

## Bedside detection of intracranial midline shift using portable magnetic resonance imaging for evaluation of intracerebral hemorrhage.

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### Study

Observational study using, 0.064 T portable MRI (Swoop) exams on 102 stroke patients admitted to the neuroscience intensive care unit at Yale New Haven Hospital (48 ischemic stroke; 54 intracranial hemorrhage). Dichotomous (present or absent) and continuous MLS measurements were obtained on pMRI exams and locally available and accessible standard-of-care imaging exams (CT or MRI).

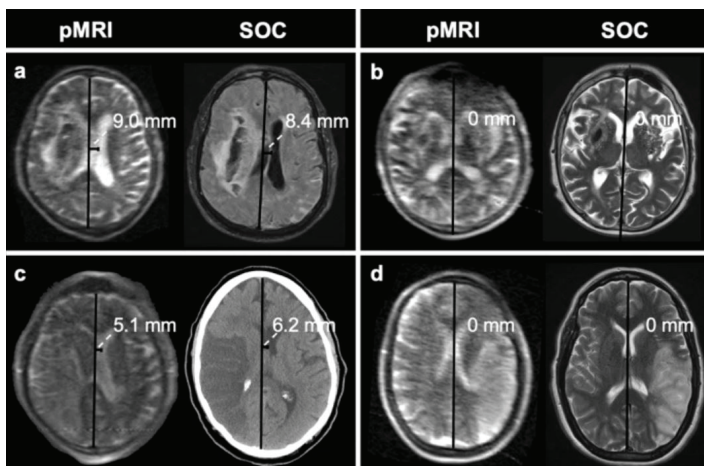
### Highlights from Discussion Section

*“We report the use of low-field pMRI for bedside assessment of MLS in patients with IS and ICH. This approach enabled the acquisition of bedside neuroimaging exams that visualized MLS, a well-known marker of mass effect and cerebral edema<sup>5,10,11,37</sup>.*

*We show that MLS measurements on pMRI images are consistent with measurements obtained on conventional MRI and CT studies. We also demonstrate that MLS on pMRI neuroimaging is associated with worse discharge functional outcome, recapitulating a well-established clinical relationship<sup>5,6,7,8,9,10,11</sup>.”*

### Relevance of Study

Observational study of 102 patients from two hospitals demonstrated the Swoop portable MRI can identify and quantify midline shift with clinically significant accuracy, demonstrating the utility of Swoop as a bedside tool for monitoring mid-line shift and predicting worse discharge function outcome.



Example midline shift measurements on portable MRI (pMRI) and standard-of-care (SOC) imaging exams. (a) 81-year-old male with right intracerebral hemorrhage. Midline shift was measured to be 9.0 mm and 8.4 mm on the pMRI T2-weighted (T2W) and standard-of-care (SOC) MRI fluid-attenuated inversion recovery (FLAIR) images, respectively. (b) 43-year-old male with right intracerebral hemorrhage. No midline shift was measured on either pMRI T2W or SOC MRI T2W exams. (c) 71-year-old male with right M1 occlusion. Midline shift was measured to be 5.1 mm and 6.2 mm on the pMRI T2W and SOC CT images, respectively. (d) 44-year-old female with left M2 occlusion. No midline shift was measured on either pMRI T2W or SOC MRI T2W exams.