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Emergency Medicine**Response to: “Medication errors with push dose pressors in the emergency department and intensive care units***Keywords:*

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“What we've got here is failure to communicate.”
[-Cool Hand Luke (1967)]

This iconic movie line neatly sums up the recent article by Acquisto, Bodkin, and Johnstone, “Medication errors with push dose pressors in the emergency department (ED) and intensive care units (ICU)” [1]. The authors open with a case where a physician ordered “50” of phenylephrine, intending 50 mcg to be given, and instead 50 mg was given, owing to the incomplete order. In another case a physician inadvertently administered ten times the intended dose of phenylephrine; the authors do not describe why this occurred. They go on to describe inadvertent dosing and route of administration errors when using epinephrine to treat angioedema, anaphylaxis, and hypotension. Each of these errors can be traced back to a lack of communication between the treating physician and their team, and each was apparently complicated by dosing conversion errors.

We thank the authors for raising awareness about potential medication errors with preparing doses during critical situations [2]. Unfortunately, the authors then point to the influence of Free Open Access Medical Education (FOAM) as the cause for these errors. They assert, without any supporting data, that an increase in the “popularity,” “prominence,” and “overwhelming support,” of “push dose pressors” online led to these issues. There was no discussion of the number of times push-dose pressors have been used in the ED and ICUs to give a perspective on the rate of errors. Nor was there any quantification of the use of FOAM resources by the involved physicians. The authors conclude “EM/ICU physicians are not traditionally trained in medication manipulation” and the dilution of phenylephrine and epinephrine for use as “push dose pressors” is simply too complicated for routine use. This is not our experience. The availability of pharmacists at the bedside as well as nursing staff explicitly trained in the use of push dose pressors may mitigate errors.

The authors also stated that there were more errors related to epinephrine use for anaphylaxis at their institution after a December 2015 EM:RAP (Emergency Medicine Reviews and Perspectives) podcast [3]. The EM:RAP segment on anaphylaxis to which the authors refer focused largely on potential epinephrine dosing errors. The brief point regarding IV epinephrine was mentioned by the editor as an option for use in select cases. The editor was explicit about the dangers of incorrect epinephrine dosing and the correct dose was provided. It should be noted that EM:RAP has approximately 20,000 paid monthly subscribers

worldwide. As it is not free, it does not qualify as FOAM. The authors' conclusion regarding the effect of the podcast is purely anecdotal; there is no evidence that those making errors had listened to the podcast or that they erred as a result of listening. There is a dearth of literature on the use of IV epinephrine in refractory anaphylactic shock. However, this approach to management is well established as standard practice as evidenced by its presence in standard Emergency Medicine textbooks, Rosen's and Tintinalli's. IV epinephrine was also discussed in a 2014 review article in the Journal of Emergency Medicine [4]. The fact that these books list this treatment as part of standard care speaks against the author's contention that the blame should be placed on a podcast (both textbooks are commonly read by EM trainees). Ultimately, the inclusion of a discussion of anaphylaxis treatment errors in the Acquisto paper discussing FOAMed and “push dose pressors” is confusing and off topic as this is neither a FOAMed issue, nor a “push dose pressor” one.

A more detailed look at the patient safety concerns of push-dose pressors properly advocates for a systems-based approach to reduce the risk of harm [5]. Within this article, there are several citations from resources that are considered to fall under the umbrella of FOAM, many of which, in turn, have cited references from traditional print publications. There have been a number of investigations conducted related to methods for appraisal of FOAM resources, many of which are derived in the same manner as one would expect for appraising the literature found in traditional print publications [6,7]. We believe that one of the many values of FOAM includes guiding us as clinicians to further our education on various topics as means to fulfill our responsibilities in being lifelong learners within our respected professions.

It is important to emphasize that any technique described in any medium, whether it be through FOAM or traditional print publications, requires the same degree of critical assessment, training, practice and clear communication in a proactive and thoughtful manner prior to application at the bedside during time-critical situations [8]. Such recommendations related to the optimal use of FOAM can help foster a reduction in the window of knowledge translation as a means to deliver safe, evidence-based, timely, and effective patient-centered care.

Disclosures

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