walters, M., & Dawson, J. (2016). Multimodal interventions to enhance adherence to secondary preventive medication after stroke: A systematic review and meta-analysis. *Cardiovascular Therapeutics*, 34, 85-93. <https://doi.org/10.1111/1755-9222.12176>
- Cheng, H.Y., Chair, S.Y., & Chau, J.P.-C. (2014). The effectiveness of psychosocial interventions for stroke family caregivers and stroke survivors: A systematic review and meta-analysis. *Patient Education and Counseling*, 95 (1), 30-44. <https://doi.org/10.1016/j.pec.2014.01.005>
- Condon, C., Lycan, S., Duncan, P., Bushnell, C. (2016). Reducing readmissions after stroke with a structured nurse practitioner/registered nurse transitional stroke program. *Stroke*, 47, 1599-1604. <https://doi.org/10.1161/STROKEAHA.115.012224>
- Ing, M.M., Linton, K.F., Vento, M.A., & Nakagawa, K. (2015). Investigation of stroke needs (INVISION) study: Stroke awareness and education. *Hawaii Journal of Medicine and Public Health*, 74 (4), 141-145. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4407457/>
- Lapchak, P.A. & Zhang, J.H. (2017). The high cost of stroke and stroke cytoprotection research. *Translational Stroke Research*, 8, 307-317. <https://doi.org/10.1007/s12975-016-0518-9>
- Mohammed, K., Nolan, M.B., Rajjo, T., Shah, N.D., Prokop, L.J., Varkey, P., & Murad, M.H. (2016). Creating a patient-centered health care delivery system: A systematic review of health care quality from the patient perspective. *American Journal of Medical Quality*, 31(1) 12-21. <https://doi.org/10.1177/1062860614545124>
- Nouh, A.M., McCormick, L., & Staff, I. (2017). High mortality among 30-days readmission after stroke: Predictors and etiology. *Frontiers in Neurology*, 8, 632-638. <https://doi.org/10.3389/fneur.2017.00632>
- Pindus, D.M., Mullis, R., Lim, L., Wellwood, I., Rundell, A.V., Aziz, N.A.A., & Mant, J. (2018). Stroke survivors' and informal caregivers' experiences of primary care and community healthcare services: A systematic review and meta-ethnography. *PLoS ONE*, 13 (2), 1-23. <https://doi.org/10.1371/journal.pone.0192533>
- Raosoft. (n.d). *Sample size calculator*. Retrieved from <http://www.raosoft.com/sampleize.html>
- Siddharthan, T., Rahon, T., Chauhan, M.E., Nassari, F., Kirchhoff, P., Kalyesha, R., Coxa, S., Rastegar, A., & Knauf, F. (2016). Implementation of patient-centered education for chronic-disease management in Uganda: An effectiveness study. *PLoS ONE* 11 (11), 1-12. <https://doi.org/10.1371/journal.pone.0166411>
- White, C.L., Brady, T.L., Saucedo, L.L., Motz, D., Sharp, J., & Birnbaum, L.A. (2014). Towards a better understanding of readmissions after stroke: Partnering with stroke survivors and caregivers. *Journal of Clinical Nursing*, 24, 1091-1100. <https://doi.org/10.1111/jocn.12739>