In 2019, a multidisciplinary work group was assembled with broad representation from every stakeholder group including: Vascular Neurosurgery, Neurointerventional Radiology (Neuro IR), Vascular Neurology, Anesthesiology, Emergency Department (ED), House Supervisors (HS), Nursing Administration (NA), Nursing, and Critical Care Department (CCU). A multidisciplinary plan was instituted to streamline the MT workflow for all key stakeholders and improve communication to all responding staff with the ultimate goal of decreasing DTP times to ≤ 90 min to achieve early reperfusion.

Implementation required scheduled testing of the system to validate its functionality. Test pages were sent on specified days and times to on-call staff with instructions to notify a designated person that the page was received. During test paging, hospital and surgical operations continued as normal to best simulate a real activation. On-call staff who received the page were required to respond promptly which meant brief diversion from daily activities (inpatient rounding, outpatient clinic, surgery, etc.).

Test paging exercises offered an opportunity to improve broader notification of a Code Stroke LVO activation to the anesthesia department. Anesthesiology leadership instituted two “anesthesia stroke pagers,” one for the OR front desk and one for the CRNA facilitator. The anesthesia stroke pagers would be used during normal business hours to ensure prompt anesthesia notification and coverage.

Prompt electronic feedback would also be sent to staff involved in each case, departmental leaders, and administrators to promote transparency, acknowledge achieved goals, and identify opportunities to improve the new workflow.

A project timeline was established with milestones focused in three categories: 1) planning, 2) education and training, and 3) implementation.

Planning activities included research of current ASA clinical practice guidelines, surveying key stakeholders, multidisciplinary simulations, and securing HS group agreement to activate the system. Key stakeholders also provided input on who receives a Code Stroke LVO page from their respective groups and what critical information would be included in the page.

Staff education and training focused on standardization of each specialty’s respective workflow and role during a Code Stroke LVO. Specialty specific educational materials were created focusing on key information: who activates the system, what triggers system activation, and how to send out cancelation notifications.

Code Stroke LVO went live Sep 3, 2019 with the first activation/case occurring on Sep 6, 2019. The first Code Stroke LVO case demonstrated a drastic reduction in the NN to CST of 25 min (36 min reduction) resulting in a DTP of 82 min (42.6 min reduction) and DTRp of 105 min (57.6 min reduction).

There have been 14 activations since the system went live. The average NN to CST time is 28.8 min (32.3 min reduction; all cases, n=14; p<.0001) resulting in an average DTP time of 82.5 min (42.6 min reduction; ED cases only, n=11; p<.0001), and average DTRp of 135.2 min (27.6 min reduction, n=9).

The group paging system was cost neutral because of existing licensing agreements.

Conclusion: These outcomes suggest instituting an early notification system, along with standardized multidisciplinary roles and workflows, can transform different specialty practices, improve system inefficiencies resulting in more timely treatment with the goal of early reperfusion for AIS patients requiring emergency MT.

References


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