



Pennsylvania Patient Safety Reporting System

Patient Safety Advisory

Produced by ECRI & ISMP under contract to the Pennsylvania Patient Safety Authority

USE OF X-RAYS FOR INCORRECT NEEDLE COUNTS

PA-PSRS received a report of an incorrect needle count during surgery in which a missing 7-0 suture needle could not be located. After searching the patient, the operating table, floor, and waste receptacles with a needle magnet and failing to locate the needle, the surgeon declined an x-ray of the surgical site, stating that the needle was too small to be visualized on an x-ray.

The clinical literature provides conflicting evidence for when x-rays may be useful in locating lost surgical needles.

During the test phase from November 2003 through April 2004, involving 22 volunteer facilities, PA-PSRS received reports of occurrences in which needle, sponge, and equipment counts

were incorrect, incomplete or not performed. Problems with needle counts were the most commonly reported (50%), followed by equipment (22%) and sponge (15%) counts. All occurrences of incorrect needle counts were reported as Incidents, and the majority (78%) were coded as Harm Score D—an event requiring monitoring to confirm that it resulted in no harm and/or required intervention to prevent harm. Sixty-four percent of reports of incorrect needle counts indicated that an x-ray was performed to search for potentially retained needles.

The clinical literature provides conflicting evidence for when x-rays may be useful in locating lost surgical needles. A 2001 study found that suture needles as small as 8-0 could be visualized on x-ray with unassisted eyesight.¹ However, the results of a more extensive follow-up study² conflict with these earlier findings. In a 2003 Australian study, the smallest needle that could be visualized by a majority of observers on at least one of three different films was 17 mm (corresponding to a 5-0 suture size), and only 13% of observers were able to find a 13 mm needle (6-0 suture size).

The authors of the 2003 study felt that x-rays for missing needles smaller than 13 mm (6-0 suture size) would expose patients to unnecessary radiation for a very small chance of locating retained needles. Participants in this study (which focused on the thoracoabdominal cavity) chose department x-ray

(51%) as the preferred mode for detecting retained needles, followed by a mobile image intensifier (39%), and a portable x-ray machine (7%). Departmental radiography is not feasible in the OR, however, where a mobile image intensifier may be the best method.

Some healthcare facilities have developed formal policies or procedures for how clinicians respond to cases of incorrect counts following surgery—in particular when x-rays are used to search for potentially retained needles. Barrow, the author of the 2001 study, states that hospital staff reported decreased anxiety over when to order such imaging after a formal policy was developed and implemented.

Notes

1. Barrow CJ. Use of x-ray in the presence of an incorrect needle count. *AORN J* 2001 Jul;74(1):80-1.
2. Macilquham MD, Riley RG, Grossberg P. Identifying lost surgical needles using radiographic techniques. *AORN J* 2003 Jul;78(1):73-8.

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An Independent Agency of the Commonwealth of Pennsylvania

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