Stress in the anesthesia student

BETTE M. WILDGUST, CRNA, MS
Philadelphia, Pennsylvania

Negative coping behaviors in response to the stress of anesthesia school can affect a student's clinical and academic performance adversely. This article discusses the identification of potential stressors, manifestations of stress, and the need to recognize and help the student cope with stress in a positive manner.

Students enter schools of nursing as goal-directed and achievement-oriented individuals. Their quality of prior performance generally is very high. Their letters of reference frequently describe them as ambitious, intense, and capable of performing multiple tasks and accomplishing them well. Anesthesia school is highly competitive and filled with potential stressors.

Is the typical anesthesia student prone to develop chronic stress and resultant physical symptoms and eventually leave the profession as a victim of burn-out? The answer lies within each student, in how he or she perceives his or her own environment. However, faculty need to be cognizant not only of the physical signs of chronic stress which already may have caused bodily damage, but also of the more subtle, psychological maladaptive behaviors exhibited by students.

Efforts to learn new adaptive mechanisms for coping with stress are the responsibility of both students and faculty. Before those affected can learn these coping skills, the areas of stress and responses to stress must be identified.

Overview

Stress is the adaptational response of an organism to change. Most are familiar with Selye's pioneering work in the study of stress. He describes stress as something that affects people in an automatic, reflex-like way—a rather mechanistic definition of the concept of stress. In attempting to provide a more comprehensive view of the stress phenomenon, Lazarus emphasized the role of cognitive appraisal systems (the parts of our brains which perceive and evaluate the environment) in producing stress reactions.1 It becomes critical to understand that stress is a personal experience. It is a phenomenon that takes place within an individual's own body.2 Consequently, Lazarus used "stress" as a collective term, which includes the stimuli producing stress reactions, the reactions themselves, and the factors influencing the processes that come between the stress stimulus and the stress response. In this definition, perception of a threat (real or imagined) becomes the key variable. Threat refers to a person's appraisal of the situation as physically or psychologically frightening or dangerous.3 It is cognitive processes that underlie stress, and appraisal is part of the cognition that intervenes between the stimulus and the emotional reaction. It becomes an evaluation by the individual of the significance of the stimulus.

Once an appraisal of the stimulus as threatening is made, physiological and psychological coping processes function to reduce or eliminate the anticipated harm. Physiologically, the reaction
takes the form of the General Adaptation Syndrome, which consists of three stages: alarm, resistance, and exhaustion. The reaction is characterized by the "fight or flight" response triggered by stimulation of the sympathetic nervous system, with the outpouring of various hormones from the pituitary and adrenal glands. Psychologically, the reactions have been categorized by Lazarus as direct action tendencies aimed at reducing the anticipated confrontation and defense reappraisal, in which the individual deceives himself about the actual condition of threat. The ability to cope with stress is a function of the stressful stimulus and the individual's assessment of how well he thinks he can cope.

Everyone experiences some degree of stress virtually all the time. To be alive is to experience stress: absence of stress occurs only in death. Problems relating to stress become apparent when there is too much stress or too much for too long. Again, how much stress we can endure is an individual matter. What is clear is that too much stress for too long can be destructive.

The severity of stress is gauged by the amount of disruption experienced by an individual when he fails to cope with an adaptive demand. This severity is dependent on three factors: (1) intensity and duration; (2) the coping style and endurance of the individual; and (3) the external resources or support systems available to help the individual.

In summary, there are three levels or components of the stress reaction: (1) the environment; (2) the appraisal and evaluation of the environment; and (3) the reaction of emotional and physiological arousal. Events in the environment give rise to stress, but it is the individual's perception that negative consequences will follow these events that actually causes the stress response. Once this negative appraisal is made, emotional and physiological arousal occur automatically. Whether the threat is real (imminent physical danger) or imagined (anxiety), the physiological reactions that take place are identical. It is the perception of events, not the events themselves, that induces a stress response.

### Sources of stress in anesthesia students

A certain amount of stress is critical to motivate students to learn. Stress beyond the optimal level can lead to failure, unhappiness, and economic loss. One of the tasks of educators is to manipulate the environment so that stress is kept to a level that will promote the development of the student.

<table>
<thead>
<tr>
<th>Table I</th>
<th>Sources of stress for junior students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academics</strong></td>
<td><strong>Rating</strong></td>
</tr>
<tr>
<td>Information overload</td>
<td>7</td>
</tr>
<tr>
<td>Test anxiety (first term)</td>
<td>7</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>7</td>
</tr>
<tr>
<td>Disorganized lectures</td>
<td>7</td>
</tr>
<tr>
<td>Instructor reading from notes</td>
<td>7</td>
</tr>
<tr>
<td>First failure (exam)</td>
<td>6</td>
</tr>
<tr>
<td>Irrelevant material presented</td>
<td>6</td>
</tr>
<tr>
<td>Lecturing too fast</td>
<td>6</td>
</tr>
<tr>
<td>Repetition of subject matter</td>
<td>5</td>
</tr>
<tr>
<td>Amount of study time required to maintain excellence (Personal standard)</td>
<td>5</td>
</tr>
<tr>
<td>Test anxiety (presently)</td>
<td>4</td>
</tr>
<tr>
<td>Care plans, student record keeping</td>
<td>4</td>
</tr>
<tr>
<td>Graduation</td>
<td>1</td>
</tr>
<tr>
<td>National certification exam</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Sources of stress were rated from 1 to 7, with 1 meaning "no stress" and 7 meaning "extremely stressful."*
The effects of stress on anesthesia students can be diverse. But before these effects can be discussed, the sources of stress should be identified.

Eight junior students (level—six months) and ten senior students (level—eighteen months) who were enrolled in a two-year anesthesia program were polled as two separate groups to identify major sources of stress. Three categories were employed: (1) academic, (2) clinical, and (3) social/personal. Ratings were based on a one-to-seven scale, with one representing no stress and seven being extremely stressful. The results of the poll are shown in Tables I and II.

**Discussion**

Academically, both groups rated information overload as the highest stressor. Encountering large bodies of difficult material, in addition to an internally generated drive to absorb all the material presented, were the chief sources of anxiety. Test anxiety and fear of failure initially were rated as most stressful by the junior students and then decreased in severity as time in the program and experience with studying and testing increased. After 18 months in the program, test anxiety and fear of failure were only mild stressors. Teacher behaviors, such as disorganized lectures, reading from notes, and lecturing too fast, also were significant stressors for the junior students. At the senior level, the anxiety associated with the national certification examination was rated as highly stressful to all members of the class. Preparation for graduation and maintaining academic excellence also were very stressful as they related to an increasing clinical workload and responsibility.

**Clinical stress**

As the junior students entered the clinical area, there were many incidents that ranked high on their lists of stressors. Most of these were "firsts"—first induction, first intubation, first code, and so on. They reported high levels of stress over fear of making clinical errors in calculating doses and fluid requirements. As their initial clinical experience continued, their level of self-confidence fluctuated as new experiences were encountered. Inconsistency of teaching methods and individual preferences among the clinical instructors became great sources of anxiety for the junior students. As they grew more familiar with the likes and dislikes of each instructor and learned to "play the game," these areas became less of a problem. Role ambiguity also was a major stressor. Many students reported feeling unsure of their expected behaviors, even though they received an orientation period. Again, as their length of time in the program increased, this source of stress decreased.

The seniors' area of increased stress in the clinical area revolved around intense clinical work, increased responsibility, and gravelly ill patients. The experience of new situations, such as rotations, took away the feeling of familiarity. All of them perceived going to a new hospital and staff as one of the most stressful events of the senior year.

---

<table>
<thead>
<tr>
<th>Table II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources of stress for senior students</td>
</tr>
<tr>
<td><strong>Academics</strong></td>
</tr>
<tr>
<td>Information overload</td>
</tr>
<tr>
<td>National certification exam</td>
</tr>
<tr>
<td>Amount of time needed to maintain academic excellence (Personal standard)</td>
</tr>
<tr>
<td>Preparation for graduation</td>
</tr>
<tr>
<td>Irrelevant material presented</td>
</tr>
<tr>
<td>Fear of failure</td>
</tr>
<tr>
<td>Disorganized lectures</td>
</tr>
<tr>
<td>Test anxiety</td>
</tr>
<tr>
<td>Repetition of subject matter</td>
</tr>
<tr>
<td>Reading from notes by instructor</td>
</tr>
</tbody>
</table>

*Note: Sources of stress were rated from 1 to 7, with 1 meaning "no stress" and 7 meaning "extremely stressful."*
Social-personal stress

The juniors' concerns involved mainly the adjustment to school life. Ranked highest as sources of anxiety were loss of income, relocation, lack of time for one's self and family, and meeting their own expectations. Their basic problem was the need to develop a proper balance between their personal and professional life—a problem that seems to carry through even into the senior year.

It was interesting to note that the seniors felt little to moderate stress in regard to academic and clinical performance (other than rotations). Perhaps they had gained confidence in their ability to cope with these tasks. At the same time, each of them expressed concern about leaving the program as a new graduate and being able to perform satisfactorily in a new setting.

Manifestations of stress

In the academic setting, stress can interfere with the learning of concepts, their retention, and recall. In the clinical setting, stress can impair the performance of the student as he struggles with multiple tasks—as a learner trying to apply knowledge, as a person adapting in a strange environment, and as an aspirant to membership in the health care team.6

Remembering that stress is an adaptation to change, it is overwhelming to reflect on the number of changes to which students are expected to adapt rapidly. First, there is a change of status. Anesthesia students have varying backgrounds and years of experience, and each has attained a certain degree of status and regard in his previous practice setting. Assuming a student role again often means being stripped of that power and prestige. Relocation to a new area also means that the support and comfort of friends and family often is lost. The area of scholastic challenge is unknown, as are the patterned responses of each and every faculty member. In short, all of the consistency previously known is lost, and prediction of the outcome of unknown variables is impossible.7

The experience of stress often is denied by all of us. As a result, the sources of stress rarely are specifically identified and handled. With any stressful experience, however, there are physical, emotional, and intellectual symptoms. It is important that these symptoms be brought into awareness and that patterns of stress be identified.7 Some common stress symptoms are shown in Table III.

Learning how to interpret life's experiences is an important milestone along the road to maturity. Understanding how we respond to those interpretations is a key factor in controlling stress behavior through adjustment rather than maladjustment.8

As stated previously, too much stress affects a student's academic performance. Typically, it is the student who has excelled in nursing school and college who meets with the Academic Frustration Syndrome. This syndrome has been researched widely in medical schools, but it also is applicable to nurse anesthesia students. The academic problems of this type of student are unanticipated and can be severely disruptive. Common frustrations include failing an examination, encountering large bodies of difficult material, or competing with students of unusually high caliber. When presented with these problems, most students cope by accepting their personal fallibility and by increasing and improving their methods of study. However, a few students become increasingly depressed, attribute their failure to reasons beyond their control, and persist rigidly in non-effective study habits and performance patterns. This pattern becomes cyclic and self perpetuating.10

The functional relationship between good study habits and academic performance is obvious. However, anxiety can play a major role in affecting this performance. Alpert and Haber have redefined the unidimensional construct of anxiety into two modes: facilitating, that which enhances

---

Table III
Common stress symptoms

I. Physical
Increased blood pressure and pulse, palpitations, dry mouth, sweaty palms, tightness in chest, trembling, stuttering, headaches, urinary frequency, diarrhea, neck and back pain, slumped posture, constant state of fatigue, insomnia, accident proneness, and increased alcohol and drug abuse.

II. Emotional
Irritability, angry outbursts, depression, suspiciousness, jealousy, restlessness, overpowering urge to cry or run and hide, lack of interest, self-deprecating behavior, being critical of others, impulsive behavior, and floating anxiety (don't know source of fear).

III. Intellectual
Forgetfulness, preoccupation, lack of concentration, mathematical and grammatical errors, errors in judging space, decreased perception, diminished fantasy life, diminished creativity and productivity, and lack of attention to details.

---
performance, and debilitating, that which impedes it. In the treatment of Academic Frustration Syndrome, counseling students enabled them to become more confident of their knowledge of the subject area and more aware that the reasons for their failure were related to their high levels of debilitating anxiety. Their anxiety was redirected in a facilitating manner by viewing tests as an opportunity to display their knowledge.

Eysenck, drawing upon more than 20 years of research, states that "anxious subjects engage in more task irrelevant cognitive processing than non-anxious subjects," and that "anxious subjects try to compensate for the detrimental consequences of such task irrelevant activity on task performance by increased effort. Both task irrelevant processing and mental effort affect working memory, thus reducing the capacity available for processing relevant information."

Eysenck's analysis is consistent with the Yerkes-Dodson Law which assumes that there is a curvilinear relationship between anxiety and performance, with the optimal level of performance being associated with moderate levels of anxiety. This law also assumes that the optimal level of arousal varies inversely with task complexity; that is, anxious students assemble information less elaborately than non-anxious students. Students in academic difficulty approach their coursework in a simplistic fashion, attempting to memorize material available, whereas those who perform better approach their material in a more conceptual manner.

Besides the Academic Frustration Syndrome, there are other manifestations of maladaptive stress behaviors which can be demonstrated in the classroom as well as the clinical area. A student under stress who answers before the question is completed, and who does not think the situation through is said to be impulsive. He or she may even be thought of as emotionally unstable. A lack of experience and self-confidence in the student may foster over-dependence upon the instructor. This coping behavior may be considered an adaptive mechanism initially and even is encouraged through student/instructor activities. It becomes maladaptive when carried past the time when a student should be ready for independence. Cognitive activities should be emphasized in the classroom, and laboratory simulations should be employed to help reduce this behavior.

Inability to concentrate and lack of attention to detail plague all of us sometimes. The stressed anesthesia student may be forgetful of basic items in preparation for the day's cases or may be daydreaming when he is supposed to be studying.

Preoccupation with something other than the task at hand also is common. Research has shown that as stress increases so do the possibilities of medication and fluid errors. This is an area of which all clinical instructors should be aware for the patient's welfare.

Assertive behavior often is rewarded in anesthesia, and therefore, students are encouraged to develop a degree of assertiveness. But a student who is experiencing high levels of stress may show dogmatic, aggressive behavior. He thinks he knows all the answers, is a frequent user of "either" and "or," and is insensitive to nuances of expression and shades of meaning. His statements often are of the all-or-nothing kind, and his behavior may be disruptive in the classroom.

Finally, a student may exhibit rigidity and inflexibility. Such students are like "little old men and women" before their time. New ways of doing things are scary, and they are far more comfortable with the old, friendly ways. Each of us probably could say that we feel that way too, but the crux of this situation is that the student exhibiting this style of coping is more likely to repeat the same errors over and over again.

Coping with stress

It is neither practical nor desirable to eliminate all stress, but it is desirable to convert distress into eustress—that is, "positive" stress. In doing this, the practitioner has to be aware of his own stressors and how he responds to them. When individuals ignore the symptoms of stress, they are training themselves to assume a greater load of stress. In this sense, coping becomes disastrous. Albrecht states that a person will act in ways that help reduce the unpleasantness and physical discomfort caused by stress, within the constraints of his value system and beliefs, and that most of this behavior is unconscious.

Stress on the job or in school leads the individual to experience anger, anxiety, tension, and a feeling of rigidity. These are short-term feelings, but if not dealt with, they become problems, leading to fatigue, chronic depression, and alienation. Then physiological changes become apparent causing stress-related diseases.

It is not within the scope of this paper to discuss all the stress reduction skills described in the literature. Most of the therapies recommend physical exercise, progressive muscle relaxation, visual imagery, time management, and identification and
replacement of stress-producing or stress-maintaining thoughts. Many of the programs are based on Meichenbaum's stress-inoculation technique and Richardson's anxiety management training. These programs consist of three phases: (1) education; (2) relaxation and cognitive skills training; and (3) an application phase.15,16

There are several areas in which instructors can help reduce stress in the student. Mechanic states that anxiety over examinations during school, and how early that anxiety appears, is a function of the extent to which the stress experienced by the group taking the examinations is visible to the lower level students.17 Therefore, test anxiety develops long before the anesthesia student comes to the program. The faculty also increases the student's anxiety over the national certification examination by making references to it, legitimizing its importance. For example, a didactic instructor may say in class, "This was a certification exam question.' The students immediately perk up and begin taking notes furiously. They are indoctrinated into the significance of this very early. One way of reducing test anxiety is to use the course objectives, practice tests, and note sets, especially during senior review. The graduate students at the author's school reported this was most helpful in preparing for certification examinations.

Evaluations also are a source of increased stress in students. The discomfort that comes from knowing that others will be making decisions about their work that can have an important, if not critical, impact on their future cannot be eliminated.17

The instructor who uses feedback appropriately can do much to relieve the stress of evaluations by accepting Rogers' premise. It contends that each person has an intrinsic value—that he is unconditionally worthy no matter what situation, behavior, or feelings are represented.18 One's self-concept is based largely on the feedback one receives from others. The instructor must provide this in an honest, positive manner and help the student realize that to fail at a task is not to be a failure.2

Perhaps the two most important coping mechanisms for everyone—faculty and students—are a sense of humor and a support system. A sense of humor, and the perspective that goes with it, is probably the best stress reducer there is.2 Broadly, social support may involve nurturing, empathy, encouragement, information, material assistance, and expressions of sharedness. Evidence strongly points to the fact that this type of support protects individuals against the adverse effects of stress.17

Summary

Stress is not necessarily something that is negative—it all depends on how it is used. From a faculty perspective the goal is not to eliminate all stress but to devise learning situations in which the student adapts in a positive manner, consistent with the values of the profession and the achievement of competence. Faculty members must be willing to recognize that some of the variations in academic and clinical performance of students are not attributable to intelligence, teaching, or learning but to the anxiety generated by the type of profession and the previous education required to enter it.

Both classes of students experienced stress; each class had certain unique characteristics and one common stressor—information overload. The seniors were experiencing increasing anxiety levels about the impending transition from a dependent learner's role to one entailing at least increased responsibility and decision making and the need to work in an unfamiliar setting.

There are three components that lead to successful adaptation. First, the individual must have the skills to appraise the situation and its demands. The severity of stress is dependent upon the person's perception of the environment and how well he thinks he can cope. One also must be able to regulate the pace of change to which he is exposed. Second, the individual must have the motivation to meet these demands. An individual can escape anxiety by lowering his internal drive, but this is judged as unfavorable in today's society. As motivation increases, so does the threat of failure; therefore, motivation can be a source of stress. Third, an individual must be able to balance his life so that energies and skills can be directed to meet external as well as internal needs. Most important is the presence or absence of social supports. People depend on others for "strokes," and few can survive without support from others.

Staff and students should share a common perceptual framework and a system of objectives so that full utilization and achievement of individual potential will be attained. Student responses must be evaluated not in isolation but in relation to the situation in which they find themselves and their interpretations of the events. It is vital to learn students' perceptions and methods of coping with stress. Students are a source which must be tapped in order to help nurse anesthesia educators improve anesthesia education.

REFERENCES


**AUTHOR**

Bette M. Wildgust, CRNA, MS graduated from Montgomery Hospital School of Nursing and Montgomery Hospital School of Anesthesia, Norristown, Pennsylvania. She received her bachelor of arts in health care and education from Ottawa University, Kansas City, Missouri. She completed her master's in education at St. Joseph's University, Philadelphia. She currently is director of Lankenau Hospital School of Anesthesia for Nurses, Philadelphia.