Quarterly Update on the Preventing Wrong-Site Surgery Project

The revised graph of the number of reports of wrong-site surgery events by quarter has been extended through the first quarter of 2008 and updated on the Pennsylvania Patient Safety Authority's Web site (see Figure 1).* One more wrong-site surgery event has been reported for the fourth quarter of 2007, increasing that number from 13 to 14, and 18 events have been reported for the first quarter of 2008. Five of the 18 were limited to punctures of the skin for the injection of local or regional anesthesia preparatory to the scheduled procedure, still wrong-site surgery as defined by the National Quality Forum.[1]

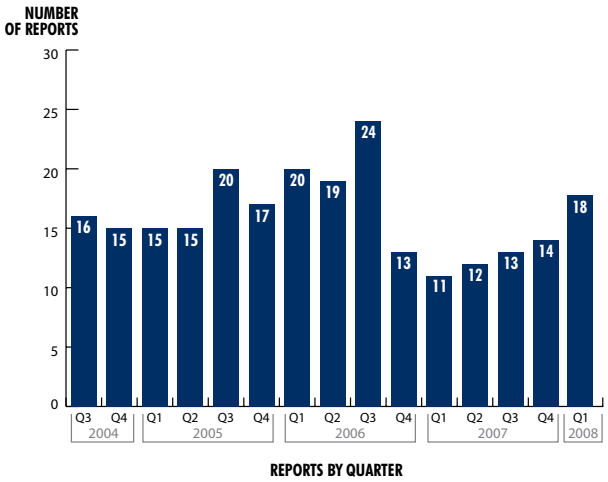
Detailed wrong-site surgery reports continue to be submitted by cooperating facilities in follow up to reports of near-miss and actual wrong-site events. By comparing the processes that were and were not significantly associated with trapping the error before harm occurred, PA-PSRS clinical analysts can better understand which processes are associated with successfully catching these rare events. As of May 29, 2008, a cumulative total of 70 results from in-depth surveys about near-miss events and a cumulative total of 28 results about actual wrong-site surgery events from 62 cooperating facilities have been received through PA-PSRS. The compliance rate with the request for detailed information within 30 days of the event has been more than 75%. In the previous quarterly update, six elements of a prevention program for wrong-site surgery were noted to be more commonly present when errors were trapped. This update identifies another eight elements that differ between the two groups (Table 1). Reports of near misses were significantly more likely to indicate the following:

- The time out was done after the patient was draped.
- The surgeon's records and diagnostic images were available in the operating room (OR).
- Diagnostic tests were reviewed by the surgeon before the incision was made.
- The patient's identification, the procedure, and antibiotic administration were addressed as part of a preoperative briefing with the surgeon.

Paradoxically, verification by the patient of the information in the documents was always done in the wrong-site surgery events, but not always done in the near-miss events. It is possible the near-miss reports that indicated a lack of verification intended to convey not that the patient was excluded, but that the patients' responses did not agree with the written information.

The analysts are pleased to report that 64 hospitals and 69 ambulatory surgical facilities voluntarily

Figure. PA-PSRS Wrong-Site Surgery Reports by Quarter



completed assessments of the elements on the Authority's "Self-Assessment Checklist for Program Elements Associated with Preventing Wrong-Site Surgery." By comparing facilities that did and did not report having each element on the checklist against existing reports of wrong-site surgery events, the analysts demonstrated that several elements were more commonly found in facilities that reported no wrong-site surgery events (see Table 2), including the following:

- Consents require the correct patient name, the exact description of the procedure, and the site or side, if applicable.
- The checklist prior to the day of surgery, for documentation of the preoperative verification and reconciliation, includes the schedule.
- The site marking occurs after reconciliation of *all* relevant documents.
- The time out with the entire surgical team, after prepping and draping, requires the surgeon to request other members of the OR team to speak up if their understanding is different than stated during the time out.
- The verification of the specimen specifically includes the patient name.

Two elements had paradoxical correlations, as follows:

- Involvement of an alert patient or surrogate in the site marking was more common among facilities that had reported wrong-site surgery. Possible explanations include an improvement after the reported event, vulnerability among those that have not reported an event, or a more critical inclusion of compliance, rather than just policy.
- An intraoperative time out to verify spine or rib level, if applicable, with verification by fluoroscopy

* The Pennsylvania Patient Safety Authority maintains an online collection of articles, educational resources, and data snapshots pertaining to wrong-site surgery. This collection, "Preventing Wrong-Site Surgery," is available at http://www.psa.state.pa.us/psa/cwp/view.asp?a=1293&q=448010.

Table 1. Current Preliminary Associations between Elements of a Prevention Program for Wrong-Site Surgery and Success in Trapping Wrong-Site Errors before Harm Occurred

ELEMENT	NEAR MISSES	WRONG-SITE SURGERIES	SIGNIFICANCE (P LESS THAN)
Surgeon reconciled discrepancies in documents	31 of 36	6 of 18	0.001
Time out done after draping*	44 of 50	14 of 27	0.001
Someone raised a concern	38 of 48	6 of 24	0.001
Surgeon responded to the concern raised	31 of 33	10 of 19	0.001
Surgeon did a preoperative verification	44 of 47	18 of 27	0.01
Identification involved wristband and chart	47 of 47	22 of 26	0.01
Surgeon's records available in the operating room (OR)*	40 of 41	22 of 27	0.05
Diagnostic images available in the OR*	28 of 29	10 of 13	0.05
Diagnostic tests reviewed by surgeon before incision*	24 of 24	10 of 12	0.05
Patient identification verified during preoperative briefing with surgeon*	26 of 26	10 of 12	0.05
Procedure verified during preoperative briefing with surgeon*	26 of 26	10 of 12	0.05
Antibiotics verified during preoperative briefing with surgeon*	19 of 20	6 of 9	0.05
Mark visible during time out	37 of 43	13 of 21	0.05
Information verified against patient's response*,†	40 of 49	25 of 25	0.05

* One of eight additional elements of a prevention program for wrong-site surgery not present in results presented in March 2008.

† According to the submitted results, the patient verified information in the documents in every wrong-site surgery event, but not in every near miss. It is possible that near-miss reports were intended to convey that the patients' responses did not agree with the written information.

or radiograph (x-ray) using a radiopaque marker firmly affixed by the operating surgeon was also more common among facilities that had reported wrong-site surgery. Overall compliance with this element was low (49%). An additional explanation for this paradox might be that facilities not doing such surgery answered "no" rather than "not applicable."

A revised version of the checklist is available on the Authority's Web site for use by interested facilities and by states collecting wrong-site surgery events. The Authority encourages facilities to assess their program for preventing wrong-site surgery using the checklist.

What do these two surveys reinforce? Combined with earlier studies of events reported through PA-PSRS, the analysts feel confident making the following points:

- The exact procedure, including side or site, should be on the initial request to schedule the case.
- All personnel handling preoperative documentation should reconcile all discrepancies whenever the documents cross their desks.
- No patient should present to the facility the day of surgery with discrepancies in any of the essential preoperative documents; no patient should enter the OR with discrepancies; and the attending surgeon should correct all discrepancies.
- Both the preoperative verification of the documents on the day of surgery and the marking of the site should involve an alert patient or surrogate prior to the patient entering the OR. The healthcare provider who marks the site should precede the process by verifying all relevant documents with each other and the patient. The mark should be visible when the patient is prepped and draped for any procedure and should be referred to during the time out.
- Anesthesia providers should do time outs before regional blocks.
- The final time out should be done just before the incision is made. The information should be verified using the documents and marks, not memory.
- Surgeons should explicitly empower members of the OR team to speak up if their understanding is different than stated in the time out.

Anecdotally, the major problem discussed by facilities is the additional time surgeons feel it takes to see the patients in the preoperative holding area before transport to the OR. The analysts have no doubt that the visit is valuable. However, the time spent may not be trivial. Through the courtesy of 27 facilities in the Delaware Valley,* the analysts obtained 249 observations of the time spent doing a preoperative verification. The median time spent was 2 minutes and the average was 2.8 minutes, compared to a median of 1 minute and an average of 1.5 minutes for the 227 time outs. The analysts have calculated that a busy surgeon doing 500 operations per year, with a 1 minute walk each way, plus a 2.8- minute preoperative visit, would spend 40 hours over the course of the year on this activity. The analysts suggest that facilities make the process as convenient as possible for the surgeons to minimize any time expenditures other

* Observations were provided courtesy of the Health Care Improvement Foundation.

Table 2. Statewide Survey of Elements in Facilities' Wrong-Site Surgery Prevention Programs

ELEMENTS	FACILITY TYPE	FACILITIES WITH WRONG-SITE SURGERIES			FACILITIES WITH NO WRONG-SITE SURGERIES			SIGNIF. (P LESS THAN)	OVERALL PERCENT COMPLY
		Yes	No	Yes (%)	Yes	No	Yes (%)		
The consent must include the correct patient name.	Hospitals	24	3	89%	37	0	100%	0.05	98%
The consent must include the correct patient name.	All	34	3	92%	96	0	100%	0.01	98%
The consent must include the exact description of the procedure.	Hospitals	24	3	89%	37	0	100%	0.05	98%
The consent must include the exact description of the procedure.	All	34	3	92%	96	0	100%	0.01	98%
The consent must include the site or side, if applicable.	Hospitals	23	4	85%	37	0	100%	0.05	96%
The consent must include the site or side, if applicable.	All	33	4	89%	95	1	99%	0.01	96%
The required standardized checklist prior to the day of surgery, for documentation of the preoperative verification and reconciliation, includes the schedule.	All	15	9	63%	45	9	83%	0.05	77%
Site marking occurs after reconciliation of *all* relevant documents.	Hospitals	16	10	62%	33	4	89%	0.01	73%
Time out prior to procedure, involving entire surgical team, after prep and drape, requires the surgeon to request other members of the operating room (OR) team to speak up if their understanding is different than stated during the time out.	Ambulatory surgical facilities	4	6	40%	35	11	76%	0.05	68%
Required verification of the identity of the specimen in OR must include the patient name.	All	23	6	79%	69	4	95%	0.05	90%
Site marking involves alert patient or surrogate.*	All	34	2	94%	69	23	75%	0.05	80%
Intraoperative time out to verify spine or rib level, if applicable, requires verification by fluoroscopy or radiograph (x-ray) with radiopaque marker firmly affixed by operating surgeon.*	All	25	11	69%	31	48	39%	0.01	49%

* Percentage of elements was higher in facilities with wrong-site surgeries.

than efficient verifications of the documents and the discussions with the patients before they enter the OR.

A new tool to monitor compliance with the elements of any policy for preventing wrong-site surgery is available on the Authority's Web site. The Authority encourages facilities to monitor their policies for preventing wrong-site surgery by using this tool.

The analysts are planning to collect experiences with marking pens and hope that facilities will help share those experiences with others.

The analysts will continue to track and study all reports of wrong-site surgery events and near misses. Hospitals and ambulatory surgical facilities are encouraged to continue to share, through PA-PSRS, facility assessments and the success or failure of any efforts to improve protocols to insure correct sites. Facilities have already provided some enlightening anecdotes, and the analysts anticipate that additional stories will be informative. Facilities outside Pennsylvania are also welcome to share this information.

Note

1. National Quality Forum. Serious reportable events in healthcare—2006 update. Washington DC: National Quality Forum; 2007.

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