Impact of Multiple ‘Learners’ in a Neurosurgical Operating Room

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Disclosure

• None
Introduction

The operating room (OR) in an academic medical center often includes personnel in addition to those essential to the procedure. In addition to a surgeon, an anesthesiologist, a nurse, and a scrub technician or scrub nurse, there are often additional learners at different stages of education. These can include neurosurgical residents, medical students, student advanced practice providers, nursing students, tech students, interns, and orientees. There are occasions when multiple learners participate in the surgical care of a single patient. It is hypothesized by the authors that an excess of learners can be disruptive and effect the safety and efficiency of the environment in the OR. A survey was developed to query both learners and educators on their perceived effects of increased numbers of learners in the neurosurgery OR. Also, the relationship between the number of learners in the room and the time to turnover the room between cases was assessed.
Methods

A survey was developed and administered to both educators and learners following each surgery. Neurosurgeons, advanced practice providers, anesthesiologists, circulating nurses, and surgical technicians were categorized as educators; neurosurgical residents, interns, and students of any type were categorized as learners. Immediately following each surgery, educators and learners were surveyed by a single individual regarding their perceived safety of the environment in the OR, perceived ability of educators to effectively teach the learners, and the perceived ability of learners to effectively learn. Scores for each category ranged from 1-4, with higher scores representing decreased safety and decreased ability to teach or learn. The number of learners in the OR during the surgery was also noted.

Statistical analysis was done using IBM SPSS. Pearson’s coefficients were calculated to assess the correlation between number of learners in the OR and perceived safety, ability to teach, and ability to learn.
Results

The survey was administered following a total of 65 surgeries over a three month period.

A total of 195 responses were captured.

The average number of learners per case was 1.15, with a range of 0-4.

Approximately one third of cases (30.1%) had multiple (>1) learners involved.
Perception of Safety

Decreased safety

Number of Learners

$p<0.001$
Perception of Ability to Teach

Perception of Ability to Learn

$p<0.0001$

Decreased

Number of Learners

$p<0.0001$

Decreased

Number of Learners
OR Turnover Time vs 
# of Learners in Room

# learners per room (total number in sample)

\[ p-value = 0.006 \]

Turnover time is the time from when one patient leaves the operating room until the next patient enters the room.
Discussion

- Our study strongly supports concerns that multiple learners in the OR can effect perceptions of safety, the ability of educators to teach, the ability of learners and students to learn, and the room turnover time. While there was no significant impact on safety or efficiency of having a single learner in the operating room, it appears that additional learners may significantly compromise safety, efficiency, and the quality of the education perceived by both educators and learners. We expect that the negative impact of multiple learners is caused by a variety of factors, including increased room traffic and crowding, increased noise leading to challenging communication between caregivers, and additional distractions causing decreased attentiveness and engagement from. Our data suggests that limiting learners in the OR is key to providing excellent care, improving education experience, and to OR efficiency.
Summary Points

- Multiple Learners in the operating room can have a negative impact on:
  - The quality of learning environment
  - The perceived safety of environment
  - Turnover time