

## Portable Magnetic Resonance Imaging for ICU Patients

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### Study

Prospective, nonrandomized, observational study at one institution. Nineteen ventilated patients with laboratory-confirmed Covid-19 infection. Patients selected for imaging had any of the following: 1) unexplained encephalopathy or coma, 2) seizures, 3) focal neurologic deficit, or 4) abnormal head CT. Imaging was performed in each patient's ICU room with a portable, self-shielding, 0.064-T MRI.

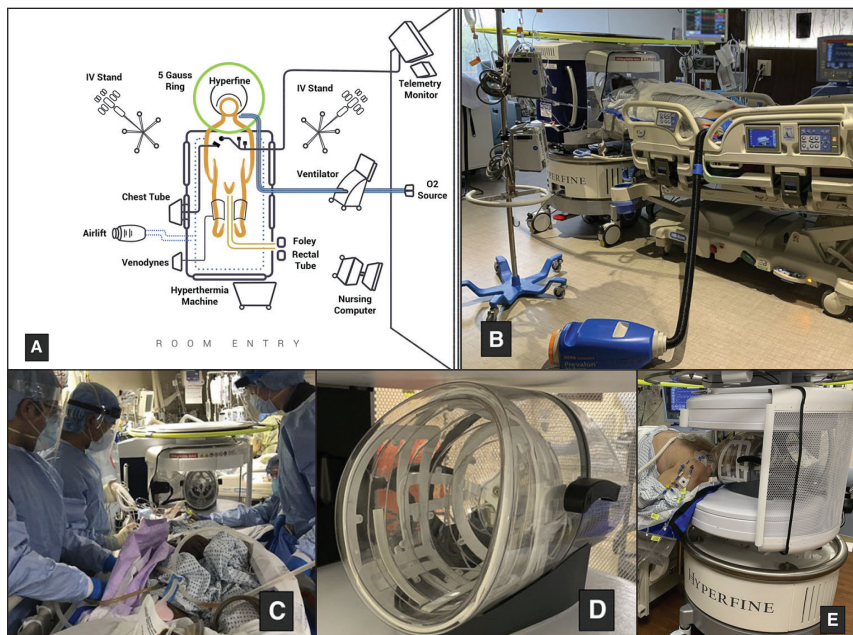
### Main Results

*"Among 19 patients, 20 MRI scans in seven ICUs were acquired between April 13, 2020, and April 23, 2020. No adverse events to patients or staff from MRI acquisition were reported. In 12 patients, abnormal findings were seen, which included increased fluid attenuated*

*inversion recovery signal (n = 12), hemorrhage (n = 3), and diffusion-weighted imaging positivity (n = 3). Imaging led to changes in clinical management in five patients."*

### Relevance of Study

Two neurosurgeons and a neuroradiologist reviewed image acquisitions for 20 patients and assessed their utility in clinical practice. Based on these findings changes in clinical mgmt were made for 25% of the patients who would not have otherwise been imaged. These included the diagnosis and treatment of venous thrombosis, cerebral infarction (patient illustration 1), and the involvement of palliative care (patient illustration 2), additionally, three patients underwent a lumbar puncture as a result of the MRI.



Portable MRI room setup.

A, Key features of the portable MRI room setup, as demonstrated in a coronavirus disease 2019-ICU.

B, The patient positioned for imaging. The bed is turned 90° relative to the ventilator and wall oxygen sources to minimize circuit disruptions. The bed is tilted in ~10° Trendelenburg.

C, The mobility team moves the patient into the MRI gantry.

D, The receive coil.

E, The patient's head secured in the transmit-receive coil.