ORIGINAL ARTICLE

The Effect of Instructional Supervision by an Operating Room Assistant on First-Case Starts

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Background: *Delays in starting first cases of the day are a common topic associated with high economic costs.*
Purpose: *This study aimed to determine if an operating room (OR) assistant using an instructional supervision program could reduce the tardiness of first-case starts.*
Design: *A prospective study was conducted. Data from four ORs were used to compare the effectiveness of an instructional intervention to reduce delays in starting first cases of the day.*
Methods: *The first cases in two ORs received instructional supervision by an OR. The primary endpoint was the percentage of first cases that started on time. Other endpoints were the percentage of the team work score of OR staff and the percentage of patient satisfaction score.*
Finding: *Over 48 weeks, the effect of instructional supervision was evaluated in 960 first-case starts. In the instructional supervision group ($n = 480$), the percentage of first cases that started on time increased significantly (92.1% vs 71.7%; $P < .001$), and there was a higher percentage of the team work score (84.4% vs 76.7%; $P < .01$) and patient satisfaction score (88.3% vs 79.4%; $P < .001$).*
Conclusion: *Instructional supervision by an OR assistant can make a potential improvement in our on-time first-case starts per day.*

Keywords: *operating room, first-case starts, instructional supervision, research.*

OPERATING ROOMS (ORS) are the most cost- and revenue-intensive area in a hospital, given the fact that more than 40% of revenues generated,[1] and more than 60% of patients admitted to a hospital are treated in the OR.[2] A late start of the first surgical case of the day is a common source of frustration for patients and OR staff potentially affecting the rest of the scheduled patients.[3] Delays in the start of the first operation of the day often leads to the loss of expensive production capacity, meanwhile, significant conflict between OR staff may ensue.[4] According to data analysis and best practice sharing, nationwide benchmarking can be applied to identify and measure the effectiveness of interventions to reduce first-case tardiness in a university hospital OR environment.[5] However, data analysis remains complex with high economic costs. In undeveloped countries such as China, lack of data management

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capacity is a common phenomenon. But for the huge amount of operations in every Chinese large-sized tertiary comprehensive hospital, it is urgent to improve operational efficiency, especially to reduce the tardiness of first-case starts with minimum economic costs.

Starting each case on time every morning may result in not only an earlier finish, but also the potentially more efficient use of the OR throughout the day. OR efficiency can be influenced by additional interventions such as an efficient completion of the case and subsequent saved turnover time.[6] In two before-after controlled studies,[3,7] Kotter's eight-step change process to transforming an organization and multiple trainees in both the surgery and anesthesiology teams was applied to reduce the delay of first-case starts. A prior study showed that decreasing the supervision ratio had a large effect on tardy first-case starts.[8] There have been no prospective parallel controlled studies to specifically evaluate the effect of instructional supervision on starting first cases on time.

The time saved from starting first cases on time could be translated into one more additional short surgeries each day or a potential reduction in the amount of overtime paid to OR staff.[3] The effect of a late first-case-of-the-day start can be thought of as an increase in turnover times, with the increase each day being the time for the first case of the day to start divided by the number of turnovers in the same OR on the same day.[9] The aim of this study was to assess the effect of instructional supervision by an OR assistant on the percentage of first cases on-time starts.

Methods

Huashan Hospital is a large-sized tertiary comprehensive hospital in China with 40 ORs that provide surgical care in 12 disciplines, conducting about 35,000 surgical procedures per year.

A prospective parallel controlled study was designed. Data were from the surgical cases performed at its secondary surgical suite of eight ORs. From July 2013 to July 2014 (48 complete weeks), a total of 960 first-case starts in the four tentative rooms assigned were included in this study. Analysis was limited to cases performed on scheduled workdays. Weekends and the weeks including holidays were excluded. First cases from two ORs received the instructional supervision by an assigned OR assistant, first cases from another two ORs received none. The instructional supervision included resolution/assistance with lack of transport capacity of patients from the ward to the OR, incomplete patient records or missing laboratory results, missing equipment, and the late arrival of anesthetic staff or surgeon.[10]

To obtain the standardized data, a definition of starting on time was defined. It was regulated that all first starts in our surgical suite needed to have the patient physically present in each OR by 08:30 to 08:45 each day. Thus, we defined a first-start delay as any case that was physically presented in the OR after 08:45 each day. If any first surgical case did not meet this time standard, it was considered a delayed case. We calculated the percentage of first cases that started on time bimonthly. The primary endpoint was the percentage of first cases that started on time over 48 weeks.

Other endpoints were the percentage of the team work score of OR staff and the percentage of patient satisfaction of 4 or greater points. The team work score and patient satisfaction score were scaled as the following: score 5 indicating extremely smooth or satisfied; score 4 indicating quite a bit smooth or satisfied; score 3 indicating moderately smooth or satisfied; score 2 indicating a little bit smooth or satisfied; and score 1 indicating not at all smooth or satisfied. The team work score was obtained from anesthetists.

Statistical analysis was performed using Pearson χ^2 to compare each group, and average data were presented as standard mean and standard deviation.

Results

Over 48 weeks, the effect of instructional supervision was evaluated in 960 first-case starts. Four hundred eighty cases received the instructional supervision by an assigned OR assistant in two ORs, while 480 cases in another received no supervision. The characteristics of these cases are shown in Table 1. The cases were well matched and there were no significant differences between the two groups.