



Original contribution

Residents in tutored practice exchange groups have better medical reasoning as measured by script concordance test: a controlled, nonrandomized study



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Abstract

Study Objective: Clinical reasoning by anesthesiology residents in emergency situations where optimal management is uncertain could be improved by setting up a tutored practice exchange group. This study attempted to evaluate the impact of a practice exchange group (PEG), tutored by a senior anesthesiologist, on anesthesiology residents in emergency situations. Changes in clinical reasoning were measured by script concordance tests (SCT).

Design: We conducted a controlled, non-randomized study.

Setting and Participants: Participants are residents in anesthesiology in Rouen, Caen and Amiens University Hospitals.

Interventions: Two resident groups were made up without randomization. The first group was the control group and consisted of residents from Amiens University Hospital and Caen University Hospital. The second study group (PEG group) consisted of residents from Rouen University Hospital, who followed weekly PEG sessions. Two groups had the same learning objectives except the PEG.

Measurements: In both the control group and the study group, each resident's clinical reasoning was assessed in the same formal manner by SCT. The primary outcome measurement of this study was to compare SCT results in the study group with PEG training (PEG group) with those without (control group).

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Main results: Performance in the SCT, expressed as degree of concordance with the expert panel (95% CI), was better in the PEG group (64% [62.1%-66%]) than in control group (60% [57.5%-62.8%]) ($P = .004$).
Conclusion: Our study strongly suggests that an expert-directed, peer-conducted educational training program may improve the clinical reasoning of anesthesiology residents as measured by SCT.
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1. Introduction

The on-call period is an important component of anesthesiology residency training, because residents perform technical skills but, more importantly, they apply appropriate clinical reasoning to emergency cases, where clinical information may be incomplete and uncertainty may exist. The patient's condition may be critical and subsequent lack of time may not enable all required investigations. In addition, unstable vital parameters might make it more difficult to apply professional guidelines. Furthermore, no established recommendations are available regarding specific anesthesiology residency training in this context of emergency anesthesia care.

Peer learning or peer teaching is a method in which the student plays a direct role, not only as a teacher but also as a learner, by taking an active part in debates between peers [1]. This method has shown its efficacy in the teaching of clinical reasoning [2]. It is used particularly in practice exchange groups (PEG), also called peer or quality groups [3]. A PEG consists of a small group with same speciality physicians (peers) who meet regularly to review patient cases extracted randomly from their daily practice [4]. For each case, exchange between participants leads to a confrontation of practices. At the end of discussion, practitioners have to agree on a specific direction for action. If no satisfactory solution can be agreed upon, literature research is then initiated. In the context of continuing medical education, the purpose of these groups is to improve the quality of care, by comparison between peers and medical frames of reference [3]. This methodology has also been successfully used for initial medical education [2,5] but, to our knowledge, it has not yet been used for in anesthesiology residents who are confronted with emergency situations.

Therefore, this study attempted to evaluate the impact of anesthesiology residency training based on a PEG tutored by a senior anesthesiologist. Changes in clinical reasoning applied to anesthesia during emergency situations in a context of adult general surgery or obstetrics, were assessed by using the script concordance test (SCT).

2. Material and methods

2.1. Student selection

This prospective, controlled, non-randomized study was conducted among residents in anesthesiology from 3 French university hospitals (Rouen, Caen and Amiens). The Ethics

and Evaluation Committee for Non-Interventional Research of Rouen University Hospital approved the study in April 2013 (N°E2013-9) before beginning test. All participants received information before any study procedures were undertaken. After, residents in the anesthesiology training program were invited to willingly participate as subjects in the study.

Two resident groups were made up without randomization. The first group was the control group and consisted of residents from Amiens and Caen University Hospitals. The second study group (PEG group) consisted of residents from Rouen University Hospital who have attended a weekly PEG session since 2010. Three groups had the same learning objectives except the PEG. The control group also met weekly but not with the same methodological approach and not on the same case reports. In both the control group and the study group, each resident's clinical reasoning was assessed in the same formal manner by SCT.

2.2. Study procedures

2.2.1. Learning objectives

In the 3 university centers learning objectives for anesthesiology residents were French National Guidelines for anesthesia teaching, given to all participating residents at the beginning of their 5-year anesthesiology program.

The teaching schedule was similar for the 3 centers. This training program includes several types of learning. Students attend 1 or 2 days of specific topic lectures throughout the academic year. In addition, a weekly journal club is organized. Each centre also provides its anesthesiology residents with at least 2 training sessions on high-fidelity simulation. Assessment was common for the three universities.

2.2.2. Establishment of a tutored PEG

The PEG group of anesthesiology residents met weekly for 90 minutes at Rouen University Hospital under the supervision of a senior academic teacher. During any given session, 1 or 2 residents individually presented an anesthetic situation they had had to deal with during a recent emergency situation (obstetric case or adult emergency surgery cases). Cases were linked to difficulties associated with intensive care or daily practice. Following each case presentation, residents compared their practices in an open discussion. At the end of the exchange, the senior anesthesiologist helped when necessary to reach a final joint consensus with the approval of the entire group. The senior teacher routinely insisted on the importance of clinical reasoning based on a single diagnostic decisional

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