• *Research Hypotheses.* We hypothesized that the use of a standardized and formulated checklist during handoff would improve communication between the anesthesia provider and the receiver (eg, RN), resulting in reduced information loss during report, higher adequacy of report, lower rate of callbacks for information clarification, and reduced time in the PACU for the anesthesia provider.

• *Randomization.* A computer-generated list of random numbers was used for participant allocation in a 1:1 ratio on the day of surgery to 2 groups. In group 1, the anesthesia provider performed the PACU handoff using the formulated checklist. In group 2, the anesthesia provider performed the PACU handoff without using the checklist.

All anesthesia providers were instructed on how to use a checklist but were blinded to the content of the real checklist (see Figure 1) until they were enrolled in the checklist group (group 1). In the morning, each anesthesia provider participating in the study received a sealed envelope that contained a randomized group assignment, and the checklist was given only to those assigned to the checklist group. The checklists were collected immediately after the handoff occurred to prevent circulation into the nonchecklist group. All PACU nurses assigned to the adult inpatient and outpatient areas were eligible to participate as receivers in the study.

Depending on group assignment, the anesthesia provider delivered a verbal report either with a checklist or without a checklist after the patient arrived at the PACU. After the handoff was completed, a sealed data collection sheet (Figure 2) was given to the PACU RN. The PACU RNs were prompted at the beginning of each shift, during morning rounds, to complete the data collection sheets. The data collection sheet was filled out immediately after the verbal handoff occurred and was collected by the data collector every hour. Patient-identifiable information was removed before data analysis, and medical record numbers were kept on an encrypted hospital computer.

• *Sample Size Justification.* An a priori power analysis was performed to determine the needed sample size. From a previous pilot study, we estimated that receivers (ie, RNs) during handoff from the nonchecklist anesthesia provider group had a success rate of 67% (4 of 6*100%) of correctly identifying 6 key elements of the checklist. A sample size of 26 per group was estimated to have 80% power to detect a difference of 28% (ie, those receiving from the checklist anesthesia provider group would have a success rate of 95%) at a 2-sided significance level of .05. To account for 10% missing data, we enrolled and randomized a 60 anesthesia providers (30 per group) into the study.

• *Data Collection.* The following sections highlight the 4 measures or components recorded in the data collection sheet (see Figure 2).

To be completed by the PACU RN receiving report

PATIENT MRN:

Report with Checklist? YES /NO

KEY ELEMENTS

Please circle yes or no if the information listed was given in the handoff:

1. Patient identified: YES / NO
2. Patient allergy information given: YES / NO
3. Antibiotic information given: YES / NO
4. Intake and output: YES / NO
5. EBL information: YES / NO
6. Pain management discussed: YES / NO

HANDOFF QUESTIONS

1. Did you need to clarify information or call back the provider after the anesthesia provider completed the handoff? YES / NO
2. Was the handoff adequate: YES / NO

To be completed by the data collector

Information score:
Clarification/Callback: Yes (1)/No (2)
Report adequate: Yes (1)/No (2)

Time in PACU:
Anesthesia End:
TOTAL TIME:

Figure 2. PACU Data Collection Sheet

Abbreviations: EBL, estimated blood loss; MRN, medical record number; RN, registered nurse; PACU, postanesthesia care unit.

1) **Information score:** The PACU RN attempted to recall 6 key elements of the handoff after a report was given. A numerical rating score on a scale of 0 through 6 was calculated, with 0 representing that none of 6 key elements was correctly recalled and 6 being the highest score, wherein all 6 key elements were correctly recalled. The 6 key elements were defined as follows:

- Patient identification using the patient's name band
- Patient allergy information
- Antibiotic information
- Intake and output
- Estimated blood loss
- Pain management

2) **Handoff adequacy:** The PACU RN rated the handoff as adequate or inadequate in a yes or no question format. Definition of an adequacy rating was discussed in a staff meeting with the PACU nurses and managers present. An adequate report was defined as a verbal report that allowed the PACU RN to begin direct patient care without having to look up additional information. This included performing a clinical assessment, administering medications, and patient positioning. All PACU RNs received instructions orally as well as by written communications sent electronically through the hospital email system.

3) **Information clarification:** The rate of callbacks for information clarification was determined by the PACU