



# Clearing the Runway: An Innovative Approach to Preparing an Intensive Care Unit Patient for a Magnetic Resonance Imaging Scan

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**ABSTRACT:** Intensive care unit (ICU) patients need vital examinations, such as MRI, for diagnosis and to determine a treatment plan. In this institution, ICU patients were transported to the magnetic resonance imaging (MRI) area where an assessment is performed. This takes place away from the ICU area, thereby increasing the risk for issues to occur without proper support. Developing a safe streamlined process for ICU patients going for MRI will decrease time and provide for safe transport while away from the critical care setting. A quality improvement project was developed to address this issue. A communication plan was developed to coordinate transport of the patient to MRI area, bypassing any other stops in radiology. Performing the patient assessment in the ICU setting instead of in the Radiology Department showed that most issues causing delays for the patient were caught and addressed before the patient was transported to the MRI area. By preassessing the patient and having both the patient and scanner ready, patient safety, patient and staff satisfaction, and efficiency are increased while maintaining a high standard of care. (*J Radiol Nurs* 2014;33:147-151.)

**KEYWORDS:** ICU; Transport; MRI; Handoffs; Assessment.

Intensive care unit (ICU) patients have high acuity requiring specialized care when away from the critical care setting. Diagnostic imaging may be a component of their care. One of the challenges with the ICU patient population is maintaining a safe environment with all of the necessary life support equipment when away from the ICU. When an ICU patient travels to the magnetic resonance imaging (MRI) radiology area, the patient may be away from the ICU for 1 to 2 hr. There is a higher likelihood of problems during transport with sicker patients (Day, 2010). Delays in patient care compromise patient safety when issues

are found during the assessment such as devices that are not MRI compatible, not having an appropriate line or intravenous (IV) route to administer contrast, or the inability of the patient to physiologically tolerate lying for an extended period of time.

## BACKGROUND

Literature related to the transport of critical patients to tests and procedures is limited. A best practice as to the best way to address this issue was not found in the literature. Improved communication and pretransport planning can reduce or eliminate complications and adverse events in critically ill patients during transport (McLenon, 2004). Preplanning is critical to safe patient care (Ott, Hoffman, & Hravnak, 2011). In the Radiology Department, patients are typically there for brief episodes of care and many times just a single encounter. It must be ensured the radiology area is ready for the patient with equipment, coverage, and the scanner (Greenawalt, 2012; Ott et al., 2011).

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## PROBLEM

In this large teaching facility, the ICU patients are transported to the MRI area by the ICU registered nurse (RN), an escort, and potentially a respiratory therapist. Once in the radiology area, an assessment is performed to identify IV access, to screen for MRI safety, to assess for contrast administration, to assess medications, and to evaluate if the patient is able to tolerate lying flat for an extended period of time. These assessments take place away from the ICU, away from the needed support that patients and staff rely on. Studies have shown that there is an increased risk of complications when transporting critically ill patients (Berube et al., 2013; Greenawalt, 2012; Jarden & Quirke, 2010; Livy, 2010; McLenon, 2004). Once cleared for the MRI, the patient may have an additional wait for the scanner to be available and ready. It is imperative that the same monitoring and level of care is provided during and after the transport as in the ICU setting (Day, 2010; Greenawalt, 2012; McLenon, 2004; Ott et al., 2011).

When patient issues occur, delays can result in the ICU patient being away from the critical care unit for a prolonged period of time. This leads to concern and frustration for both the radiology and the critical care nursing staffs. Another factor is that in the MRI waiting and holding areas, there is a mix of inpatients and outpatients, as well as pediatric and adult patients. This demographic variability makes it challenging if there is an ICU patient who needs a higher level of care and privacy.

After brainstorming potential solutions and looking to the literature for other interventions and possible solutions such as using a beside tool (Balcom et al., 2012), a transport tool (Jarden & Quirke, 2010), or a transport team (McLennon, 2004), a quality improvement project was initiated to decrease the time that patients spent away from the ICU when receiving an MRI scan. The project involved having a radiology RN go to the patient's bedside to prescreen and assess the patient before being transported to the MRI area when the scanner would be ready for the patient. This intervention was chosen over others because of being able to decrease handoffs, address multiple issues, and address them on the spot using the MRI RNs to their full scope of practice.

The goal was to decrease time away from the ICU and to provide safe, efficient transport from the critical care setting to radiology by developing a safe streamlined process for ICU patients receiving an MRI scan.

## BASELINE MEASURES

A thorough review of the ICU patient flow process through the MRI area was completed to identify barriers and frequent delays. Data was collected on 25 pa-

tients over a period of 3 weeks. A designated RN followed each ICU patient for a period of 3 weeks through the process from the time they were called for the MRI scan until the time they left the radiology area.

Data collected during this time frame included if the case involved contrast administration, the scheduled appointment time, the number of phone calls made to the ICU before the examination, the time the patient was called to the radiology area, the time the patient was on the MRI table, any delay, open table time, and the reason for any delays.

A survey about questions related to satisfactions with the current process, typical delays encountered, and perception of patient safety was also completed by MRI RNs, MRI technologists, and ICU RNs.

## METHOD

Overall, data was collected from 51 ICU patients who had an MRI (25 baseline and 26 during the pilot). The data collected focused on issues that potentially caused delays (eg, IV tubing that was not long enough, MRI compatibility issues, and so on). During the pilot, the radiology RN assessed the patient in the ICU to ensure that the patient was completely MRI ready. A communication plan was in place to coordinate moving the patient straight to the MRI bypassing any other stops (such as the waiting area or assessment area) in the Radiology Department. Surveys to assess satisfaction levels before and after the pilot were completed by the MRI technologists, ICU RNs, and MRI RNs.

## PLAN

The project was approved by the Institutional Nursing Critical Care Practice Committee, ICU nursing leadership, radiology MRI multidisciplinary leadership teams, and anesthesia and escort staff. Institutional review was not needed for this quality improvement project as advised by the institutional review committee.

The radiology RN monitored the list of all inpatients scheduled for an MRI. All ICU patients were identified and a goal start time for the MRI was set. The radiology RN would assess the patient in ICU room in collaboration with the ICU RN before the MRI. This would ensure that the patient was completely ready and stable enough to travel to the MRI area. Once the patient was MRI ready, the radiology RN would notify the MRI technologists. The MRI technologists would then page the radiology RN when the time was right and the table would be ready. The radiology RN would notify the ICU RN who would then bring the patient straight to the MRI machine bypassing any other stops in the Radiology Department. The MRI scan would then take place, and the patient would be able to immediately return to the ICU.

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