

Is scolding analogous to positive end-expiratory pressure (PEEP)?

S Singhal,¹ MD, EDRM ; M Verma,² MD, NFPM; G Bhatia,³ MD, DM (Addiction Psychiatry)

¹Department of Pulmonary Medicine, All India Institute of Medical Sciences, Rajkot, India

²Department of Radiation Oncology, King George's Medical University, Lucknow, India

³Department of Psychiatry, All India Institute of Medical Sciences, Rajkot, India

Corresponding author: S Singhal (drsanjaysinghal79@yahoo.co.in)

South Afr J Crit Care 2023;39(1):e563 <https://doi.org/10.7196/SAJCC.2023.v39i1.563>

Keywords: PEEP, ARDS, scolding, medical training

The residency programme transforms medical students from novices to competent physicians/academic teachers. Being a professional course, it requires not only reading to deepen the theoretical understanding but also intellectual inquiry and practical training.^[1] However, keeping up with the unrelenting responsibilities of being a responsible healthcare provider is not easy in the ever-evolving world of medical knowledge and practice. Therefore, experienced physicians-cum-teachers supervise and train residents to enhance their learning, inculcate accountability, and secure patient safety. It is a common practice to guide residents with a caring but disciplined hand, which often includes inducing fear by scolding, depending on the nature of the event. The aim is to push them to continue putting in their best efforts at attaining the highest standards of knowledge and skill while at the same time travelling along the path of the continuous journey of acquiring wisdom and taking wiser decisions during their medical life.^{2,3]} In this context, I (SS) wish to recount one such experience during my residency training period in critical care medicine, as follows:

A patient presented with almost 100% burns late in the night. After initial resuscitation with crystalloid fluid, the patient was put on a mechanical ventilator because of anticipated respiratory failure and ventilated as per the lung protective ventilation strategy. As a resident, I always got confused by low v. high tidal volume, positive end-expiratory pressure (PEEP), and their association with barotrauma. I used to mix up the benefits of PEEP with the drawbacks of high tidal volume. Despite multiple readings, I could not sort it out. During the morning presentation, I was told to increase the PEEP because of acute respiratory distress syndrome (ARDS). On my asking why, my superior scolded me and said, 'Just go and read.' Immediately, I felt my brain jolted and cleared out, the cobwebs swept away, and a newfound illumination on tidal volume (high v. low), PEEP, and its effects on the lungs.

Years later, when I became one of the teaching faculty, and was in charge of the academic section at one of the premier medical institutions in our country, I was finally able to reminisce about the shenanigans of our training days. I realised that the impact of scolding on the brain was similar to the recruitment effect of PEEP on the lungs. As I was sharing this enthusiastic thought with my colleagues during lunch hour, a psychiatrist colleague (GB) pointed out that not every resident may have a similar reaction to such scolding. While one may attain clarity, another may go silent or even feel anxious or tearful. Prolonged exposure to such stress may also have varying impacts on residents, based on individual

differences. A recent paper, in agreement with the psychiatrist's opinion, reported that the PEEP effect was observed to vary between different phenotypes of ARDS, with beneficial effects of a higher PEEP with the hyper-inflammatory phenotype.^[4] Similarly, studies on medical students indicated that resilience, generally understood as the ability to be flexible and adaptive in response to challenges, demonstrated a protective role in the negative relationship between residency demands and residents' psychological well-being.^[5,6] Furthermore, studies indicated that resilience increases directly with stress, up to a limit beyond which it becomes almost constant.^[7]

Thus, while a healthy dose of stress in the form of scolding with continuous feedback may inspire a resident to attain a higher standard of training, as per the Yerkes-Dodson law, being subject to chronic stress beyond one's coping skills may lead to long-term adverse psychological consequences, including a reduction in empathy, interpersonal reactivity, and development of psychiatric illnesses.^[8] Much like lungs, where excessive PEEP may be harmful. It is therefore recommended that teaching faculty in any specialty must find and choose an optimum balance between positive and negative feedback techniques that suit each and every resident trainee in a specific individual manner instead of using a generalised approach. This will produce not only competent health providers but psychologically healthy 'healers' with good interpersonal, managerial and social skills.

Acknowledgements. None.

Author contributions. SS and MV were involved in the conceptualisation, SS and GB drafted the original manuscript, and MV and SS edited the original manuscript. All authors have reviewed and approved the final manuscript.

Funding. None.

Conflicts of interest. None.

1. Van der Leeuw RM, Lombarts KM, Arah OA, Heineman MJ. A systematic review of the effects of residency training on patient outcomes. *BMC Med* 2012;10:65. <https://doi.org/10.1186/1741-7015-10-65>
2. Grover AK. Residency training in India: Time for a course correction. *Indian J Ophthalmol* 2018;66:743-744. https://doi.org/10.4103/ijo.IJO_328_18
3. Wartman SA, O'Sullivan PS, Cyr MG. The service/education conflict in residency programs. *J Gen Intern Med* 1990;5:S59-S69. <https://doi.org/10.1007/BF02600439>
4. Matthay MA, Arabi YM, Siegel ER, et al. Phenotypes and personalised medicine in the acute respiratory distress syndrome. *Intensive Care Med* 2020;46:2136-2152. <https://doi.org/10.1007/s00134-020-06296-9>

5. Lin YK, Lin CD, Lin BY, Chen DY. Medical students' resilience: A protective role on stress and quality of life in clerkship. *BMC Med Educ* 2019;19:473. <https://doi.org/10.1186/s12909-019-1912-4>.
6. Tempiski P, Santos IS, Mayer FB, et al. Relationship among medical student resilience, educational environment, and quality of life. *PLoS ONE* 2015;10:e0131535. <https://doi.org/10.1371/journal.pone.0131535>
7. Priyadharshini KM, George N, Britto DR, Nirmal SR, Tamilarasan M, Kulothungan K. Assessment of stress, resilience, and coping style among medical students and effectiveness of intervention programs on stress level in South India: A non-randomised control trial. *Indian J Community Med* 2021;46:735-738. https://doi.org/10.4103/ijcm.IJCM_157_21.
8. Andersen FA, Johansen AB, Søndergaard J, Andersen CM, Assing Hvidt E. Revisiting the trajectory of medical students' empathy, and impact of gender, specialty preferences and nationality: A systematic review. *BMC Med Educ* 2020;20:52. <https://doi.org/10.1186/s12909-020-1964-5>.

Accepted 26 January 2023.