



Interrater reliability of paramedic student field performance evaluations

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LETTERS TO THE EDITOR

INTERRATER RELIABILITY OF PARAMEDIC STUDENT FIELD PERFORMANCE EVALUATIONS

To the Editor:—Competency in paramedicine is performance-based. The traditional form of evaluating the field performance of paramedic students is through direct observation by experienced preceptors. This format allows the student to be viewed in the contextual setting of real practice.

Valid field evaluations require credible behaviors for field performance and acceptable interrater reliability among evaluators. As educators, we assume that our preceptors are reliable based on their experience, thus frequently provide only a basic orientation covering a review of the evaluation form and requirements specific to the training program.

While I was serving as the program director for a university-based training program, faculty noted some severe deficiencies in the field performance of some students at the end of the field practicum. Yet, a review of paramedic preceptor evaluations of these students revealed passing scores. Our first step to investigate the reason for the discrepancy was to review the field evaluation form currently in use. We solicited input for all paramedics in the primary service program regarding entry-level behaviors via a survey. A panel consisting of the medical directors of the training and service programs and the faculty of the training program reviewed these behaviors. It was noted that there were only minor variations between the behaviors identified by

the paramedics and those on the evaluation form in use. Thus, the panel suggested only a recategorization of those behaviors.

The second step was to conduct a study to determine interrater reliability. Although we believed preceptor reliability was suspect, we could not ignore the possibility that faculty interrater reliability might also be questioned. We did not have the option of having two preceptors evaluate the same student's performance by direct observation. However, the three faculty were paired with a preceptor so that all three faculty were observers in two different dyads at some time during the data collection. Twenty-five patient encounters were observed, with faculty and preceptor independently completing the student evaluation form following the patient encounter.

Kappas between faculty ranged from 0.40 to 0.81, with a mean of $\kappa = 0.60$. Kappas were calculated separately for the preceptor and each faculty observer. Results ranged from 0.10 to 1.0, with a mean of $\kappa = 0.39$. Although there is no real test for significance, a κ of 0.40–0.59 is considered fair and 0.60–0.75 good.

Although interrater reliability between individual faculty was greater than interrater reliability between faculty and preceptors, the difference was not as significant as expected. Faculty agreed that because of their background and involvement in the training program, they believed they knew the standards of performance required and needed minimal guidelines.

Evaluators frequently use their past experience as the basis of their

interpretation of a student's performance. Regardless of how clear the performance standards are written, they are interpreted by the evaluator based on personal perception. The more open-ended the guidelines, the greater the chance of personal interpretation based on the experience of the evaluator. In retrospect, faculty recognized that their "knowledge" of expected performance standards was based in their individual perceptions.

Faculty also agreed that the basis of their evaluation of student performance (especially the skills of assessment and interventions) was the skill guide provided to students by the training program. By contrast, the preceptors' interviews revealed their evaluation was based primarily on the ability of the student to recognize the significance of the situation, thus tailor the assessment to the patient rather than following the skill guide's step-by-step process.

The final finding occurred in scanning the data sets. It was noted that faculty consistently used the full range of the ratings (e.g., pass, not pass, and not applicable) for each student, whereas the preceptors tended to limit the range of their ratings to only two categories: pass/not applicable or not pass/not applicable.

Direct observation evaluations are often influenced by the interpersonal relationship that exists between the student and evaluator, resulting in a halo effect. Since preceptors indicated they were more influenced by the student's ability to tailor assessments (a skill of the experienced preceptor), it appears that preceptors' evaluations reflect

the "similar to me" rating error, resulting in a halo effect in the overall evaluation.

It is critical to patient well-being and safety that graduates of paramedic programs are able to provide competent medical care in the field setting. In order to evaluate the field competency of students, evaluators must provide objective feedback on student performance that is consistent from evaluator to evaluator.

This limited study revealed: 1) the need for guidelines that clarify standards of performance by defining specific examples of behaviors that do (or do not) exemplify the standard and 2) the need to develop a training program for preceptors to prepare them in evaluation skills. As a result of this study, guidelines and a training program were developed and a study is currently in progress to evaluate the effects of that training program on interrater reliability.

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NITROGLYCERIN IN THE OUT-OF-HOSPITAL TREATMENT OF CHEST PAIN

To the Editor:—Nitroglycerin (NTG) is an organic nitrate commonly used as a vasodilator in treating angina and has been recognized as a useful cardiovascular drug for more than 100 years. Reported adverse effects range from headache to cardiovascular collapse. This rapidly acting nitrate is

widely used in a variety of out-of-hospital (OOH) settings for the treatment of chest pain (CP).

A recent, thoughtful thread on the EMS-L Internet discussion list revisited several controversies related to this use.¹ Four separate questions were implicit in the discussion: 1) Does the widespread self-administration of NTG by cardiac patients endorse its safety? 2) Can EMT-basics safely assist patient administration of the drug, as allowed in the 1994 curriculum revision? 3) Should placement of an intravenous line (IV) precede NTG administration whenever possible? 4) What complications should be anticipated? The variety of opinions expressed by EMS-L participants prompted a brief review of the literature that follows.

The benefits of NTG in the management of unstable angina and acute myocardial infarction (AMI) were described as early as 1879.² Recently, the "ACC/AHA guidelines for the management of patients with acute myocardial infarction" reviewed the benefits of sublingual NTG.³ According to these guidelines, randomized controlled trials of nitrate use demonstrate a small but statistically significant reduction in mortality. The brief half-life of NTG makes any potential adverse effects theoretically minimal. The authors recommend the use of NTG in the routine management of the patient with ischemic-type CP.

Advocates for OOH use of NTG without prior IV access note that patients regularly, and presumably safely, self-administer NTG in unmonitored settings. Two reports suggest that the home use of NTG is not always benign. Bassan found that of 112 patients surveyed, two experienced dizziness and one fainted, and suggested that patients take the medication only in the supine position.⁴ Interestingly, he also found that 57% of patients would take NTG for rapid heart beat, dizziness, or weakness. Not

all patients seeking assistance in taking NTG should get it. Kelly reported one episode of fainting in a prospective series of 44 patients who were receiving instructions in NTG self-medication.⁵ These authors accept the uncommon but serious nature of such events and stress caution when administering the medication in every circumstance.

Although occasional dramatic reports of complete heart block and asystole appear in the literature, retrospective in-hospital reviews describe an incidence of serious adverse reactions in fewer than 5% of cases.⁶⁻⁹ The most common serious adverse effect of NTG is the hypotension/bradycardia syndrome. The mechanism is uncertain. Patients who become bradycardic during hypotension may be experiencing unrecognized right ventricular ischemia (RVI), which can cause an abnormal response of the conduction system. The Bezold-Jarisch reflex is a phenomenon described in animals whereby stimulation of unmyelinated vagal fibers in the myocardium in the setting of hypovolemia can cause such a paradoxical bradycardic response. The response has also been attributed to a simple vasovagal event.¹⁰

Nitroglycerin in the presence of RVI presents significant hemodynamic risks. Right ventricular ischemia occurs in up to 50% of patients with inferior wall MIs, but only 10-15% of them have profound hypotension after the administration of preload reducing medications. Because of their dependence on preload, patients suspected of having RVI should be given nitrates with great caution, if at all. If hypotension does occur, replenishing preload with large amounts of intravenous crystalloid usually improves cardiac output.^{5,11,12} Accurate OOH identification of RVI is usually not possible.

The relevant OOH literature is limited (no surprise here) to one well-written report of a prospective