



# Closing the Loop: Providing Follow-Up Reports

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## Objectives

Describe the components of the follow-up report for referring hospitals.

Discuss the processes that were improved as a result of the feedback and education.

## Introduction

For providers within the emergency department (ED), their contact often ends at the time the patient is admitted or transferred to another facility. With the focus on comprehensive stroke centers, more patients are being transferred from community hospitals to tertiary facilities for advanced intervention options. With this pattern of care, tertiary facilities have a responsibility to provide education and feedback to referring hospitals.

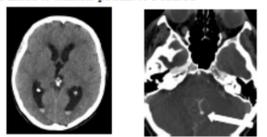
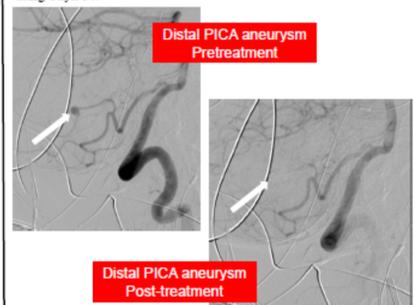
## Implementation

Format development based on the following:

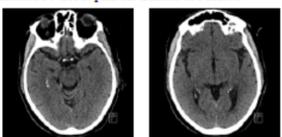
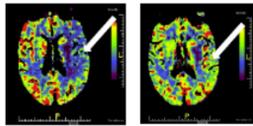
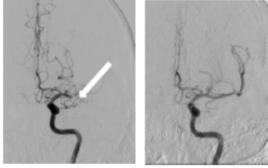
- Informal survey of partner hospitals of what information they would like to receive
- Review of literature and opportunities for process improvement
- Review of samples available from other organizations

Referring hospitals receive information pertaining to the patients that were transferred either by email (preferred) or by regular mail. Details include brief history of the care at referring hospital, transfer times, interventions performed, and outcome data at discharge.

**Neurovascular Intervention Clinical Update**  
Thank you for your referral to Penn State Hershey Stroke Center.  
Please call (717) 531-1104 with any other questions related to the care of this patient.

<p><b>History</b></p> <p>&gt; CF is a 64 year old female who had acute onset of dizziness followed by seizure-like activity on 11/2. Patient transported to local Emergency Department.</p> <p><b>Work-Up at Waynesboro Hospital</b></p> <p>&gt; CT Scan (below left) showed intraventricular hemorrhage with associated subarachnoid hemorrhage in the cerebellar vermis and hydrocephalus.</p> <p>&gt; Plans made to transfer patient to PSHMC</p>  <p><b>Transfer Process</b></p> <p>&gt; Life Lion dispatched at 1950 &gt; Arrived at OSH at 2018 &gt; Depart OSH at 2045 &gt; Arrived at PSHMC NSICU at 2110 &gt; Patient was stable during transport</p>	<p><b>Treatment at HMC</b></p> <p>&gt; CTA at PSHMC (first column, right image) showed a small distal aneurysm in the posterior fossa.</p> <p>&gt; On 11/4, patient was transported to neuroangiography suite and underwent successful endovascular liquid embolization of ruptured distal Posterior Inferior Cerebellar Artery (PICA) aneurysm using Onyx-34.</p>  <p><b>Distal PICA aneurysm Pretreatment</b></p> <p><b>Distal PICA aneurysm Post-treatment</b></p>	<p><b>Outcome</b></p> <p>&gt; On 11/22, patient alert and oriented. &gt; External Ventricular Drain (EVD) placed initially for hydrocephalus was weaned and removed. &gt; Patient was transferred to Inpatient Rehab for further therapy.</p> <p><b>Comprehensive Neurovascular Care</b></p> <p><a href="http://www.PennStateHershey.org">www.PennStateHershey.org</a> MD Network: (800) 233-4082 Careline: (800)243-1455</p> <p>Arteriovenous Malformations of Brain, Face &amp; Spine Brain Aneurysms • Carotid-Cavernous Fistula Carotid Angioplasty &amp; Stenting • Carotid Endarterectomy Cavernous Angioma • Decompressive Hemicraniectomy Intracranial Angioplasty &amp; Stenting Intravenous &amp; Intra-arterial tPA • Ischemic Stroke Treatment Merci Retrieval Device • Onyx for Aneurysms &amp; AVM Penumbra Stroke System</p>
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<p><b>History</b></p> <p>&gt; 70 year old male who had acute onset of right-sided weakness and slurred speech at between 9:30 and 10:30 am on 10/23</p> <p>&gt; Transported to Fulton County Medical Center</p> <p><b>Work-Up at Fulton County MC</b></p> <p>&gt; CT scan completed and reported as negative for hemorrhage</p> <p>&gt; New onset a-fib</p> <p>&gt; Initiated IV tPA &amp; plan for transfer to PSHMC</p>  <p><b>Transfer Process</b></p> <p>&gt; Life Lion dispatched at 1236 &gt; Arrived at Fulton County at 1308 &gt; Arrived at PSHMC CT Scan at 1453 &gt; tPA completed in flight; no changes in exam during flight</p>	<p><b>Treatment at HMC</b></p> <p>&gt; Patient taken to angio suite where he underwent successful mechanical thrombectomy using L5 Merci retrieval device with restoration of flow to the distal left middle cerebral artery (M1 segment and subsequent M2 branches).</p>  <p><b>CT perfusion images, showing mismatch between cerebral blood flow (left) and cerebral blood volume (right).</b></p>  <p><b>AP left internal carotid artery angiogram images, showing abrupt occlusion of left MCA (arrow - left panel) and follow-up angiogram after mechanical thrombectomy with Merci retrieval showing restoration of flow to distal left MCA (right panel).</b></p>	<p><b>Outcome</b></p> <p>&gt; Patient was noted to have marked improvement in his right hemiparesis immediately after the procedure.</p> <p>&gt; Patient is undergoing evaluations by physical, occupational and speech therapies; and will likely be discharged to inpatient rehabilitation soon.</p> <p><b>Comprehensive Neurovascular Care</b></p> <p><a href="http://www.PennStateHershey.org">www.PennStateHershey.org</a> MD Network: (800) 233-4082 Careline: (800) 243-1455</p> <p>Arteriovenous Malformations of Brain, Face &amp; Spine Brain Aneurysms • Carotid-Cavernous Fistula Carotid Angioplasty &amp; Stenting • Carotid Endarterectomy Cavernous Angioma • Decompressive Hemicraniectomy Intracranial Angioplasty &amp; Stenting Intravenous &amp; Intra-arterial tPA • Ischemic Stroke Treatment Merci Retrieval Device • Onyx for Aneurysms &amp; AVM Penumbra Stroke System</p>
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## Discussion

This concise format promotes communication between providers and can be shared with all staff involved including the pre-hospital caregivers. Feedback from our partners:

- It serves as constructive feedback regarding their own ED processes
- It has raised awareness of what advanced treatment options are available "...I never really thought about what else could be done" was stated by one of the ED physicians
- It has facilitated improved assessment of appropriate candidates for transfer

## Conclusions

This concise, comprehensive follow-up report closes the loop in the care path and emphasizes the vital link between referring hospitals, pre-hospital staff, and tertiary hospitals in timely appropriate stroke care. With an increased focus on continuum of care in stroke management and education throughout the community, this process demonstrates to referring hospitals and pre-hospital staff the vital role they play in stroke care and emphasizes the collaborative effort between hospitals.

## References

Park, S. & Schwamm, L.H. (2008). Organizing regional stroke systems of care. *Current Opinions in Neurology*, 21, 43-55.

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