city and even from hospital to hospital in the frequency with which certain routine operations are performed, in the mortality from standard surgical procedures, and in the duration of stay in hospital of patients with similar diseases? Do long-stay patients with hernias or varicose veins really fare better or worse than short-stay or outpatient cases respectively, or do the more economical methods of treatment demand differently trained surgeons? The patient with cardiac infarction do better under the continuous monitoring of the specialist hospital unit or in bed at home with simple nursing care? At what point does population screening cease to pay dividends and become counter-productive?

These questions and many like them require answers. The answers are needed to support our demand for the facilities we need to give our patients the best that modern medicine can offer. They cannot be furnished by a Government department. Justified or not, it would almost certainly face the charge of encroaching on the doctors' clinical freedom and of special pleading in the cause of economy. The answers can come only from the profession.

HOSPITAL TOPICS

Psychiatric View of the Intensive Care Unit

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In less than 10 years intensive care units have become an essential part of most general hospitals. They have demonstrated their value in the treatment of the critically ill. Obviously, in the initial development of such instrumentation our attention was focused on mastering the technology. A reasonable level of mastery now appears to exist. I therefore believe this is an appropriate time to examine the impact of this environment on the people who live in it—patients and staff.

The psychiatric problems can be placed in four categories: (1) the psychiatric reactions produced by the serious medical-surgical illnesses that bring the patient to such a unit; (2) the psychiatric reactions produced by the unique environment of such a unit; (3) the psychiatric reactions produced by the intensive care unit experience which manifest themselves after discharge from such a unit; and (4) the emotional reactions of the professional staff working in such a unit.

Category 1

Within the intensive care unit can exist all those psychiatric complications which accompany serious medical-surgical illness. The major problem is the acute organic brain syndrome, or delirium, a reversible psychotic state related to organic factors which interfere with brain function.

It is clear that psychiatric symptoms in this setting, regardless of their cause, can be a serious problem. The confused, agitated patient can pull out infusion sets, catheters, and gastrointestinal drains and thus seriously interfere with his treatment. The anxiety or agitation which accompanies these symptoms can affect the patient's cardiovascular status and in some situations pose a serious threat to life. Immediate treatment is therefore essential. Phenothiazines are the most effective symptomatic treatment. Recent clinical experience (Blachly and Starr, 1964; Egerton and Kay, 1964; Kornfeld et al., 1965) have demonstrated that the psychological responses described were cause for concern, since they were occurring in severely ill patients in whom marked shifts in cardiovascular status produced by anxiety and agitation could be life-threatening.

While symptomatic treatment can be reasonably effective, it is imperative that the physician recognizes that tranquilization is merely symptomatic treatment. An effort must simultaneously be made to determine the cause of the psychotic state. The change in mental status may be the first indication that some pathological shift has occurred in the basic medical problem.

Category 2

There are psychiatric problems which appear to be related to the unique environment of the intensive care unit itself. In these rooms we provide patients with the most modern electronic equipment designed to provide optimal medical care. However, a busy medical staff can quickly lose sight of the impact of this environment on the patient. The patient's view of the intensive care unit can be quite different from our own.

Interest in this area was stimulated by the observation that a high incidence of psychosis was occurring in the open-heart recovery room (Blachly and Starr, 1964; Egerton and Kay, 1964; Kornfeld et al., 1965). The psychological responses described were cause for concern, since they were occurring in severely ill patients in whom marked shifts in cardiovascular status produced by anxiety and agitation could be life-threatening. In our study (Kornfeld et al., 1965) we found that 38% of all adult open-heart surgery patients experienced some of the manifestations of a psychotic-like syndrome while in the recovery room. In most cases the psychotic symptomatology began its slow evolution after a lucid interval of about three to five days. The patient might first experience a perceptual distortion—for example, the sound arising from the air-conditioning vent might begin to sound like his name. In some patients these distortions of reality progressed to the point of auditory or visual hallucinations and then to frank paranoid delusions. Transient disorientation to time, place, and person was also reported.

Our study suggested that certain preparative and operative factors, such as severity of illness and the length of time the patient was on the heart-lung machine, did increase the likelihood of the delirium developing. However, the delirium did occur after a clinically lucid interval of three to five days postoperatively, and usually cleared within 24 to 48 hours after transfer to the standard hospital environment. The recovery room environment was therefore seen as a significant factor. Many patients described the experience there as most disturbing and complained of the lack of proper sleep, a sense of being chained, and a general state of apprehension. This environment resembled the artificial conditions created for experiments in

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sensory deprivation (Kubzansky and Leiderman, 1961) and sleep deprivation (West et al., 1962) which have produced similar abnormal mental states.

We therefore concluded (Kornfeld et al., 1965) that the recovery-room delirium was the result of the impact of sleep and sensory deprivation on patients whose capacity to handle such stress was already impaired by chronic cardiac illness (Kezelid et al., 1963) and the effects of surgery.

Suggested Changes

The following suggestions were made for changes in the recovery room, and are generally applicable to intensive care units:

(a) Nursing procedures should be modified to allow the maximum number of uninterrupted sleep periods. The usual day-awake, night-asleep cycle should be maintained whenever possible.

(b) Patients should be placed in individual compartments. Thus they will not be awakened by activity occurring around other patients, or kept awake by the need to maintain a lighted room in order to observe others; they will not be made more anxious by the emergency procedures performed on others or by the occasional deaths which do occur.

(c) Monitoring equipment should be maintained, when possible, outside the individual room. Bedside monitors could then be turned on only when the patient is to be transferred. This will break the constant rhythmic signalling sound or light and will also reduce the anxiety in those patients who are aware of the significance of these signalling devices and the danger implicit with any change in their pattern.

(d) Patients should be allowed increased mobility by removing as many wires and tubes from their extremities as possible. Tele-metering equipment could probably best achieve this increased mobility and the suggested removal of equipment.

(e) The constant noise of oxygen tents and air conditioning is a monotonous sound which should be removed wherever possible.

(f) In order to provide a greater variety of meaningful stimuli, each patient should be provided with a patient-controlled radio and television set. Centrally controlled radio and television serves only to increase the patient's sense of helplessness.

(g) Each room should be equipped with a large clock and calendar visible to the patient to help with orientation.

(h) An outside window should be visible to the patient.

In addition to changes in the room, alerting the staff to the possible development of these psychiatric symptoms can do much to prevent the development of the more florid forms of psychosis. The recovery room nurse should visit each patient preoperatively, since a relationship established before surgery is more effectively used postoperatively. She can describe the room in as much detail as seems appropriate. Patients can be told that occasionally strange things may occur which are quite common and transitory; that the staff want to know about them so that they can bring them to a halt quickly. After surgery frequent bedside visits from staff provide meaningful stimuli and reduce anxiety. Lazarus and Hagens (1968) believe that they have shown a reduction in the incidence of delirium from such environmental changes alone. If the delirium does develop, patients can be allowed more sleep or, if possible, transferred out more quickly. If the patient should become more agitated chlorpromazine in small doses, 12.5–25 mg. intramuscularly, can be quite effective in controlling the symptoms (Blachly and Starr, 1966).

Category 3

In the medical intensive care unit for cardiac patients we noted the possibility of a response to the experience which manifests itself after discharge from such a unit. Dr. Richard Druss and 1 studied the course of 20 patients (Druss and Kornfeld, 1967); 10 had experienced a cardiac arrest with resuscitation and 10 had a serious cardiac problem without arrest.

As is often the case, the coronary care unit was not specifically constructed for such use. It was a converted ward with four beds in rather cramped quarters. Patients were separated only by curtains and were entwined by the usual assortment of cables and catheters. The flashing oscilloscope was over each bed. Patients on pacemakers had an attachment which flashed a light with each heart beat and sounded a bell should malfunction occur. The defibrillator stood against the wall ready for use, and it was often used.

In contrast with the surgical patients, these patients were kept heavily sedated, usually with barbiturates. However, at times the room could be far from tranquil. The cardiac arrest page could bring a stampede of house officers, nurses, and medical students. They quickly became oblivious to the other patients in the area as they concentrate on their resuscitation efforts. Physicians are all familiar with the procedures, but I wonder how many have ever looked at them from the viewpoint of the other patients in the room. The sights and sound can be truly horrifying to a layman looking on, and even more so if that layman himself has a serious cardiac problem.

We reviewed the reactions of these 20 patients during their stay in the unit as well as their discharge. The incidence of delirium while in the unit was quite high; however, this situation is medically quite complicated, and it was not possible to attribute these symptoms to any specific cause. Parker and Hodge (1967) reported delirium in 11 patients treated in a coronary care unit which they attributed to the environmental factors. However, Sgroi et al. (1968) compared the psychological reactions of patients treated in an intensive care unit with a matched group treated in a medical ward and found no significant difference. They noted that anxiety often did increase after intensive care unit patients were transferred to a regular medical floor. These patients had apparently associated the close supervision of the intensive care unit with security and were initially frightened by the change to routine care. Such patients may require more attention until they are convinced that they are no longer in need of constant nursing observation. Their anxiety can also be dealt with more directly by a discussion of their feelings regarding their transfer. Klein et al. (1968) also noted severe emotional responses on transfer from an intensive care unit which were accompanied in five out of seven patients by an increase in urinary catecholamines. Seven other patients, psychologically prepared for transfer and treated by a physician and nurse who followed them after transfer from the intensive care unit, did quite well with only two showing raised catecholamines.

In evaluating the impact of the room on these patients after discharge from the hospital, it was difficult to separate the effect of the cardiac arrest and cardiac illness from the impact of the room itself. It was clear, however, that most of these patients were suffering from persistent psychological symptoms such as restlessness or irritability. Many had become increasingly dependent and had modified their life habits beyond what appeared to be medically indicated. This, of course, is often seen in patients after cardiac disease. It is possible, however, that the effect of the intensive care unit experience is an additive one; that is, while these patients were reassured at the time by the constant attention of the intensive care unit, they were simultaneously made increasingly aware of the great danger in which they found themselves. This constant awareness of danger may produce a sense of chronic apprehension which would persist after discharge.

Atmosphere Created by Staff

It may be possible to reduce the potential stress of this experience. The room can be modified as suggested to make it a less...
frightening place. The atmosphere created by the staff can also be made more supportive. Physicians can guard against the tendency to become so preoccupied with the equipment that they appear to be more interested in the monitor than in the patient to whom it is attached. The critical medical setting can easily distract the physician from his patient's emotional needs at the time when his support is most needed. In an emergency it is understandable that a physician, intent on saving a life, may lose sight of the impact of his words or actions on his patient or others in the area. There may be limitations on how much of the emergency routine can be modified; however, I do believe that greater caution could be exercised in bedside conversation.

Some consideration can also be given to the patients in the vicinity of emergencies. They may need an opportunity afterwards to ventilate some of their concerns and receive some added support from their doctor. Providing these patients with an opportunity to talk about their fears may dispel some of their unrealistic anxiety. The intensive care unit staff must be aware that patients may displace their concern about themselves to some minor matter. They may complain about a bad mattress, poor service, too many blood tests. This should be an indication to sit down and determine what the patient's real concern may be.

A physician may also be so involved with emergencies that he loses sight of the importance of the less dramatic matter of discharge instructions. Patients who see themselves as this close to death can easily overreact, either with excessive invalidism or with denial of the seriousness of their illness. Thus vague advice such as “Take it easy for a while” can be too easily misinterpreted. The patient needs an opportunity for an unhurried talk with his physician. The physician must take the initiative in setting up these talks and exploring anxiety-laden areas. The patient, terrified at having been close to death, may avoid asking questions. Often the true answers to these unanswered questions can be reassuring.

**Category 4**

One must not overlook the psychological hazards in the intensive care unit setting for the staff (Koumans, 1965; Kornfeld et al., 1968). The unit is a special environment for both the patient and the people who work there. A better understanding of their problems may provide some means of reducing the stress and thus diminish the turnover rate in these highly trained people. For example, the nurse is beset by a variety of problems. She must deal constantly and exclusively with the seriously ill. Opportunities for relaxation are therefore reduced, since every patient is critically ill. She must face death more often than she would in a general medical setting. This requires her frequently to undergo all of the emotional turmoil that one experiences at that time. She may be working with physicians who have much less experience in the handling of the special equipment and problems seen in these units. Yet it is the junior physician who is often least able to ask for, or receive, help from a nurse.

The areas of responsibility in an emergency may not be clearly spelled out. There may not be time to wait for the attending physician to answer his page. The house officer may not be certain of how much responsibility he should assume. The nurse may be the only experienced professional person immediately available. At the Columbia-Presbyterian Medical Center the coronary care unit nurses are therefore permitted to do electrical conversion of ventricular fibrillation if a physician is not available. This authority is logically delegated to the experienced cardiac nurse, but simultaneously places her in conflict with her previous training to act only on the direct order of a physician. Clear guide-lines should be laid down to eliminate conflict in these emergency situations.

What else can be done to relieve some of these problems? Firstly, the medical staff must be made aware that the problems do exist. It is important that the nurse feels that the physicians with whom she works understand these special stresses. Ward secretaries and nurses' aides should therefore be assigned to handle routine tasks, since close surveillance of patients often will not allow nurses the time required to handle some of these chores. This relieves the conscientious nurse of the chronic sense of uneasiness which will occur when these tasks remain undone. Every opportunity should be provided for relief of floor nurses during the course of the day. They should not be forced to work through meal-times or work without an opportunity for brief breaks to provide some anxiety-free moments. Regular meetings should be instituted by the charge nurse with her staff. This is important to maintain the morale of a staff working under pressure. Simultaneously, regular meetings with the medical staff should be arranged so that the nurse can feel that a direct channel of communication is available to the physician in charge.

**References**