PSO NAVIGATOR™

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When Seeing Clearly Doesn't Solve the Problem: Wrong-Site Imaging

Although inadvertent imaging of the wrong site is rare, it may have significant effects on the patient—largely ranging from delayed diagnosis to unnecessary additional exposure to radiation. One study identified 45 events in which the wrong site was scanned due to wrong-study or wrong-patient errors over a period of six years; of these, 20% resulted in significantly increased exposure to radiation for the patient (Rubio and Hogan).

Wrong-site imaging errors may be attributed to breakdowns in communication, reluctance to seek clarification from the ordering physician, and productivity pressures.

WHAT WE ARE SEEING

A search of the ECRI Institute PSO database identified 17 events involving imaging of the wrong site that occurred between January 2011 and March 2015. Wrong-site imaging errors included the following:

- Imaging of the wrong side
- Imaging of the wrong site (i.e., performance of the wrong study)
- Use of wrong patient record or order

See the figure, "Breakdown of Wrong-Site Events."

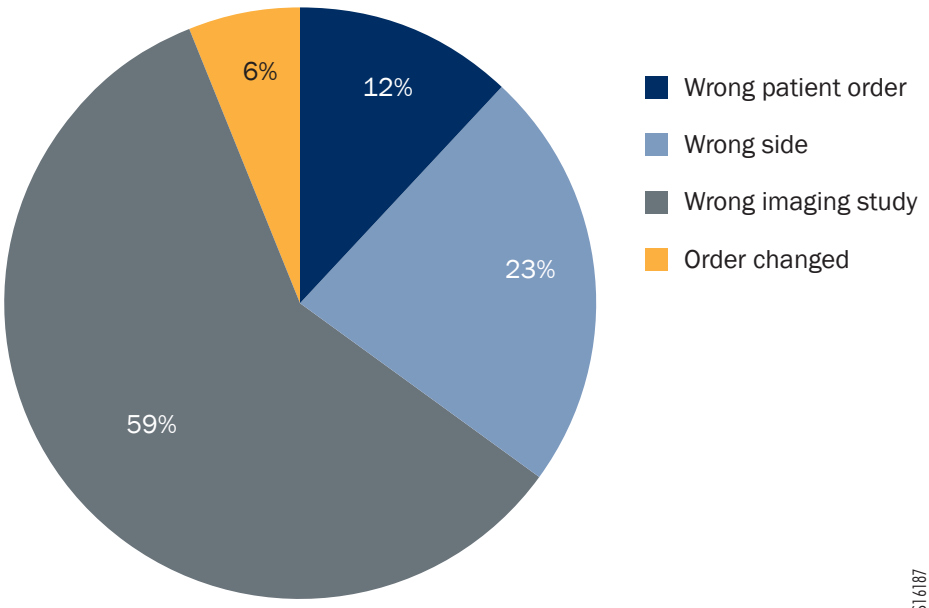
One root cause of wrong-site imaging seen is productivity (or throughout) pressure. For example, in this event seen by ECRI Institute PSO, the technician was overwhelmed by a sudden influx of patients:

- *We had multiple patients come over from the emergency department. We thought this patient was here for [a certain type of] scan, and we recorded the wrong test by the patient's name. When questioned, the patient noted symptoms in that general area. We did not realize we performed the wrong test until the exam was finished.*

Another factor seen in several wrong-site imaging events is the performance of the wrong study, due to misreading the order or reading the wrong patient record. These are evident in the following two events:

- *The technologist went to image the patient; an x-ray of the abdomen was ordered. The patient's chest was imaged. The error was discovered when the radiologist read the study.*
- *The patient was scheduled for an imaging study of the chest, but imaging of the brain, which was ordered for another patient, was performed instead.*

Figure. Breakdown of Wrong-Site Events (n = 17)



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Several events involved wrong-side imaging. In two, the wrong side of the patient's ribs were imaged; in another, the wrong leg was imaged. Another event demonstrated a related concern, the reversal of a film:

- *I performed an x-ray of the patient. After the doctor reviewed the image, I noticed that my "right" marker was on the left side. I reviewed the prior films in the patient's record, repeated the exam, and this time requested that another provider present verify my marker placement.*

One factor involved in most events seen is a lack of effective communication. For example, a data review by the Pennsylvania Patient Safety Authority identified the following commonalities among wrong-site imaging events ("Applying"):

- Sharing of incomplete or inaccurate information
- Incomplete or insufficient documentation
- Lack of preprocedure verification—e.g., time out

An event seen by ECRI Institute PSO demonstrates the importance of clear communication among the care team:

- *The order was placed by the physician assistant and was changed by the imaging technician without informing the physician assistant. The technician reported that she had changed it to fit [another set of parameters]. The patient was required to repeat the imaging study to see the area of concern.*

RISKS INHERENT IN WRONG-SITE IMAGING

Although requiring an additional imaging study may not seem a severe consequence, as indicated by the fact that multiple events were submitted to ECRI Institute PSO with an AHRQ harm score of "no harm: event reached the patient," the patient must still undergo an additional imaging study and be subjected to radiation that would have otherwise been avoided.

"There are many reasons wrong-patient or wrong-study events deserve to be treated with the same seriousness as wrong-site, wrong-procedure, and wrong-person surgeries," write the authors of a 2015 study (Rubio and Hogan). Among these reasons are unnecessary radiation exposure, the possibility of missing a serious diagnosis, a loss of credibility, and potential for liability. (Rubio and Hogan)

Reducing Radiation Exposure

The Joint Commission's 2011 Sentinel Event Alert, "Radiation Risks of Diagnostic Imaging," provides guidance regarding how to reduce exposure to unnecessary radiation. Among its recommendations is awareness that "communication among clinicians, medical physicists, technologists, and staff" is a contributing factor in radiation dosing events. The Joint Commission also points to the ALARA ("As Low As Reasonably Achievable") guidelines issued by the Nuclear Regulatory Commission, as well as the "Image Gently" campaign from the Society for Pediatric Radiology and the "Image Wisely" campaign from the American College of Radiology, Radiological Society of North America, American Association of Physicists in Medicine, and the American Society of Radiologic Technologists. (Joint Commission)

SEEKING SOLUTIONS FROM OUTSIDE RADIOLOGY

Because many of the events seen seem related to the actions of individual staff members, it may be thought that solutions likewise aimed at the individual may be the answer. However, such low-impact strategies may not be effective. For example, one study found that, over the course of four years, education- and reminder-based initiatives were largely ineffective. Interventions tested during this time included safety fairs, town-hall meetings, interviews, written reprimands, skits, and reminders on badges and in e-mails; yet, the error rate remained unchanged. However, a second attempt that was integrated into the system also failed. This intervention was too unwieldy, and it was

determined that verifying that the patient's identity was confirmed in the information system did not fit the workflow. (Rubio and Hogan)

Then, a staff member suggested a two-person time-out prior to all radiology procedures, including imaging scans. This two-staff member process confirmed the patient's name, medical record number, and the study to be conducted. The order and patient armband were also verified, and a hard stop was implemented if the patient did not have an armband. Test implementation found that this process added an average of less than 13 seconds to each patient encounter. When fully implemented, wrong-patient and wrong-study errors decreased by two-thirds. (Rubio and Hogan)

A similar tool that may be used to reduce likelihood of error in imaging studies is the Joint Commission's Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery (information about the Universal Protocol may be found as part of the Joint Commission's National Patient Safety Goals). This may help providers ensure the proper patient identification, proper site for the study, and the proper imaging study to be conducted. Other strategies that can support safety practices in imaging include the following ("Applying"):

- Departmental leadership support to ensure compliance and seek feedback on implemented policies and procedures
- Verification of documentation
- Empowerment of staff to verify orders with the ordering physician
- Sharing of near misses and adverse events, as well as lessons learned from them, with staff at meetings

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